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Trade in Services-Economic Growth Nexus: An Analysis of the Growth Impact of Trade in Services in SADC Countries

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Abstract: The article analysed the trade in services led growth in ten selected countries in the Southern African Development Community region using econometric regression models. Panel data obtained from the World Bank and United Nations Conference on Trade and Development databases for the period 1992 to 2015 was analysed. Five variables were used in the econometric analysis. The marginal effects of service and goods exports were positive while those of goods and service imports were negative and highly significant as was expected from literature. Service exports registered an impact that was almost threefold that of service imports and greater than goods exports. Policy-makers are encouraged to, clearly define their trade in service strategy and reduce or remove trade restrictions. The study is of importance to researchers, the private sector and government policymakers.

Keywords: *Trade in Services, Economic Growth, SADC, Gross Domestic Product, Service Exports, Imports.*

1. Introduction

Services have become a critical component of economic growth and development across the globe. This has challenged long-held theories of economic development the world over. Sáez et al. (2015) argue that increased agricultural productivity and growth in the manufacturing sector have been the normal steps out of poverty. This has however changed the world over as the world has been experiencing a different economic trajectory that has seen services trade taking the lead in economic growth and development. Sáez et al. (2015) note the decline and stagnation in agriculture and manufacturing`s shares in GDP respectively against theoretical anticipation. Services trade predominantly increased as depicted by its share of GDP, total employment and exports. Services trade has becoming the driver of value addition and provider of essential inputs for other economic sectors. World Trade Organisation [WTO] (2015) reports that "the General Agreement on Trade in Services (GATS) is the first multilateral trade agreement to cover trade in services the world over." The creation of GATS in 1995 was one of the major achievements of the Uruguay Round of trade negotiations, from 1986 to 1993. GATS defines trade in services in four modes. These modes are covered in Article I: 2 of GATS. The definition depends on the territorial presence of the supplier and the consumer at the time of the transaction. To WTO (2015), the services sector has become the most dynamic segment in international trade. Since the 1980s, "the world services trade has grown faster, albeit from a relatively modest basis than merchandise flows" (WTO, 2015). According to Loungani et al. (2017a), service exports have grown ten-fold since 1990.

The rise in service exports is not confined to advanced economies; developing countries alike have strongly participated in that growth (WTO, 2013 and Loungani et al., 2017a). The United Nations Conference on Trade and Development [UNCTAD] (2015a) reports that a number of countries in Africa have become service-oriented economies contributing almost half of Africa`s total output. To this effect, the sector contributes substantially in many African countries` GDP as well as absorbing a large proportion of youth employment and matter substantially for gender parity (UNCTAD, 2015a). Dihel and Goswami (2016) argue that there is also ample evidence to support the resilience of services trade during the 2009 global financial crisis. Dihel and Goswami (2016) further opined that "as oil and commodity prices tumble globally, diversification into service exports will be critical for maintaining future economic growth in Africa." UNCTAD (2015a) states that Africa has become a marginal player in global services trade with an export share of 2.2%. This sector represents an important source of export revenue for Africa if well exploited. What is saddening, however, is that very little is known about trade in services in Africa and its prospective impact especially exports of non-traditional services, such as financial services which are often overlooked. Hoekman and te Velde (2017) argue that "while much of the discussion on economic transformation centres on transforming agriculture and moving into manufacturing.

