

Regional trade integration and trade facilitation as a pro-industrialization policy tool: the case of North Africa's countries

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Introduction

The economic emergence of North African countries¹ (NACs) requires the significant transformation of their economies and raises the question about the process guiding their structural change. Despite their different level of diversification, the economic performance of most countries in the North African region remains dependent on either commodity prices or weather conditions. North African economies are, in general, poorly diversified and specialized in a handful of sectors or non-dynamic products with low added value. The high levels of unemployment, particularly among youth, call for the urgent creation of several million jobs in the region in the coming future. Only a significant increase in economic growth can help meet this pressing challenge. Such an increase, often times called 'explosive growth' has been experienced in the past through structural change in either industries or services. The growing participation in international trade, namely through manufactured exports increasingly diverse and sophisticated has constituted a prominent engine guiding the structural transformation of successful developing countries.

The North African countries began to diversify their structures in the 60s and 70s through state-led import substitution strategies (Morocco, Tunisia) or heavy industrialization strategies (Algeria, Egypt). The diversification of their economies continued at different paces under the structural change period of the 80s and 90s. As a result the economic structures of most countries in the region have changed between the mid-80s and 2007 as proven by larger shares of industry and services in their economies. Such a change is confirmed by an increase in diversification indices (Ben Hammouda and ali. 2009), particularly in Egypt, Tunisia and Morocco (to a lesser extent). The share of these countries on the global market of manufactured goods has remained, however, marginal. Their share remained slightly above 1% between 1975 and 2008 by whereas East Asia increased from 1.7 to 20%.

The apparent paradox between the level of diversification and the international integration of the NACs is explained by several factors: on the one hand, by their relatively weak pace of diversification compared to the rest of the world and, on the other hand, by their focus not necessarily on the most dynamic world's products with limited growth of Manufacturing Value Added (MVA). Moreover, the North Africa's regional market has witnessed increasing competition of newcomers such as China, India, and Turkey. All the above has resulted in the current limited integration of these countries into global value chains (GVCs) which account for a significant share of global MVA.

Since 2008 (Moll de Alba, 2014), North Africa's MVA growth rates have declined, like in almost all world regions, partly as a consequence of the overall economic downturn. Alarmingly, North Africa recorded the second lowest MVA growth rate of all African regions in 2008-2012. Despite leading in terms of MVA per capita among African regions, North Africa's level falls far behind that of the most

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¹ In this paper NACs is made up of Algeria, Egypt, Libya, Morocco, Tunisia and Sudan. However in the simulations Sudan is not comprised in rest of North Africa.

dynamic regions of the world. Moreover, the gap increased during 2008-2012 due to the stagnant MVA per capita growth rate experienced by the region.

Manufacturing plays a modest role in North Africa's economy, and it is comparatively less important than in the most dynamic developing regions and has failed to expand during the last decades. Deindustrialization thus remains a reality in the North Africa region, where MVA accounts for barely one-tenth of its GDP, and the growth of its manufacturing sector lags behind that of its overall economy. The region has failed to spur industrial development and hence to realize significant advances in terms of structural change.

The experience of developed countries, as well as that of emerging countries, particularly in Asia, shows that it is through deep structural transformation of the economy that these countries have managed to achieve real development (UNIDO 2009). Similarly, research (Imbs and Wacziarg 2003) shows that the transition from low- to middle-income countries takes place through the development of a strong and diversified economy and with the state playing a role in this process. For such economies as NACs where minerals and hydrocarbons are predominant structural change should take place through the acceleration of the pace of diversification towards manufactured goods and through the nature of the process through its reorientation towards more dynamic and efficient technologies. Indeed, the literature suggests that beyond economic diversification and exports, it is the nature of this particular diversification and sophistication in the process of production and exports, which constitutes a lever for the structural shift of these economies (Hausmann et al. 2007). Active policy reforms have proven to play an important role supporting that process. Trade policy can make significant contributions, particularly to increase processing to lead to higher value-added. Regional trade agreements may constitute a key instrument to raise the participation of NACs in global trade. The positive growth prospects of the African continent may convert the Continental Free Trade Agreement (CFTA)² into a chief opportunity, *ex ante*, for NACs to expand their manufactured exports based on the continent's rapid urbanization and demographic evolution (Ref ERA 2014). This assumption needs to be assessed to measure to what extent such trade reforms would play a pivotal role in the re-industrialization of NACs. Beside the CFTA, NACS are embarked in two other major regional integration processes. The Great Arab Free Trade Area (GAFTA) with the countries of the League of Arab States (LAS), and the EUROMED process with the European Union.

Given the relative modest size of the NACs economies, and of that of the whole region, a deeper integration with the African continent, the LAS countries and within the Euromed framework might strengthen the optimisation of the comparative advantages of the region. However this process will not conduct to the same pattern of trade with each partner, particularly with regards to manufacturing exports. The purpose of this paper is to assess different scenarios of regional integration with the main NACs trade partners and to analyze which kind of regional integration is more pro-industrialization for NACs, .

The paper is articulated as follows: The first section presents the state of manufacturing production in NACs and analyzes its recent evolution. Section two describes the methodology and various different scenarios put forward for the regional trade integration analysis. The third section presents the main findings of the trade reforms envisaged on the NACs' trade and income performance. Finally, the fourth session puts forward a set of policy recommendations.

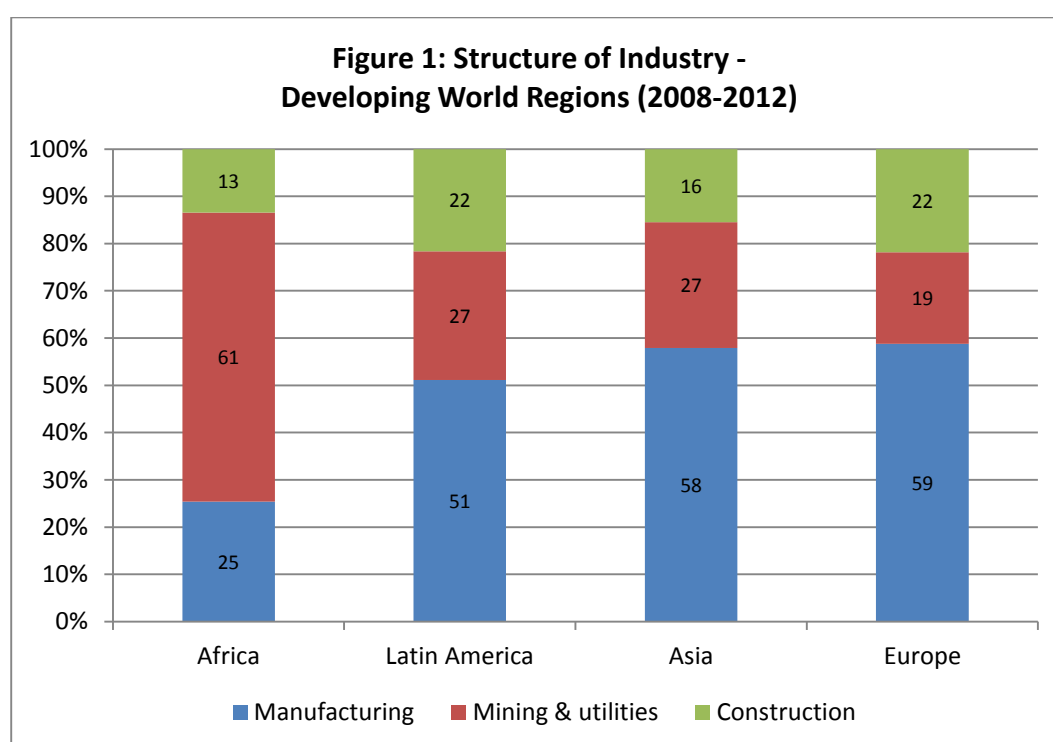
² At the 2012 African Union (AU) Summit, African Heads of State and Government endorsed an AU action plan for "Boosting intra-African trade and establishing the continental free trade area (CFTA)"; it was agreed that the CFTA which negotiations are expected to be launched at the June 2015 AU Summit would be tentatively established by 2017.

1 State of manufacturing production in North African countries

This section examines the current industrial production growth and structure of North African countries in comparison to other country groups. It then compares the relative industrial performance of North Africa with other main regions.

1.1 Industrial production

Manufacturing accounted for only one-fourth of Africa's industrial structure, on average, for the period 2008-2012, while mining and utilities made up 61 percent, the largest share of the overall structure of African industry (Figure 1). The share of mining and utilities in Africa was more than double that of other regions including Europe, Asia and Latin America, where manufacturing played the leading role in industry with 59 percent, 58 percent and 51 percent, respectively.



Source: UNSD (2014a)

Within Africa, variations among regions are significant. On the one hand, mining and utilities accounted by far for the largest share of industry in Central Africa (81 percent), Western Africa (79 percent), North Africa (59 percent) and Southern Africa (51 percent). On the other hand, manufacturing was the leading contributor to industry in Eastern Africa (45 percent); Southern and North Africa followed in terms of the highest contribution of manufacturing with one third and one fourth, respectively.

The structure of industry in North Africa also reveals a great deal of divergences between countries. The contribution of manufacturing to national industrial structure is highest in Tunisia and Sudan (both at 58 percent), followed by Morocco (52 percent) and Egypt (44

percent). At the other extreme, mining and utilities play the leading role in Libya with 85 percent and Algeria with 74 percent.

The share of Africa's population to total world population increased from 14.4 percent to 15.5 percent, growing faster than its share in world MVA which increased moderately to reach 1.50 percent in 2013. The share of Africa's MVA in total MVA of developing countries which increased their share in world MVA, declined from 5 percent in 2008 to 4.2 percent in 2013. During the same period, the share of North Africa's population in world population grew from 0.28 to 0.29 percent while its share in world MVA stagnated at 0.53 percent. Developed countries with a combined population of 17 percent held more than 64.5 percent of global industrial production in 2013.

In line with the overall trend in Africa, the North Africa region exhibited a significant slowdown of its already comparatively moderate average MVA growth rate from 4.18 percent during 2003-2008 to 1.67 percent in 2008-2013 (Table 1). This compares to Western Africa, which only accounted for 10.66 percent of Africa's MVA, but managed to increase its average annual MVA growth rate from 3.67 percent to 5.24 percent during the same period or to Eastern Africa's annual MVA growth rate, which remained close to 5 percent but only accounted for 4.05 percent of Africa's total MVA. Despite the decline in developing countries and in China, their average annual growth rates remained at comparatively much higher levels, i.e. 5.51 percent and 8.37 percent, respectively, during the period 2008-2013.

Table 1: Level and growth of MVA by country group, US\$ Constant 2005, in billion								
Country group	2008	2009	2010	2011	2012	2013	Average annual growth rate (in %)	
							2003-2008	2008-2013
World	8,248	7,581	8,299	8,627	8,829	8,980	4.10	1.72
Developed	5,810	5,090	5,595	5,740	5,799	5,793	2.65	-0.06
Developing	2,438	2,491	2,704	2,886	3,030	3,187	8.16	5.51
Central Africa	4	4	4	4	5	5	2.16	3.12
Eastern Africa	4	4	5	5	5	5	5.61	5.06
North Africa	44	45	46	45	47	48	4.18	1.67
Southern Africa	59	54	57	59	61	62	5.30	1.27
Western Africa	11	12	12	13	14	14	3.67	5.24
Africa	122	119	124	126	131	135	4.64	2.00
Caribbean	15	15	17	18	14	14	3.02	-1.50
Central America	178	162	177	185	192	193	2.97	1.59
South America	292	274	296	306	307	312	5.25	1.33
Latin America	486	452	490	509	513	519	4.31	1.34
China	1,059	1,141	1,243	1,364	1,470	1,582	11.47	8.37
Central Asia	10	10	11	12	12	13	4.60	4.83

South Asia	199	216	236	244	252	262	9.12	5.66
South East Asia	209	206	225	231	248	262	5.69	4.64
West Asia	80	83	91	96	98	102	9	5
Other Asia & Pacific	3	3	3	3	1	1	1.62	-21.08
Asia	1,560	1,659	1,810	1,949	2,081	2,222	10.07	7.32
Europe	269	261	280	301	305	312	7.20	2.96

Source: UNIDO (2015)

Low and stagnant levels of MVA explain Africa's low level of MVA per capita at constant 2005 US\$ 130 in 2013 (Table 2). This is 36 times less than that of developed countries and more than 4 times less than developing countries' MVA per capita. Despite the North Africa region recording the highest MVA per capita among Africa's regions in 2013 with US\$ 276 (constant 2005 dollars), followed closely by Southern Africa with US\$ 213, its MVA per capita is comparatively lower than that of other country groups, e.g. 17 times lower than that of developed countries and more than four times lower than the MVA per capita of Central America. Previous research by UNIDO indicates that Africa has not benefitted from the increase of manufacturing production and exports recorded by developing countries since 2000 (UNIDO, 2009). Moreover, during the period 1990-2010, the Middle East and North Africa only managed to achieve a small increase in MVA per capita, with the exception of Turkey, with no sign of diversification, i.e. the region remains dependent on oil (UNIDO, 2013a).

Table 2: Level and growth of MVA per capita by country group, US\$ Constant 2005								
Country group	2008	2009	2010	2011	2012	2013	Average annual growth rate (in %)	
							2003-2008	2008-2013
World	1,233	1,121	1,213	1,247	1,275	1,284	2.89	0.81
Developed	4,863	4,232	4,625	4,719	4,748	4,738	2.00	-0.52
Developing	444	448	480	506	531	552	6.77	4.47
Central Africa	104	101	104	105	107	108	-0.28	0.79
Eastern Africa	23	24	25	25	27	28	2.91	3.47
North Africa	274	277	280	266	274	276	2.57	0.20
Southern Africa	224	203	209	212	213	213	2.93	-1.01
Western Africa	39	40	40	41	42	44	1.05	2.56
Africa	131	125	128	126	130	130	2.25	-0.10
Caribbean	422	427	467	484	532	539	2.12	5.04
Central America	1,176	1,054	1,134	1,172	1,200	1,189	1.55	0.21
South America	761	707	754	773	767	772	4.01	0.28
Latin America	850	782	837	862	875	876	3.04	0.60
China	797	855	927	1 012	1 086	1 164	10.88	7.87

Central Asia	176	170	187	198	204	210	3.57	3.59
South Asia	125	135	145	147	150	154	7.47	4.16
South East Asia	383	373	403	408	434	455	4.46	3.53
West Asia	404	408	441	456	517	526	7	5
Other Asia & Pacific	101	97	99	100	95	97	0.57	-0.76
Asia	416	438	472	504	539	569	8.83	6.47
Europe	1,120	1,081	1,160	1,245	1,258	1,282	7.03	2.75

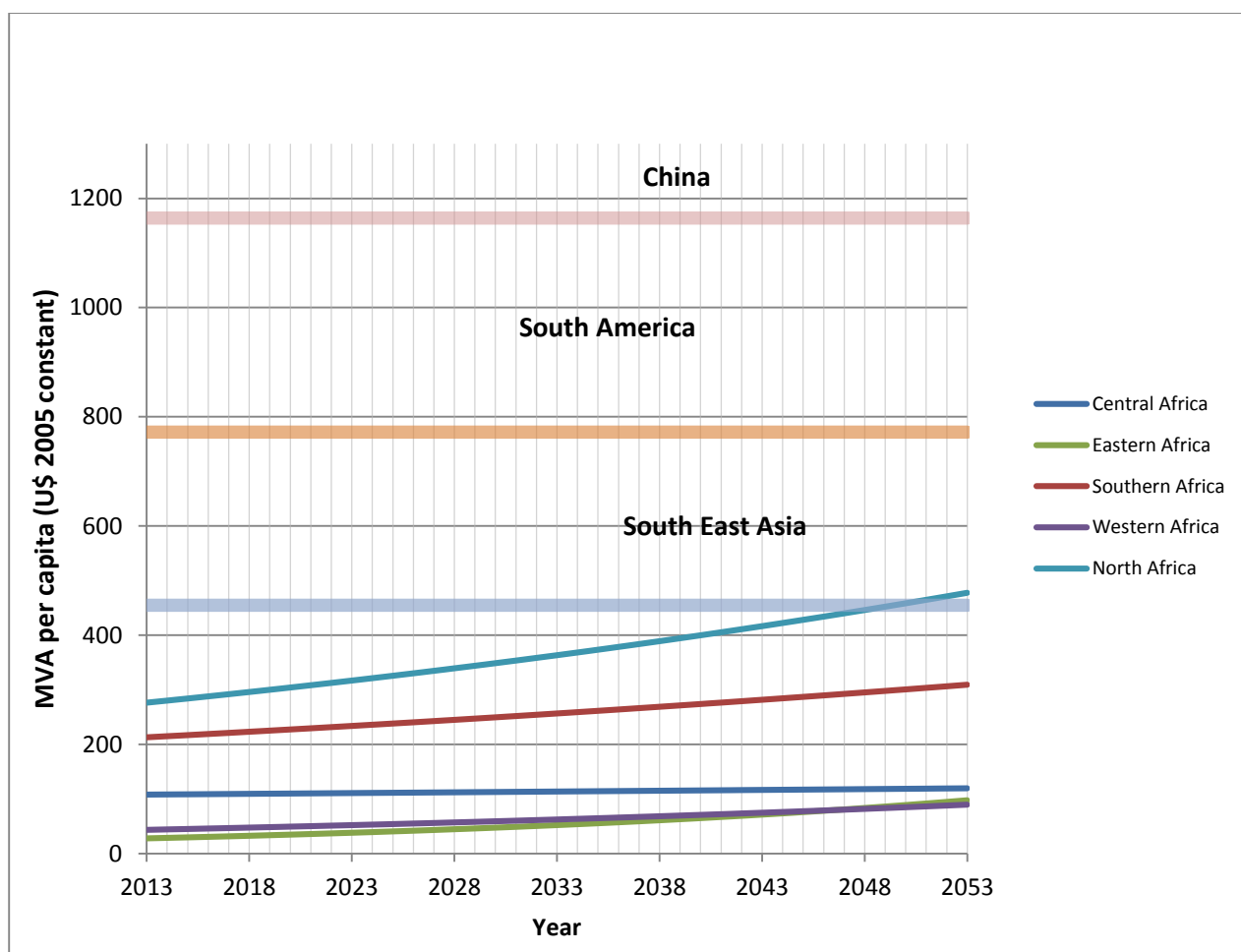
Source: UNIDO (2015)

The situation in the North Africa region looks comparatively worse when considering both its limited industrial fabric and its growing population. MVA per capita increased marginally by 0.20 percent during 2008-2013 to reach US\$ 276 in 2013 compared to a 2.57 percent growth in 2003-2008 (Table 2). Despite significantly lower levels of MVA per capita, Western Africa increased its MVA per capita at 2.56 percent during 2008-2013 to reach US\$ 42 and Eastern Africa recorded an average annual growth rate of 3.47 percent, recording US\$ 28 in 2013. The marginal increase of US\$ 2 in North Africa's MVA per capita compares to an increase of nearly US\$ 108 during the period 2008-2013 in developing countries, which reached a value of US\$ 552 (constant 2005 dollars) in 2013 or to China, which recorded an impressive increase of US\$ 367, reaching a per capita MVA in 2013 of US\$ 1,164.

Despite registering the highest MVA per capita in Africa, the North Africa region not only continues to lie far behind other world country groups, but the existing gap is also increasing due to the region's marginal increase in 2008-2013.

According to their average growth rates for 2003-2013, North Africa would manage to catch up only one other selected country groups, namely South East Asia in 37 years' time (Figure 2). None other African region would catch up any of the selected country groups. Moreover, if North Africa succeeded in increasing its MVA per capita growth rate to 10 percent per annum, the region could reach the 2013 MVA per capita level of South America within 11 years and China's within 16 years.

Figure 2: Catching-up of African regions to selected countries or country groups based on 2013 MVA per capita (2005 constant dollars)



Source: Estimations based on UNIDO data (2015)

The aggregate growth rate of the North Africa region masks the differences between countries. All countries in the region experienced lower average annual MVA growth rates during 2008-2013 compared to 2003-2008 (Table 3). Egypt, which accounted for more than 42 percent of the region's MVA in 2013, witnessed a drop in its growth rate from 5.74 percent to 2.73 percent, while Libya's MVA, which accounted for less than 3 percent of North Africa's total MVA, plummeted in 2008-2013 to a rate of -12.93 percent.

Country	2008	2009	2010	2011	2012	2013	Average annual growth rate (in %)	
							2003-2008	2008-2013
Algeria	6,221	6,594	5,676	6,105	6,199	6,285	2.69	0.21
Egypt	17,614	18,345	19,322	1,9148	19,684	20,155	5.74	2.73
Libya	2,653	2,747	2,780	6,39	1,433	1,328	4.62	-12.93
Morocco	9,574	9,636	9,913	10,121	10,414	10,721	2.73	2.29

Sudan	2,068	2,139	2,429	2,336	2,313	2,373	5.22	2.79
Tunisia	5,791	5,598	6,248	6,329	6,593	6,855	3.27	3.43

Source: UNIDO (2015)

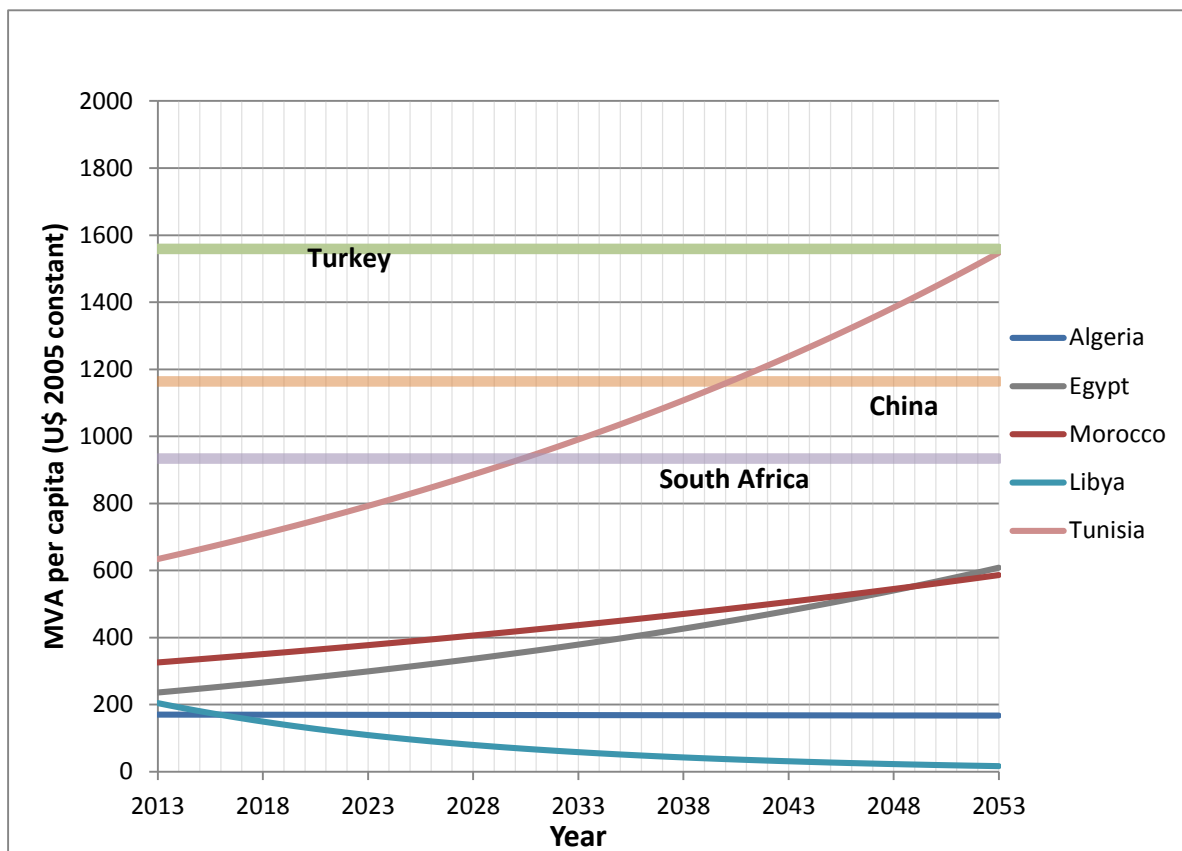
Consequently, most of the region's countries also recorded considerable declines in their MVA per capita growth rates (Table 4). Tunisia was the only country in the region that displayed a higher per capita growth rate in 2008-2013, 2.32 percent, than in 2003-2008 reaching the highest value in 2013 in North Africa at US\$ 634 (constant 2005 dollars) almost twice that of Morocco (US\$ 326). The latter displays the second highest value in the region with an MVA per capita that experienced a moderate decline in its growth rate from 1.69 percent in 2003-2008 to 1.27 percent in 2008-2013. Algeria (-1.22 percent) and Libya (-13.91 percent) witnessed a decline in their MVA per capita in 2008-2013 with their respective values dropping to US\$ 170 and US\$ 204 (constant 2005 dollars) in 2013, respectively.

Table 4: Level and growth of MVA per capita by country, US\$ Constant 2005, in million								
Country	2008	2009	2010	2011	2012	2013	Average annual growth rate (in %)	
							2003-2008	2008-2013
Algeria	181	189	160	170	170	170	1.15	-1.22
Egypt	225	230	238	232	234	236	3.83	0.98
Libya	431	439	437	100	222	204	2.46	-13.91
Morocco	306	305	310	314	319	326	1.69	1.27
Sudan	61	61	68	64	62	63	2.58	0.57
Tunisia	565	540	596	597	616	634	2.19	2.32

Source: UNIDO (2015)

Based on the region's average growth rates for 2003-2013, only one country in the region, Tunisia, could reach the MVA per capita levels achieved by some selected countries within 40 years. Tunisia could reach the level of South Africa's MVA per capita level within 18 years and China's within 28 years (Figure 3). Tunisia would almost catch up with the MVA per capita level of Turkey within 40 years. At current growth rates, all other North African countries would fail to catch up with the current MVA per capita levels of other countries. North African countries need to record significantly higher growth rates to close the gap with selected countries' MVA per capita in the coming years.

Figure 3: Catching-up of North African countries to selected countries based on 2013 MVA per capita (2005 constant dollars)



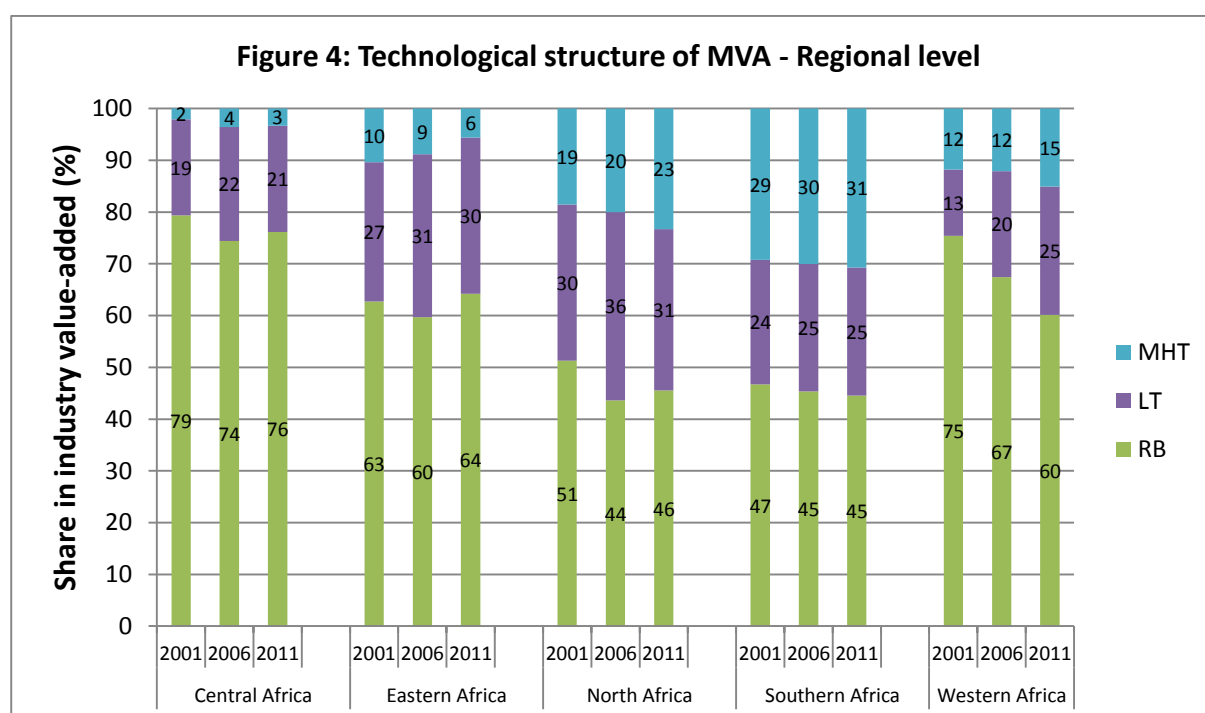
Source: Estimations based on UNIDO data (2015)

The intra-industry structure of manufactured production in African regions is presented in Figure 4. It is worth noting that sub-Saharan Africa (SSA) and Latin America recorded the lowest change in their industrial structures. Resource-based (RB) activities continue to dominate SSA's industrial structure. SSA failed to follow the pace of the general shift to more complex industrial activities (UNIDO, 2013b). Moreover, SSA reduced its capacity in 1990-2010 to capture manufacturing value as shown in the decline by one-third of its share of medium- and high-tech MVA in total manufacturing (UNIDO, 2013a).

Southern and North Africa, which together accounted for four-fifths of Africa's MVA in 2012, also had the highest share of medium- and high-technology products in the region at 31 percent and 23 percent, respectively. Medium- and high-tech (MHT) activities are particularly valuable as they grow faster, especially at medium- and high-income levels, offer enhanced learning opportunities and spillover effects (UNIDO, 2009). The share of resource-based activities accounted for nearly half of MVA and remained significant in both Southern (45 percent) and North Africa (46 percent). Low-tech (LT) MVA plays a less significant role in African manufacturing than one would expect, bearing in mind its development stage. Africa's low-tech MVA has recorded a decline, which is associated with the decrease in textiles production (UNCTAD and UNIDO, 2011).

During 2002-2011, the Middle East and North Africa roughly followed the world trend, continuously shifting towards more complex products over time. Thus, the share of resource-based manufacturing dropped to 40.3 percent while MHT activities increased to 32.7 percent (UNIDO, 2013b).

Northern and Southern Africa, Africa's two largest industrial regions, also displayed the highest increases and shares of MHT activities in manufacturing, at 23 percent and 31 percent, respectively. Overall, despite moderate declines, the share of resource-based activities remains the largest component in all African regions. Central, Eastern and Western Africa also displayed high shares of resource-based activities accounting for 76 percent, 64 percent and 60 percent, respectively.



Source: UNIDO (2014b)

1.2 Relative industrial performance

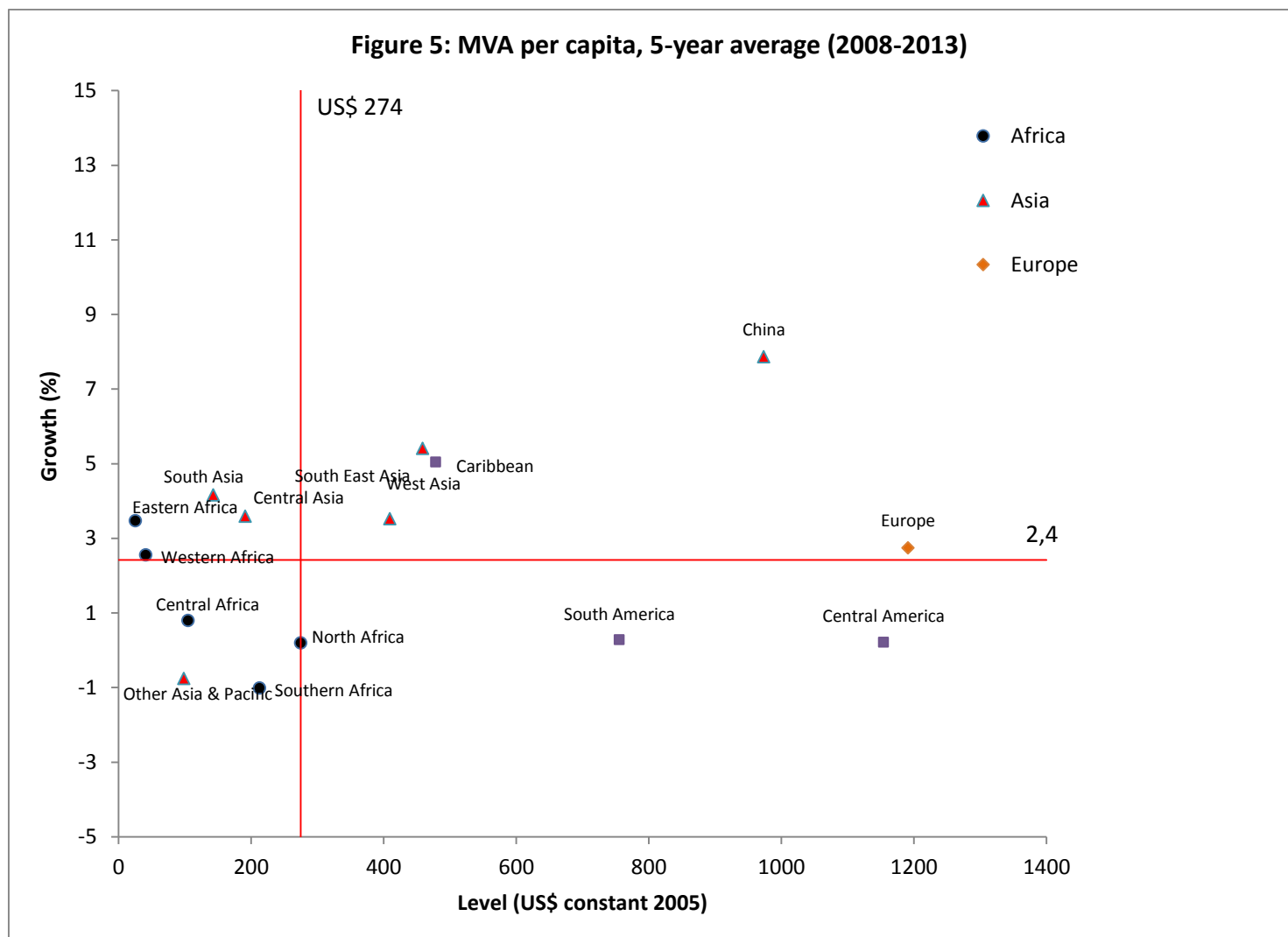
This section examines North Africa's relative industrial performance compared to other selected world regions.

Figure 5 presents the MVA per capita level of selected world regions and their MVA per capita growth. Using the MVA median growth (2.4 percent) during 2008-2013 and the MVA per capita median level (US\$ 274) in 2013 of selected regions, the graph can be divided into four zones to illustrate relative performance.

In the top-right quadrant, we find regions such as Europe, South East Asia, the Caribbean and South America and countries such as China, which recorded an impressive 7.89 percent

average growth rate with comparatively higher MVA levels and growth rates. The bottom-right quadrant includes regions such as Central and South America which have also achieved relatively higher levels of MVA per capita, but are experiencing difficulties in sustaining their growth. The top-left quadrant includes regions such as South Asia with a relatively lower manufacturing base but a significant level of growth with a 2008-2013 average MVA per capita growth rate of 4.16 percent as well as Eastern and Western Africa 3.47 and 2.56 percent average growth rate, respectively.

Finally, regions with a comparatively less dynamic MVA per capita growth rates from already relatively low levels are found in the bottom-left quadrant. These include Central Africa with 0.79 percent in 2008-2013. North Africa shows relatively low average growth rates (0.20 percent in 2008-2013) combined with an MVA per capita that falls precisely into the median of all regions. The relative performance of African regions is comparatively weak; none of them recorded higher values than the median for the two chosen variables.



Source: UNIDO (2015)

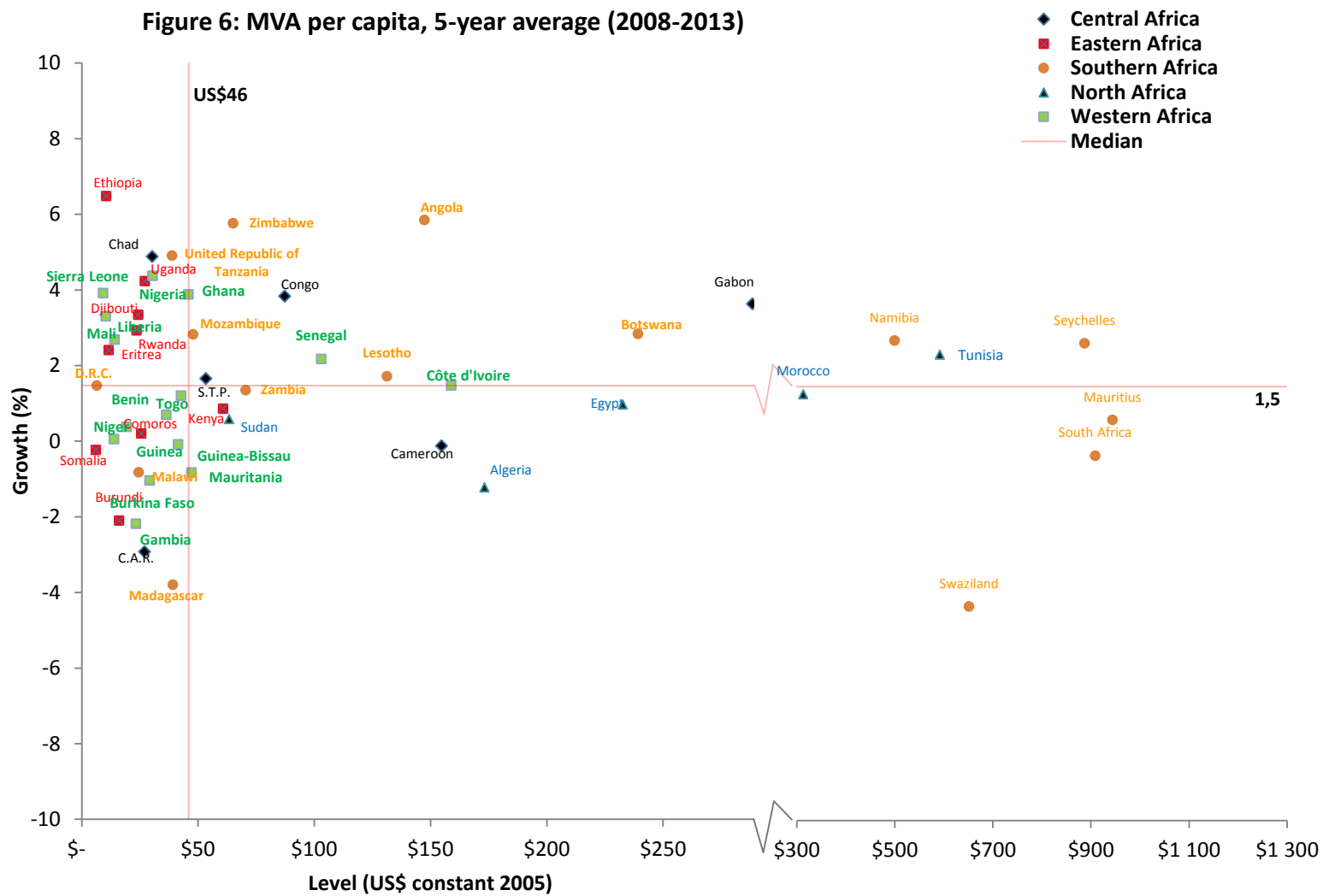
Figure 6 presents the relative average MVA per capita level of African countries and their average growth rate. Using the MVA per capita median growth (1.5 percent) during 2008-2013 and its average level (US\$ 45) of selected regions in 2013, the graph can be divided into four zones to illustrate the relative performance.

In the top-right quadrant, we find countries that recorded comparatively higher MVA levels and growth rates (relative to other African countries). Only one North African country is included in this group, namely Tunisia with US\$ 592.42 average MVA per capita and 2.32 average growth rate. In this group, the growth rates recorded by Angola at 5.84 percent and Zimbabwe with 5.76 percent were remarkable, even if their MVA per capita levels were not among the highest in this quadrant. Seychelles with US\$ 896.96 displayed the highest average MVA per capita in this group coupled with a significant average growth rate of 2.62 percent.

The bottom-right quadrant includes countries that achieved relatively higher levels of MVA per capita, but experienced difficulties in sustaining their growth. Five North African countries, namely Morocco, Egypt, Algeria, Sudan and Libya are included in this group, but they displayed significant differences in terms of the 2008-2013 average MVA per capita ranging from US\$ 313 in Morocco with the highest level in this quadrant, to US\$63 in Sudan with the lowest. Their average growth rates during 2008-2013 varied from 1.27 percent in Morocco to -1.21 percent in Algeria. The two countries with the highest MVA per capita levels, namely Mauritius at US\$ 944 and South Africa at US\$ 909 fall into this quadrant. Among this group, Swaziland with -4.34 percent recorded the worst growth rate. Libya belongs to this group as well (albeit not displayed in the figure) with an average growth rate of -13.90 percent.

The top-left quadrant includes countries with a relatively lower manufacturing base but a significant level of growth, and includes Ethiopia, Chad, Tanzania and Nigeria. Ethiopia recorded the highest average growth rate with 6.48 percent during 2008-2013, followed by Tanzania with 4.91 percent.

Finally, in the bottom-left quadrant, we find countries with a declining MVA per capita from already relatively low levels, such as Burkina Faso, the Gambia and Burundi.



Source: UNIDO (2015)

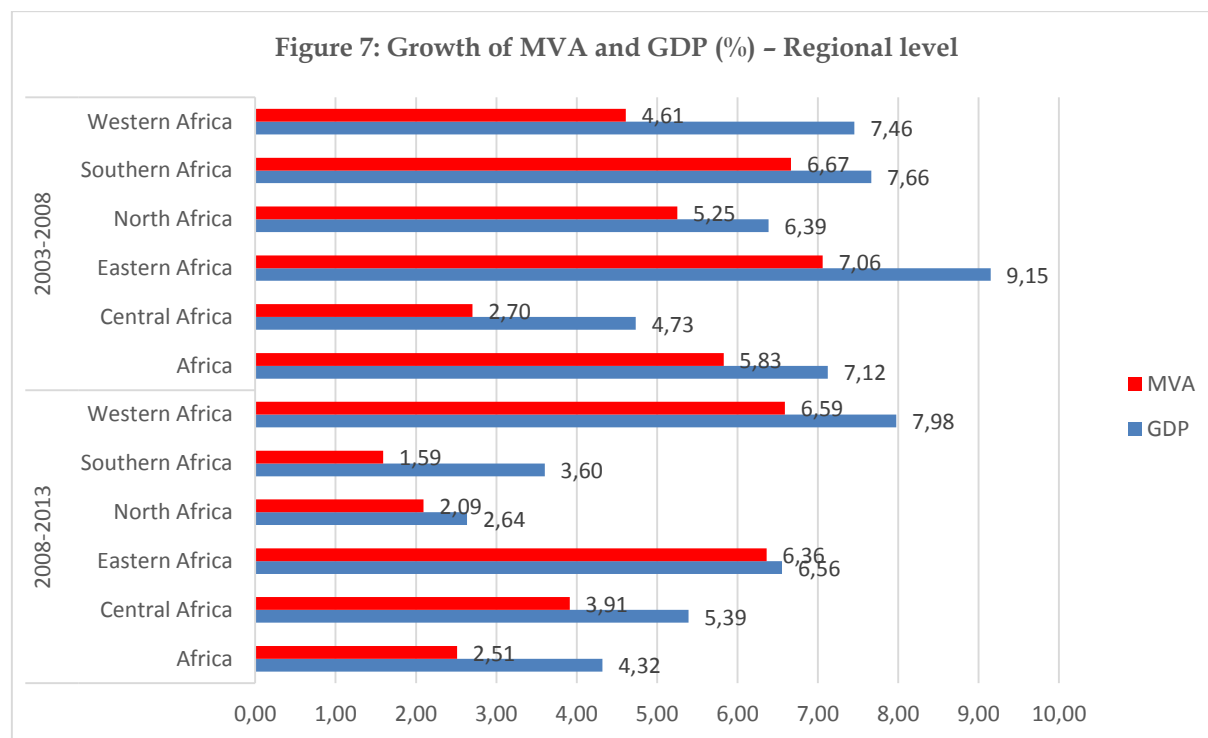
Africa's industrial sector remains underdeveloped (Lall, 2005; Bigsten and Söderbom, 2011; UNIDO, 2010, 2013a, 2013b). Moreover, Africa deindustrialized during 1993-2013 (Table 7). Its level of industrialization, using the share of MVA in GDP as a proxy, declined from 11.51 percent in 1993 to 9.88 percent in 2013. This accentuates the overall trend experienced in 1950-2005 when manufacturing industries followed an almost flat trajectory, reaching a share of 11 percent MVA in GDP in 2005, equivalent to that of 1950 (Szirmai, 2012; UNIDO, 2013a). The share of MVA in GDP declined in all African regions to values ranging from 5.07 percent in Western Africa to 12.64 in Southern Africa (Table 5). In North Africa, that share slightly declined to 10.40 percent in 2013. This compares to an increase in developing countries as a whole where MVA reached 20.84 of GDP in 2013 while South East Asia and China reached 26.95 percent and 32.54 percent, respectively.

Table 5: Share of MVA in GDP

Country/Region	1993	2003	2013
World	15.44	15.90	16.44
Developed	15.12	15.06	14.73
Developing	16.88	19.21	20.84
Central Africa	10.07	10.66	9.32
Eastern Africa	8.42	7.74	7.11
North Africa	10.94	11.09	10.40
Southern Africa	15.01	14.19	12.64
Western Africa	6.55	5.94	5.07
Africa	11.51	11.12	9.88
Caribbean	11.69	11.84	13.62
Central America	16.91	17.53	16.88
South America	17.03	15.50	13.69
Latin America	16.78	16.06	14.72
China	28.54	33.39	32.54
Central Asia	13.81	12.09	9.69
South Asia	13.53	14.38	15.07
South East Asia	23.65	27.37	26.95
West Asia	7.07	8.82	10.52
Other Asia & Pacific	17.30	14.27	7.12
Asia & Pacific	19.29	24.15	25.58
Europe	15.05	15.25	18.14

Source: UNIDO (2015)

An additional issue of concern is the fact that Africa's manufacturing sector grew slower in general with 2.51 percent than its economy as a whole with 4.32 percent during 2008-2013. The same applies to the previous period of 2003-2008 despite higher growth rates with 5.83 percent and 7.12 percent, respectively. Even Africa's post-1995 growth was weak and the lack of industry on the continent continues to constitute a barrier to its growth prospects and makes it more difficult to attract industry compared to regions that have already industrialized (Page, 2010). Thus, despite some evident growth in sub-Saharan Africa, the challenge to accelerate and sustain it remains (Abarche et al., 2008).



Source: UNIDO (2015)

No African region recorded a higher growth rate of its manufacturing sector than of its economy as a whole either in 2003-2008 or in 2008-2013. The highest manufacturing and economic growth rates during 2008-2013 were recorded in Western and Eastern Africa. Both belong to the least industrialized regions in Africa and only accounted for 10.66 percent and 4.05 percent, respectively, of Africa's MVA in 2013. Unlike other developing regions, Africa's economic growth over the last decades has not resulted in any significant structural change, jeopardizing the continent's future sustained growth. This trend has been exacerbated by the decline in growth rates during 2008-2013. The same applies to North Africa (Figure 7), whose MVA (2.09 percent) grew slower than its GDP (2.64 percent). This can be explained by the fast growing services sector in the close proximity of the European market and by the fact that the mining industry remains the main component of industrial activity in a number of economies within this region.

Our analysis suggests that, to varying degrees, the manufacturing base of the North Africa region remains comparatively weak and its potential contribution to sustained economic growth of the region is far from being realized. Moreover, our study suggests that different patterns exist within the region in terms of the development of the manufacturing sector. The manufacturing base of two natural resource-rich countries, Algeria and Libya, remains weak and calls for an urgent diversification of their economies which are almost exclusively

dependent on their natural resources, i.e. natural gas and oil. Despite having a relatively larger manufacturing base, the second group of countries, Tunisia, Egypt and Morocco, have witnessed a stagnation or decline in the contribution of their manufacturing sector to their economic growth over the last years due, among other reasons, to the political and social changes and to their strong dependence on a handful of markets which have suffered a severe downturn. This has exacerbated the trend of previous years when North Africa's industrial sector failed to keep pace with the world's most dynamic developing regions. With regard to international trade, North Africa continues to play a minor role at the global level, particularly in manufactured trade. Primary exports, which are exposed to the volatility of world prices, continue to lead North Africa's export structure (Moll De Alba, 2014). The benefits of past commodity booms and regional economic growth have not been exploited to push forward the necessary structural transformation of the region. Moreover, North African manufactured exports are dominated by resource-based and low-technology products and concentrate on a limited number of products and markets, thereby increasing their vulnerability to external shocks.

Given these facts, NACs are implementing several reforms to accelerate the diversification of their economies. Against that context, regional trade agreements (RTAs) may constitute a key instrument to raise the participation of NACs in global trade. The positive growth prospects of the African continent may convert the Continental Free Trade Agreement (CFTA) into a chief opportunity, *ex ante*, for NACs to expand their manufactured exports based on the continent's rapid urbanization and demographic evolution (Ref ERA 2014). This assumption needs to be assessed to measure to what extent such trade reforms would play a pivotal role in the re-industrialization of NACs. Beside the CFTA, NACs are embarked in two other major regional integration processes. The Great Arab Free Trade Area (GAFTA) with the countries of the League of Arab States (LAS), and the EUROMED process with the European Union.

Given the relative modest size of the NACs economies, and of that of the whole region, a deeper integration with the continent, the LAS countries and within the Euromed framework might strengthen the optimisation of the comparative advantages of the region. However this process will not conduct to the same pattern of trade with each partner, particularly with regards to manufacturing exports. The purpose of this paper is to assess different scenarios of regional integration with the main NACs trade partners and to analyze which kind of regional integration is more pro-industrialization for NACs.

2. Model used and description of trade reforms

2.1 Main model assumptions, data requirements, geographic and sectoral decomposition

This analysis relies on the Modelling International Relationships in Applied General Equilibrium (MIRAGE) multi-country multi-sector Computable General Equilibrium (CGE) model, particularly well designed for trade policy analysis. The dynamic version of the model is utilized with its standard model closure³. The dynamic is recursive implying a succession of equilibriums being solved sequentially from one year to another. See Annex 1 for a more detailed description of the model and its main assumptions⁴. The model relies on the Global

³ See annex 1.

⁴ See Decreux and Valin (2007) for full description of the model features.

Trade Analysis Project (GTAP) database version 8.1⁵ for macroeconomic and bilateral trade data while the Market Access Map at Harmonized System 6-digit (MAcMap-HS6) database version 2⁶ is employed for bilateral protection information. MAcMap-HS6 database is updated with key evolutions to date (such as to reflect the Everything But Arm (EBA) initiative, African Growth and Opportunity Act (AGOA), enlargement of the European Union to 28 members)

Considering both solver limitations and constraints from the GTAP database in terms of geographic and sectoral details, simulations are conducted with a total of 14 countries or regions and 29 sectors.

The focus being on North Africa, all the North African countries available in the GTAP version 8.1 database are preserved. The rest of African countries are aggregated in the 4 remaining African regions. The main trading partners (i.e. the European Union, the United States China) are also kept as they are in the database, while all other countries and regions are aggregated into two groups: Emerging Industrialised Economies (EIE) and rest of the world (see Annex 2).

Regarding the sectoral aggregation, emphasize is put on industrial manufacturing sectors which are keys for NACs structural transformation. In other words, as much details as possible were kept for these sectors. In total, 29 sectors were considered which can be decomposed into Agriculture (1), Food (7), industrial Manufacturing (16), Mining and Energy (3) and service sectors (2) (see Annex 3).

Following the utmost decision made to tentatively establish a CFTA by 2017, all the scenarios in this study are fully implemented by 2017. Moreover, while the reforms are assumed to be effective by 2017, outcomes are given for the year 2020 in order for all variables of the model to properly adjust to shocks. Unless otherwise indicated, these yearly outcomes are given by comparison between the scenarios and the reference (or baseline; i.e. without trade reforms) and either in percent or absolute changes.

2.2 Trade reforms

A clear roadmap for the regional integration process in Africa was initially provided by the Abuja Treaty, which came into effect in 1994. In line with the Treaty, African Heads of States and Governments have agreed in January 2012 -by endorsing the African Union Action Plan for “Boosting Intra-African Trade and the Establishment of a Continental Free Trade Area”- to set up a CFTA, with 2017 as tentative target. Therefore, a first scenario assumes the removal of all tariff barriers on goods within the African continent to be effective by 2017. An alternate reform is to consider a reduction of costs to trade across borders on top of the trade liberalization entailed by the CFTA, assuming that all countries are implementing the trade facilitation part of the WTO agreement reached in December 2013, called “the Bali package”. These are modeled using a database on trade costs associated to time from Minor and Tsigas (2008). The authors estimated the percentage of exports and imports lost due to a delay of one day in customs processing and port handling, by country and sector. Decreux and Fontagne (2009) aggregated, at the GTAP level, data of costs at the barrier from Minor and Tsigas. Applying the same methodology, trade costs were aggregated for the regions and sectors determined in the study allowing for calibration of these costs into the model. 25% reductions of these trade costs

⁵ See Narayanan et al. (2012).

⁶ See Boumellassa et al. (2009).

or “iceberg costs” were then applied, such as customs procedures, port handling and inland transport in import and export processes are assumed to become more efficient worldwide by 2017, as compared to that in the base year. The assumption is that reforms should lead to improve productivity (Portugal-Perez and Wilson, 2010) and particularly improve the competitiveness of manufactures industrial products. Trade Facilitation can boost productivity, Karingi and Spencer (2011) confirm these result on TFP on 18 African countries and indicate that trade facilitation can also shape production, catalyzing transition toward more sophisticated exports and greater future growth.

A second set of scenarios is based on the first one with an additional FTA within the Great Arab Free Trade Area framework. The implementation of the an-Arab FTA has already started in the majority of Arab countries. However, in many cases the product coverage is low and the lists of exclusion for sensitive products are important. In this scenario we assume a total FTA by 2017 without any exclusion. As for the first scenario, we assess an alternative reform that includes a 25% reduction of costs to trade across borders by 2017

A third set of scenarios is based on the second one to which we add a deep FTA between NACs and the EU countries. The scenario is an enlargement of the current bilateral Euro-med agreement, which is focused on manufactured products, to all sectors by 2017, without any exclusion. As for the previous set of scenarios, an additional reform including a 25% reduction of costs to trade across borders by 2017 is envisaged.

3. Economic impacts of implemented reforms

3.1 Impact of different scenarios on the exports

3.1.1 With only the CFTA in place:

The implementation of the first scenario will have a significant impact on African countries’ exports that would strongly increase. The North African exports would rise by 2.7% while the rest of Africa will experience an exports increase of 8.2%.

The impact of the other countries would remain very weak as third countries (i.e. from outside Africa) would see their exports slightly reduced by maximum 0.2% in the case of the EU.

Increase in Africa’s exports would essentially be the result of a boost in intra-African trade which would expand (in absolute terms) by nearly USD 70 billion in 2020. North African exporters would grab as much as 20% of this gain; 52% of which would be just expansion in intra-North African trade and the rest would be increase in North African countries’ exports to the rest of Africa (see Annexe 4).

The reverse can be observed in the case of the rest of Africa. With increase in exports towards themselves significantly larger than towards North Africa in absolute terms, but in relative terms they would expand their exports more towards North African economies (thanks to larger increase of exports towards North Africa for Central Africa and Southern Africa).

However, in relative terms (i.e. percentage) all African countries, with the exception of Egypt, would expand their trade more with African partners outside of North Africa (this would be particularly evident in the case of Morocco)

Third countries would export less to African economies, redirecting some of their trade towards non-African partners; but in net, as indicated earlier the CFTA reform would be slightly trade diverting for them

Table 6: Changes in total exports by country/region, following implementation of the CFTA with or without trade facilitation (TF) reforms, % vs. USD bn, 2020

	CFTA		CFTA + TF	
	%	USD bn	%	USD bn
China	-0.1	-2.0	8.7	257.1
European Union	-0.2	-6.2	5.3	158.3
United States	-0.1	-1.1	6.2	120.7
North Africa	2.7	8.9	6.3	20.4
<i>Algeria & Libya</i>	1.0	1.8	3.4	5.9
<i>Egypt</i>	3.2	2.7	7.5	6.2
<i>Morocco</i>	6.0	2.1	10.7	3.8
<i>Tunisia</i>	6.8	2.3	13.2	4.4
Rest of Arab League	-0.1	-0.5	4.1	35.9
Rest of Africa	8.2	42.4	15.6	80.8
<i>Central Africa</i>	3.2	3.5	7.0	7.5
<i>Western Africa</i>	13.2	21.3	18.1	29.1
<i>Eastern Africa</i>	9.8	9.1	20.8	19.2
<i>Southern Africa</i>	5.4	8.6	15.8	25.0
EIE	-0.1	-2.1	8.3	196.0
Rest of the World	0.0	-2.0	6.5	391.8

Source: authors' calculations based on the MIRAGE model

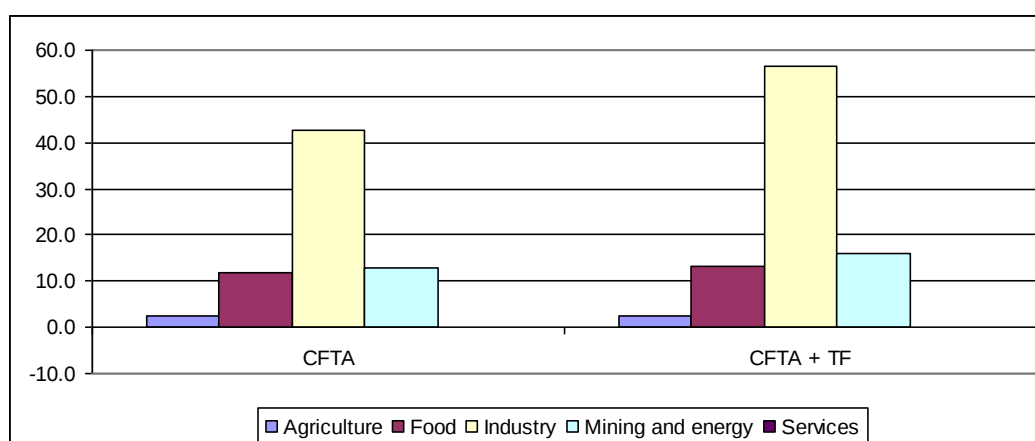
The improvement of trade facilitation measures (i.e. reduction of costs to trade across borders) would considerably enhance export gains for Africa; and also stimulate exports for third countries, thereby reversing the negative effects these economies would feel from the sole CFTA reform.

Trade expansion would be observed for nearly all bilateral relationships; elsewhere variations would be less negative than without trade facilitation reforms. It is also important to note that African countries (both from North Africa and outside) would not only be able to grab considerable export opportunities within Africa, thanks to the CFTA, but also outside of Africa, thanks to trade facilitation measures which would improve their competitiveness on foreign markets (see Annexe 5)

Sectorial analysis: change in trade by main Sector.

As the main change in export following the CFTA implementation concerns trade within the continent, we focus our analysis on the changes in intra-African trade and intra-North-African trade by main sectors.

Figure 8: Changes in intra-African trade by main sector, following the implementation of the CFTA with vs. without trade facilitation reforms, USD billion, 2020



Source: authors' calculations based on the MIRAGE model

In absolute terms, and following the establishment of the CFTA, intra-African trade would increase most in industrial products (USD 42.7 billion) bringing positive perspectives for Africa's industrialization. The industrial content of intra-African trade would expand further if trade facilitation measures are improved on top of CFTA (with 61.5% and 64.3% of increase in intra-African trade found in industrial sectors alone following CFTA and CFTA+TF, respectively).

These results indicate that: i) the CFTA has a positive bias toward trade of industrial products; ii) Trade facilitation measures will increase more the trade of industrial products compared to other categories of products (Figure 8). Indeed, TF measures on top of the CFTA reform will increase further intra-African trade of industrial product by USD 14 bn (21%) while further increases would be only USD 0.3 bn (1%), USD 1.4 (19%), and USD 3.1(14%) in agriculture, food and mining & energy, respectively.

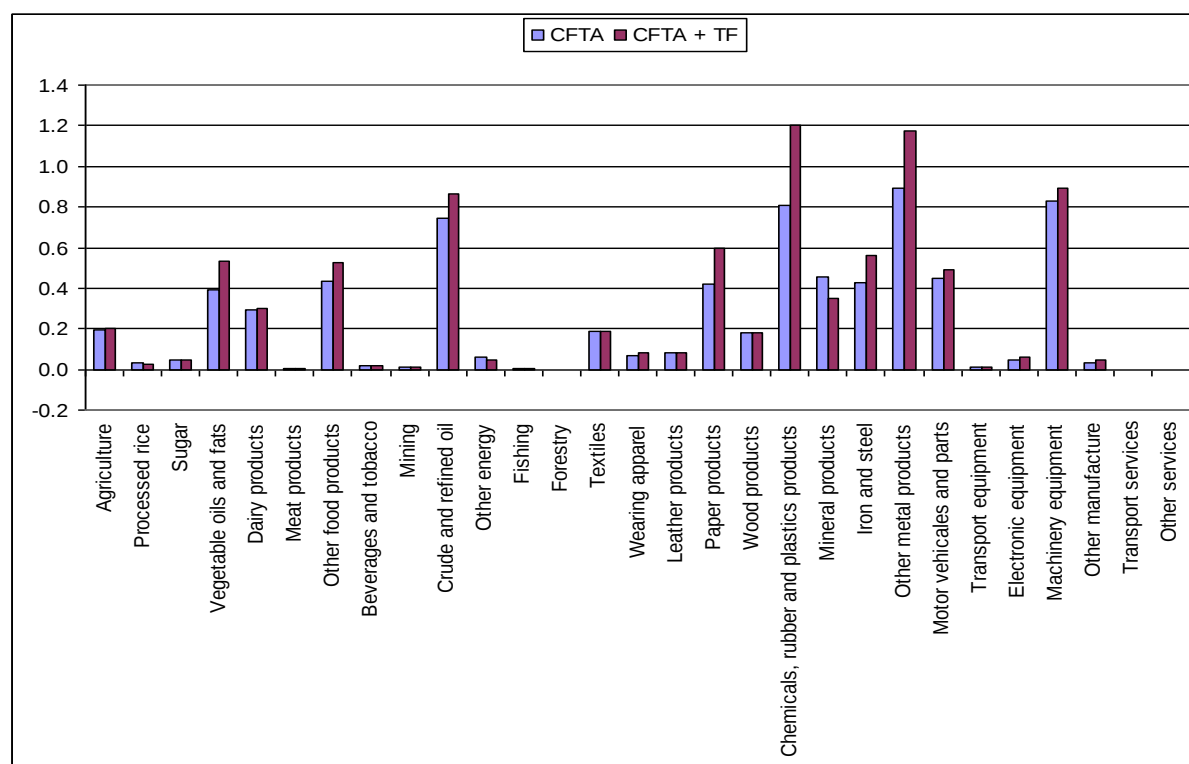
Trade of intermediate products within the continent but also with the rest of the world will increase thanks to trade facilitation reforms and will have an impact on trade of final products. Trade facilitation measure could have also a significant impact on the insertion in global value chains, but also in the development of regional value chains across the continent or within North Africa as according to Portugal-Perez and Wilson (2010) trade facilitation can boost productivity.

Focusing on solely North African countries exports to all Africa, the above still hold; with 59.0% and 61.4% of increase in North African exports to all Africa found in industrial sectors alone following CFTA and CFTA+TF, respectively

However, zooming into solely intra-North African trade the positive impact of CFTA and TF reforms on industrialization would be much more pronounced (with about 68.8% and 69.7% of increase in intra-African trade found in industrial sectors alone following CFTA and CFTA+TF, respectively).

At sector level, and although crude and processed oil would represent a significant share (namely 10%) of the increase in intra-North African trade following CFTA reforms, largest expansion would be for industrial products such as chemicals, metals, motor vehicles and parts, as well as machinery equipment; increase in process food would also be significant for vegetable oils, dairies and other food products (see Figure 9).

Figure 9: Changes in intra-North African trade by sector, following CFTA reforms, with vs. without TF measures, USD billion, 2020



Source: authors' calculations based on the MIRAGE model

The adoption of trade facilitation measures would favor most intra-North African trade in vegetable oils, mining, paper products, chemicals, metals and electronic equipment; intra-trade in those sectors being increased by at least an additional 25% with the reduction of costs to trade across borders compared to CFTA without trade facilitation

3.1.2 Scenario 2: If a PanArab FTA is in place on top of the CFTA

The second set of scenarios implies an additional FTA with Arab League countries in top of the CFTA. Against this context, the significant increase in intra-African trade, thanks to the CFTA, is complemented by a substantial increase in intra-Arab League trade (i.e. North Africa + the rest of Arab League) which would expand (in absolute terms) by nearly USD 15 billion in 2020. Export benefits for North African countries would expand further compared to only having a CFTA in place. Countries from the rest of the Arab League would pass from a net trade diversion situation under CFTA alone to net trade creation if a Pan-Arab FTA is established in parallel to CFTA reform.

The trade diversion for intra-African trade is only very limited (following the fact that some North African countries tend to export more towards the rest of Arab League at the expense of exports to African partners-from North Africa as well as the rest of Africa): intra-African trade would increase by USD 69.5 billion and USD 68.9 billion with CFTA and CFTA+PanArabFTA, respectively. Third countries' exports towards the Arab League (North

Africa and the rest of the Arab League) would be reduced further (than if only a CFTA is implemented) but this trade diversion effect for third countries would remain relatively limited

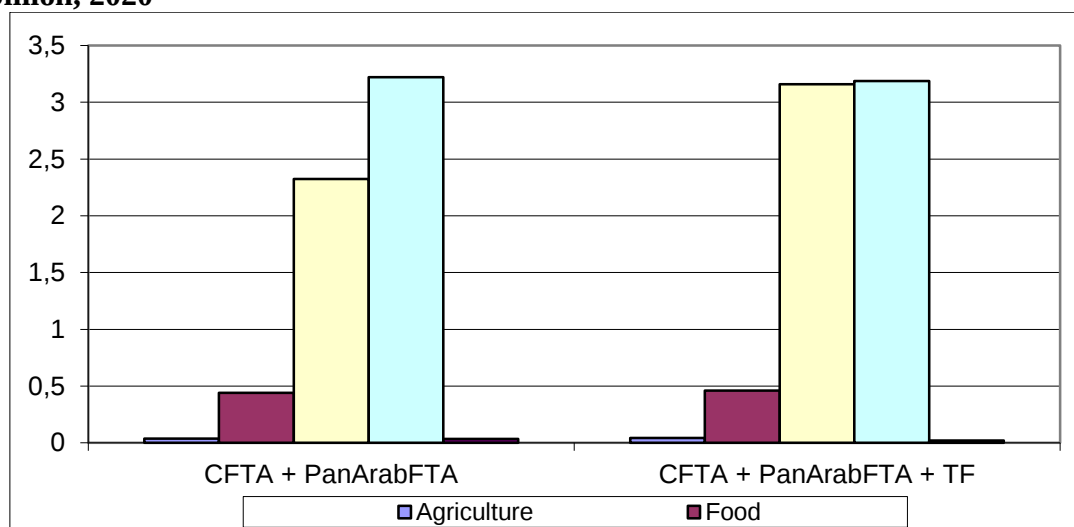
Trade facilitation would considerably expand benefits for all Arab League countries; for other countries (i.e. outside of Arab League) the benefits from trade facilitation would be nearly unchanged compared to what was observed under the sole CFTA reform.

Change in North African exports to the rest of Arab league trade by main Sector

As far as intra-Arab League trade is concerned, a PanArab FTA would also drive industrial products. However, it is worth noting that if a CFTA stimulates intra-African trade of industrial products more than for mining/energy and agriculture, a PanArab FTA would stimulates intra-Arab League trade of mining and energy significantly more than food and agricultural products and even more than industrial products.

This would be driven by: i) The strong increase of mining and energy exports from North Africa to the rest of Arab League following PanArab FTA (see Figure 10); ii) A significant increase in intra-Rest of Arab League trade of mining and energy.

Figure 10: Changes in North African countries' export to the rest of League Arab, by main sector, following CFTA and Pan-Arab FTA reforms, with vs. without TF measures, USD billion, 2020

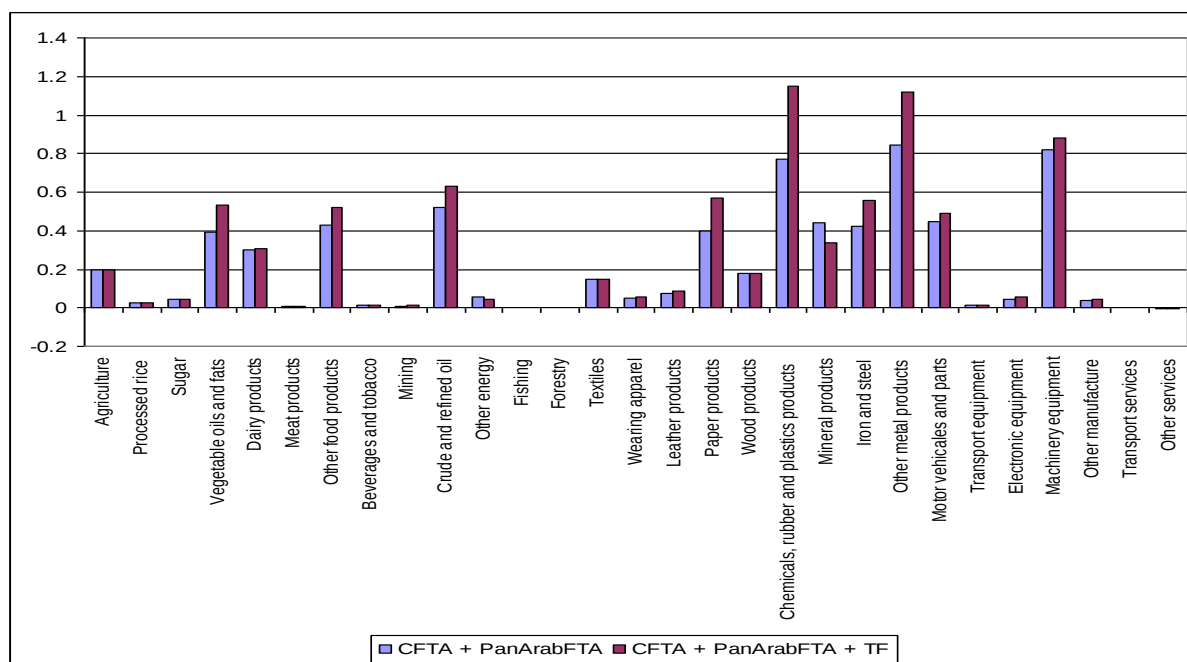


Source: authors' calculations based on the MIRAGE model

Looking at intra-North African trade gains, and as indicated earlier, they would be slightly reduced with the PanArab FTA on top of a CFTA, simply because North African countries would grab export opportunities towards the rest of the Arab League, thereby increasing less there exports to the rest of Africa than with only a CFTA.

Yet, this would not undermine the industrialization of intra-North African trade with or without TF measures (Figure 11).

Figure 11: Changes in intra-North African trade by sector, following CFTA and Pan-Arab FTA reforms, with vs. without TF reforms, USD billion, 2020



Source: authors' calculations based on the MIRAGE model

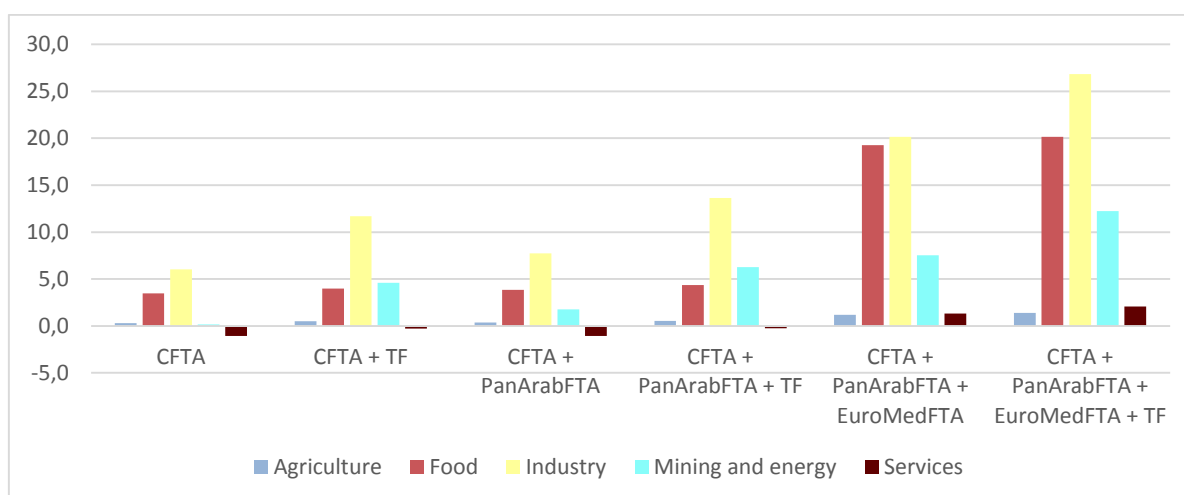
Turning to intra-Rest of Arab League FTA trade, industrial products are also the most stimulated, and the benefits of having a Pan-Arab FTA in place are clear. But benefits for mining and energy products in intra-trade expansion (as indicated earlier) are also evident; and it is interesting to note that trade facilitation measures matter tremendously for intra-Arab League trade of industrial products (as it is the sector making the largest progression with TF in relative terms and compared to a situation without TF). This result confirms in a more pronounced way the previous result in the case of the CFTA and TF.

3.1.3 Scenario 3: EuroMed FTA on top of CFTA and PanArab FTA

When a EuroMed FTA is established along with both CFTA and PanArab FT, the trade creation will be significant. More precisely, exports for the EU and all other countries of the Mediterranean alliance would in general augment considerably. EU's exports would pass from a contraction of about USD 8 billion with CFTA+PanArab FTA to an increase of USD 36 billion if a EuroMed FTA is also established.

Export benefits would nearly quadruple for North Africa as a whole (in absolute terms; with largest expansions for Morocco and Tunisia) compared to a situation where CFTA and PanArab FTA are in place. The greater the free trade area the larger export gains would be for North Africa; TF measures expanding further the benefits, with share of export gains in industrial products always the highest. But in the case of EuroMed, the share is considerably reduced due to considerable increase in North Africa's exports of food as well as energy and mining (see Figure 12).

Figure 12: Changes in North African total exports by main sector, following each of the envisaged trade reforms, USD billion, 2020



Source: authors' calculations based on the MIRAGE model

The rest of countries part of EuroMed would get relatively more limited expansion in their exports (in particular countries from the rest of the Arab League) from the benefits already obtained under CFTA and PanArab FTA.

Given to this size effect, countries outside the EuroMed would see their decline in export worsening compared to CFTA and PanArab FTA; following increased trade and higher competition within the EuroMed area.

Table 7: Changes in total exports by country/region, following each of the envisaged trade reforms, USD billion, 2020

	CFTA	CFTA + TF	CFTA + PanArabFTA	CFTA + PanArabFTA + TF	CFTA + PanArabFTA + EuroMedFTA	CFTA + PanArabFTA + EuroMedFTA + TF
China	-2.0	257.1	-2.7	256.3	-4.8	254.0
European Union	-6.2	158.3	-8.1	156.2	36.0	202.6
United States	-1.1	120.7	-1.4	120.3	-3.3	118.4
North Africa	8.9	20.4	12.7	24.5	49.2	62.2
Algeria & Libya	1.8	5.9	2.4	6.6	7.2	11.7
Egypt	2.7	6.2	4.9	8.7	12.7	16.7
Morocco	2.1	3.8	2.8	4.5	15.5	17.7
Tunisia	2.3	4.4	2.6	4.8	13.8	16.3
Rest of Arab League	-0.5	35.9	11.2	48.5	12.3	49.5
Rest of Africa	42.4	80.8	42.6	81.1	42.3	80.7
Central Africa	3.5	7.5	3.5	7.5	3.4	7.4
Western Africa	21.3	29.1	21.3	29.1	21.3	29.2
Eastern Africa	9.1	19.2	9.4	19.6	9.3	19.5
Southern Africa	8.6	25.0	8.5	24.9	8.2	24.7
EIE	-2.1	196.0	-3.0	195.1	-2.7	195.5
Rest of the World	-2.0	391.8	-3.6	390.1	-5.8	387.7

Source: authors' calculations based on the MIRAGE model

As observed in other scenarios, trade facilitation would play a very positive role on trade of all countries; expanding gains for EuroMed countries and more than compensate possible trade diversion for others (see Table 7).

For North African countries it appears that each FTA will stimulate, in relative terms, different main sectors. Breakdown by destination can help better understand these aspects (see Table 8).

Table 8: Changes in exports from North Africa to main destinations, following each of the envisaged trade reforms, %, 2020

	CFTA	CFTA + TF	CFTA + PanArabFTA	CFTA + PanArabFTA + TF	CFTA + PanArabFTA + EuroMedFTA	CFTA + PanArabFTA + EuroMedFTA + TF
North Africa's exports to EU						
Agriculture	-0.1	0.1	-0.1	0.1	0.6	0.8
Food	-0.1	0.0	-0.1	0.0	14.6	15.1
Industry	-1.5	1.3	-1.3	1.6	8.2	11.9
Mining and energy	-0.6	2.9	-1.2	2.3	3.1	6.8
Services	-0.4	0.0	-0.4	0.0	0.6	1.0
Total	-2.8	4.3	-3.2	4.0	27.1	35.6
North Africa's exports to North African partners						
Agriculture	0.2	0.2	0.2	0.2	0.1	0.1
Food	1.2	1.5	1.2	1.4	0.9	1.1
Industry	4.9	5.9	4.7	5.7	2.7	3.4
Mining and energy	0.8	0.9	0.6	0.7	0.2	0.3
Services	0.0	0.0	0.0	0.0	0.0	0.0
Total	7.1	8.5	6.7	8.0	3.9	4.9
North Africa's exports to rest of Africa						
Agriculture	0.3	0.3	0.3	0.3	0.3	0.3
Food	2.5	2.6	2.5	2.6	3.2	3.3
Industry	3.2	3.7	3.2	3.7	4.3	4.9
Mining and energy	0.6	0.6	0.6	0.6	0.6	0.6
Services	0.0	0.0	0.0	0.0	0.0	0.0
Total	6.5	7.1	6.5	7.2	8.4	9.1
North Africa's exports to rest of Arab League						
Agriculture	0.0	0.0	0.0	0.0	0.0	0.0
Food	-0.1	0.0	0.3	0.3	0.4	0.5
Industry	-0.1	0.5	1.6	2.3	2.3	3.2
Mining and energy	-0.1	0.0	3.3	3.3	3.2	3.2
Services	0.0	-0.1	0.0	0.0	0.0	0.0
Total	-0.3	0.4	5.2	5.9	6.1	6.9

Source: authors' calculations based on the MIRAGE model

If industrial products represent the largest shares of North Africa's export gains towards Africa (North Africa as well as the rest of Africa), mining and energy dominate North Africa's export gains towards the Rest of Arab League; and food dominate NA's exports to the EU.

3.2 Changes in tariff revenues and real income

Tariff liberalization reforms imply relatively large cut in tariff revenues, especially for North African countries (Table 9). However this impact is differentiated from a country to another. If Algeria and Libya are the most negatively affected in the cases of the CFTA and Pan-Arab FTA, it is for Morocco and Tunisia that the tariff revenue impact is the most negative in the case of EuroMed. For the entire region, the impact is more than ten times higher in the case EuroMed is implemented compared to only the CFTA (-58.8% compared to 5.6%); a Pan-Arab FTA would only double the fiscal impact compared to the sole CFTA reform, with a strong

impact on Morocco. This is consistent with efforts to be engaged as the deeper FTA reform, the larger the liberalization efforts, and the greater the loss in tariff revenues.

Table 9: Changes in tariff revenues by country/region, following each of the envisaged trade reforms, %, 2020

	CFTA	CFTA + TF	CFTA + PanArabFTA	CFTA + PanArabFTA + TF	CFTA + PanArabFTA + EuroMedFTA	CFTA + PanArabFTA + EuroMedFTA + TF
European Union	-0.1	4.8	-0.1	4.7	-1.3	3.4
North Africa	-5.6	-3.8	-10.3	-8.9	-58.8	-58.2
Algeria & Libya	-11.5	-10.6	-15.5	-15.0	-44.6	-44.2
Egypt	-1.8	1.2	-6.5	-4.2	-56.7	-55.1
Morocco	-2.6	-1.5	-9.2	-8.2	-71.9	-72.0
Tunisia	-1.3	2.5	-5.1	-1.6	-74.7	-74.0
Rest of Arab League	-0.1	1.4	-7.5	-6.4	-13.7	-12.6
Rest of Africa	-25.3	-21.7	-25.6	-22.0	-26.4	-22.7
Central Africa	-31.5	-30.0	-31.5	-30.0	-32.0	-30.6
Western Africa	-33.4	-30.6	-33.4	-30.6	-34.5	-31.7
Eastern Africa	-29.4	-26.2	-30.5	-27.3	-30.8	-27.7
Southern Africa	7.2	15.4	7.1	15.3	6.4	14.5

Source: authors' calculations based on the MIRAGE model

The implementation of trade facilitation measures will, however, reduce the relative negative tariff revenue impact in all scenarios. This is not a surprise as trade facilitation measures envisaged in the modeling exercise partly aim at improving cross border procedures and thus making tariff collection more efficient⁷. This is very pronounced in the case of the sole CFTA reforms as customs procedures are often less efficient within Africa than between Africa and the rest of the world.

This negative impact do not have considerable effects on real income which are either only slightly negative or slightly positive depending on the trade reforms; but the adoption of TF measures have positive impacts on all countries' real income and even offsetting the possible negative effects from liberalization reforms (Table 10).

Table 10: Changes in real income by country/region, following each of the envisaged trade reforms, %, 2020

	CFTA		CFTA + TF		CFTA + PanArabFTA		CFTA + PanArabFTA + TF		CFTA + PanArabFTA + EuroMedFTA		CFTA + PanArabFTA + EuroMedFTA + TF	
	%	USD bn	%	USD bn	%	USD bn	%	USD bn	%	USD bn	%	USD bn
China	0.0	-0.1	0.9	5.5	0.0	-0.1	0.9	5.4	0.0	-0.2	0.9	5.4
European Union	0.0	-0.2	0.9	16.8	0.0	-0.2	0.9	16.8	0.0	0.9	1.0	17.9
United States	0.0	0.0	0.3	5.3	0.0	0.0	0.3	5.3	0.0	0.0	0.3	5.4
North Africa	0.2	0.1	1.1	0.7	0.2	0.1	1.1	0.7	0.5	0.3	1.4	0.9
Algeria & Libya	-0.1	0.0	0.5	0.1	-0.2	0.0	0.5	0.1	-0.3	-0.1	0.3	0.1
Egypt	0.3	0.1	1.2	0.3	0.4	0.1	1.3	0.3	1.1	0.3	2.0	0.5
Morocco	0.3	0.0	1.3	0.1	0.0	0.0	1.1	0.1	-0.8	-0.1	0.3	0.0
Tunisia	1.0	0.1	3.0	0.2	0.9	0.0	2.8	0.2	2.7	0.2	4.7	0.3
Rest of Arab League	0.0	0.0	0.8	0.7	0.1	0.1	1.0	0.9	0.0	0.0	0.8	0.8
Rest of Africa	0.5	0.6	2.1	2.5	0.5	0.6	2.1	2.5	0.4	0.5	2.1	2.5
Central Africa	0.0	0.0	0.8	0.1	0.1	0.0	0.8	0.1	0.0	0.0	0.7	0.1
Western Africa	0.6	0.2	2.3	0.9	0.6	0.2	2.3	0.9	0.6	0.2	2.2	0.9
Eastern Africa	-0.1	0.0	2.0	0.5	-0.1	0.0	2.0	0.5	-0.1	0.0	1.9	0.5
Southern Africa	0.9	0.4	2.5	1.0	0.9	0.3	2.5	1.0	0.8	0.3	2.4	1.0
EIE	0.0	-0.1	1.0	7.5	0.0	-0.1	1.0	7.5	0.0	-0.2	1.0	7.4
Rest of the World	0.0	0.0	0.8	11.4	0.0	-0.1	0.8	11.4	0.0	-0.1	0.8	11.3

⁷ If trade facilitation measures were to be implemented alone (i.e. without any tariff cut as those implied by regional integration reforms) then trade would be boosted and tariff revenues increased following improvement of customs procedures and tariff revenues collection.

Source: authors' calculations based on the MIRAGE model

Moreover, it should be highlighted that any possible and relatively limited negative effects on real incomes of North African economies can potentially be offset through other fiscal reforms made possible by an increase in trade volume and economic activity following the various integration policies.

Conclusions and recommendations

During different phases of their economic development, North African countries have implemented voluntary policies for their structural transformation, without significant success, particularly when their evolution is compared with East Asian developing countries. During the last decade, NACs have experienced a stagnation of the contribution of their manufacturing industries to the GDP and even have faced a kind of deindustrialization during the second part of this period.

Trade policy can make significant contributions, particularly to increase processing to lead to higher value-added. Regional trade agreements may constitute a key instrument to raise the participation of NACs in global trade. The positive growth prospects of the African continent, related to the rapid urbanisation and growth of the middle class, may convert the Continental Free Trade Agreement (CFTA) into a serious opportunity for North African economies to expand their manufactured exports. Given their traditional trade relations with Europe in a less extend with the rest of Arab countries, this assumption has been assessed also within the context of the Great Arab Free Trade Area with the countries of the League of Arab States, and the EUROMED process with the European Union

In this study, three main scenarios were assessed. In absolute terms, the establishment of the CFTA, would increase intra-African trade most in industrial products (USD 42.7 bn among 69.5 bn) bringing positive perspectives for Africa's industrialization. The industrial content of intra-African trade would expand further if trade facilitation measures are improved on top of CFTA. Indeed, TF measures on top of the CFTA reform will increase further intra-African trade of industrial product by USD 14 bn.

When we consider solely intra-North African trade the positive impact of CFTA and TF reforms on industrialization would be much more pronounced.

A PanArab FTA would also drive industrial products. However, it is worth noting that if a CFTA stimulates intra-African trade of industrial products more than for mining/energy and agriculture, a PanArab FTA would stimulates intra-Arab League trade of mining and energy significantly more than food and agricultural products and even more than industrial products. In this case also trade facilitation measures matter tremendously trade of industrial products, as it is the sector making the largest progression with TF in relative terms and compared to a situation without TF.

When a EuroMed FTA is established along with both CFTA and PanArab FT, the trade creation will be significant. More precisely, exports for the EU and all other countries of the Mediterranean alliance would in general augment considerably.

Increasing intra-North African trade offering new market opportunities towards other African partners. However, reduction/elimination of tariff barriers is not costless, generating tariff revenue losses which can lead to ambiguous real income effects (some countries being hurt more than other).

For North African countries it appears that each FTA will stimulate, in relative terms, different main sectors. If industrial products represent the largest shares of North Africa's export gains towards Africa (North Africa as well as the rest of Africa), mining and energy dominate North Africa's export gains towards the Rest of Arab League; and food dominate NA's exports to the EU

The Complementary measures such as trade facilitation are also critical to ensure real income gains for all North African and more broadly all African economies. These measures help considerably boosting further intra-regional trade and export industrialization. Of course such outcomes will only be possible if reforms are fully effective and implemented, prohibiting or strictly limiting exemptions and sensitive products from trade liberalization efforts, and tackling the tariff revenue adjustment effort at the country level.

Trade facilitation reforms will have the maximum impact if in parallel an important effort is made on trade infrastructures highlighting the key importance of financial resources dedicated to these efforts. Generalizing the creation of common funds and regional development banks to finance key infrastructure projects and other projects aiming at easing trade across borders as they often benefit to a large number of countries and facilitate the development of regional value chains. Against that context the aid for trade projects should be more focused towards the objective to boosting intra-regional trade.

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Annex 1: Key features of the MIRAGE CGE model

On the demand side of the model, a single representative agent in each region is assumed. This agent devotes a fixed share of its income to savings and the rest is spent towards the consumption of goods. A Linear Expenditure System–Constant Elasticity of Substitution (LES–CES) function is used to represent agent’s preferences across sectors. Horizontal (variety) and vertical (quality) differentiations in goods are made possible by the model, such as goods produced by developed countries are assumed to be of relatively higher quality than the ones produced by developing countries (i.e. Armington hypothesis).

On the supply side, the model relies on a Leontief function which assumes perfect complementarity between value added and intermediate consumption. Unskilled and skilled labor, capital, land, and natural resources are the five factors of production contributing to the value added. Skilled labor and capital are supposed to be more substitutable between themselves than with other factors. Moreover, skilled labor is perfectly mobile between sectors. Unskilled labor, however, is imperfectly mobile between agricultural and non agricultural sectors but perfect mobility is assumed among each group of sectors. Demographic forecast provided by the World Bank⁸ is used to exogenously set the rates of variations of the labor. Land is imperfectly mobile between sectors. Natural resources and capital are both sector-specific; with natural resources being constant and capital accumulative. Investment is the sole adjustment variable for capital stocks; such as the capital stock for the current year depends on the investment made for the same year and the capital stock from the previous year which has depreciated. Additionally, GDP growth is forecasted affecting total factor productivity⁹.

A full employment of factor endowments is assumed; thanks to flexible wages that maintain constant the aggregate employment in all regions. While such hypothesis may appear unsatisfactory -especially in the African context- it is motivated by at least three reasons. First, unemployment rates for African economies –when available– are not necessarily reliable. Second, the alternative which suggests assuming fixed nominal or real wages to represent unemployment in CGE models is not less disputable than the full employment hypothesis. Indeed, such assumption does not consider the wage determination’s process in developing countries (see Ben Hammouda and Osakwe, 2006). Third, the full employment assumption is coherent with the medium to long term effects resulting from shocks analyzed with CGE models (see Bouët et al. 2010).

The current account of each region is maintained constant and fixed to its initial value to ensure the macroeconomic closure of the MIRAGE model; any possible disequilibrium of the current account is to be offset by an adjustment of the real exchange rate. In other words, when trade is stimulated by a specific reform (e.g. liberalization involving a reduction in tariff barriers) then the real exchange rates appreciate if exports increase more than the imports or depreciate when the exports increase less than the imports.

⁸ See World Development Indicators from the World Bank.

⁹ See World Bank publication: “Global Economic Prospects 2005: Trade, Regionalism, and Development”.

Annex 2: Geographic decomposition determined for the modelling exercise

#	Country/Region	Main region
1	Egypt	North Africa
2	Morocco	North Africa
3	Tunisia	North Africa
4	Rest of North Africa	North Africa
5	Central Africa	Rest of Africa
6	Western Africa	Rest of Africa
7	Eastern Africa	Rest of Africa
8	Southern Africa	Rest of Africa
9	Rest of Arab League	Rest of Arab League
10	European Union	European Union (28 members)
11	United States	United States
12	China	China
13	Emerging industrialized	Emerging industrialized economies
14	Rest of the world	Rest of the world

Annex 3: Sectoral decomposition determined for the modelling exercise

#	Sector	Main Sector
1	Agriculture	Agriculture
2	Dairy products	Processed food
3	Meat products	Processed food
4	Vegetable oils and fats	Processed food
5	Processed rice	Processed food
6	Sugar	Processed food
7	Other food products	Processed food
8	Beverages and tobacco	Processed food
9	Other energy	Mining and energy
10	Crude and refined oil	Mining and energy
11	Mining	Mining and energy
12	Fishing	Industry
13	Forestry	Industry
14	Textiles	Industry
15	Wearing apparel	Industry
16	Leather products	Industry
17	Wood products	Industry
18	Paper products	Industry
19	Chemicals, rubber and plastics products	Industry
20	Mineral products	Industry
21	Iron and steel	Industry
22	Other metal products	Industry
23	Motor vehicles and parts	Industry
24	Transport equipment	Industry
25	Electronic equipment	Industry
26	Machinery equipment	Industry
27	Other manufacture	Industry
28	Other services	Services
29	Transport services	Services

Annex 4: Changes in bilateral trade, following the CFTA reforms (without trade facilitation measures), USD billion, 2020

	Importer							
	China	European Union	United States	North Africa	Rest of Arab League	Rest of Africa	EIE	Rest of the World
Exporter	China	1.1	0.8	-0.2	0.1	-5.5	0.3	1.4
	European Union	-0.2	0.2	-1.1	0.0	-5.2	-0.1	0.2
	United States	-0.2	0.0	0.1	0.0	-0.6	-0.2	-0.1
	North Africa	-0.2	-2.8	-0.3	7.1	-0.3	6.5	-0.5
	Algeria & Libya	0.0	0.0	0.0	1.2	0.0	0.5	0.0
	Egypt	-0.1	-0.9	-0.2	2.4	-0.2	2.3	-0.3
	Morocco	-0.1	-0.5	-0.1	0.2	0.0	2.9	-0.1
	Tunisia	0.0	-1.4	-0.1	3.3	0.0	0.8	-0.2
	Rest of Arab League	0.0	0.0	0.2	-0.1	0.0	-1.0	0.2
	Rest of Africa	-1.0	-4.5	-2.8	3.8	-0.3	52.0	-2.3
	Central Africa	0.2	0.3	0.2	0.4	0.0	2.2	0.1
	Western Africa	-0.4	-1.2	-1.6	0.7	-0.1	25.3	-1.0
	Eastern Africa	0.2	0.6	0.1	0.5	0.2	7.2	0.1
	Southern Africa	-1.0	-4.1	-1.4	2.3	-0.4	17.3	-1.4
	EIE	0.0	0.5	0.7	-0.5	0.0	-3.5	0.1
	Rest of the World	-1.0	0.0	0.3	-0.2	0.0	-1.0	-0.1

Source: authors' calculations based on the MIRAGE model

Annex 5: Changes in bilateral trade, following the CFTA reforms with trade facilitation measures, USD billion, 2020

	Importer							
	China	European Union	United States	North Africa	Rest of Arab League	Rest of Africa	EIE	Rest of the World
China		63.2	41.8	2.2	5.6	4.0	42.6	97.9
European Union	29.0		18.1	3.8	3.3	1.2	37.5	65.3
United States	19.4	17.3		0.4	1.4	0.9	26.9	54.4
North Africa	-0.1	4.3	0.4	8.5	0.4	7.1	0.1	-0.1
<i>Algeria & Libya</i>	-0.2	2.8	0.5	1.3	0.1	0.5	1.0	-0.1
<i>Egypt</i>	0.1	1.0	-0.1	2.8	0.3	2.7	-0.7	0.1
<i>Morocco</i>	0.0	0.6	0.0	0.3	0.0	3.0	-0.2	0.1
<i>Tunisia</i>	0.0	-0.2	-0.1	4.1	0.0	0.9	-0.1	-0.1
Rest of Arab League	3.1	6.8	-0.2	1.5	9.1	1.3	1.3	13.2
Rest of Africa	2.4	3.8	0.8	4.4	0.3	68.1	-1.1	3.0
<i>Central Africa</i>	1.2	1.5	1.2	0.6	0.1	2.5	0.2	0.3
<i>Western Africa</i>	-0.1	1.2	-0.1	0.8	0.0	27.3	-0.7	1.0
<i>Eastern Africa</i>	1.2	2.0	0.4	0.7	0.6	12.1	0.5	1.9
<i>Southern Africa</i>	0.0	-0.9	-0.7	2.5	-0.3	26.1	-1.0	-0.3
EIE	30.6	29.3	33.0	0.8	4.6	1.6	36.5	59.6
Rest of the World	146.4	47.0	50.1	0.6	5.7	2.1	51.6	88.4

Source: authors' calculations based on the MIRAGE model