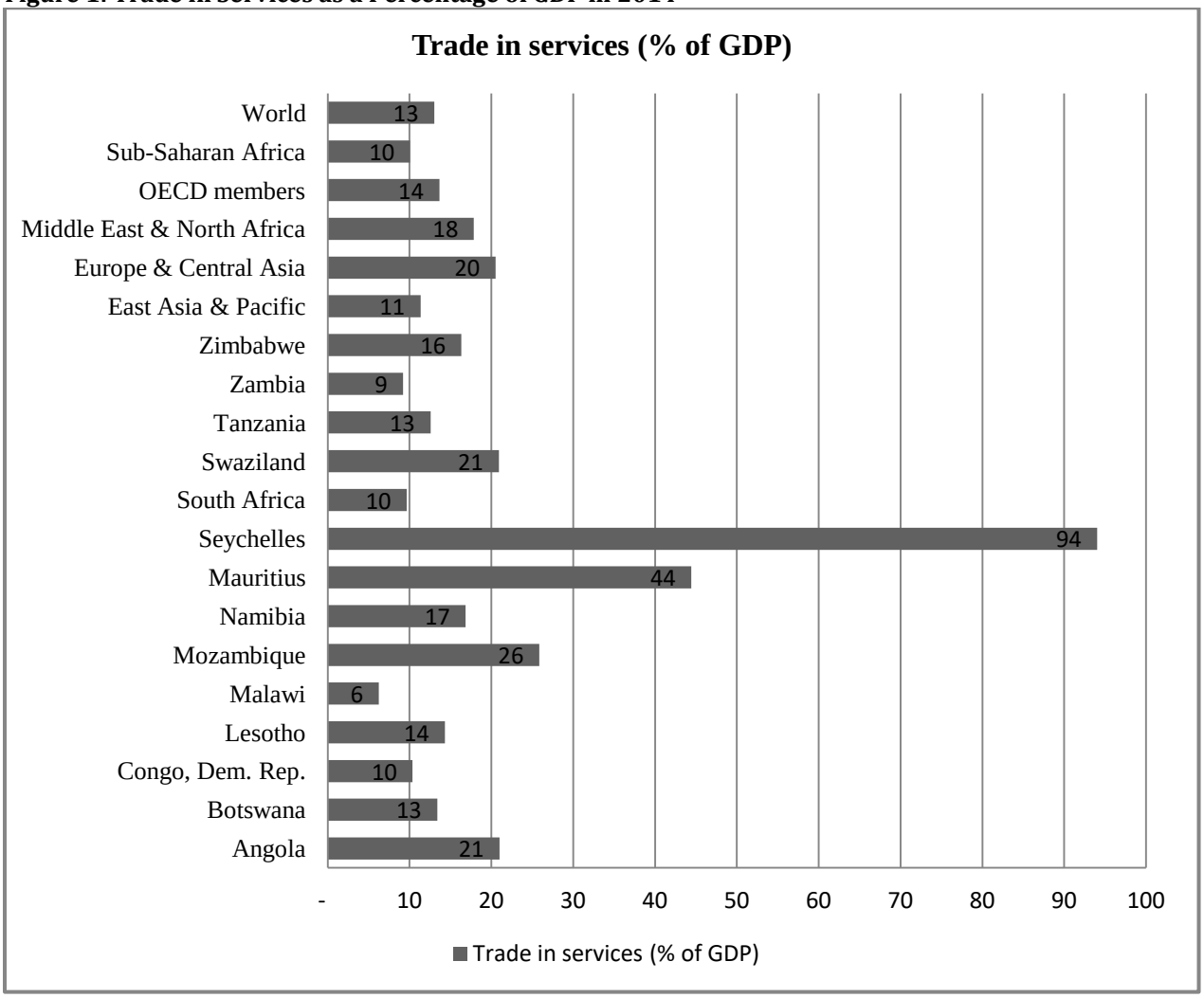
Services are an underexplored component of economic transformation strategies." To Dihel and Goswami (2016), the main challenge in exploring Africa's potential is the scarceness of data, especially in informal trade services. Although research has shown that trade in services proves to be a critical component for economic growth and development, the sector is being seriously threatened by a lot of challenges in Africa. The question that remains to be answered is whether trade in services correlates with economic growth and development in SADC countries and whether the region fully appreciates the role and contribution of trade in services to economic growth and development or not? This article seeks to provide some insights in trade in services in SADC countries in an attempt to unveil the untapped or ignored sector. The article analyses the nexus that exists between trade in services and economic growth using econometric models from ten selected SADC countries. It is expected that the findings of this article will benefit policy-makers, researchers and the academia in Africa as a whole. The remainder of the article is arranged as follows: Section 2: literature review; section 3: research methodology; section 4: data presentation and discussion of findings; and section 5: conclusion and recommendations.

2. Literature Review

Trade in Services Definition: The Centre for International Economics [CIE] (2010) states that service trade has been until recently, been defined within a Balance of Payment (BoP) framework that covered transactions in services amongst non-residents and residents only. CIE (2010) further argues that "when considered in this way, service trade includes; travel, communications, financial, transportation, construction, computer and information, business, personal, royalties and licence fees, cultural and recreational, government services and insurance." GATS defines trade in services with an allusion to the four modes of supply (OECD and WTO, 2017). These four modes of supply are given as: Mode 1 – cross-border supply; Mode 2 – Consumption abroad; Mode 3 – commercial presence and finally Mode 4 – movement of natural persons. According to WTO (2017), Mode 1 involves service provision across WTO member states, while Mode 2 involves the service provision in the territory of a member to a consumer of another member state. Mode 3 involves the provision of service by a member state through the establishment of a branch or subsidiary in another member`s territory. Mode 4 concerns service provision by a natural person in the territory of another member state through temporary presence. Mode 4 mainly involves service provision by independent professionals such as consultants, visiting professors, lawyers and also involves employee transferees between parent company and subsidiaries in different member states. CIE (2010) states that Mode 3 records the highest services trade, while WTO reports that cross-border supply (Mode 1) accounts for 35% of global services trade; consumption abroad (Mode 2) taking between 10% and 15% of service trade; commercial presence (Mode 3) accounting for half of service trade; and presence of natural persons (Mode 4) accounting between 1% and 2% of service trade.

Trade in Services and growth in Southern African Development Community: According to UNCTAD (2017a), "the services sector has emerged as the largest segment in driving the economy, contributing a growing share to GDP, trade and employment." The service sector is an input provider to other critical sectors of the economy. Loungani et al. (2017a) state that in "The Wealth of Nations," the social value contributed by "lawyers, men of letters of all kinds…, musicians, opera singers, etc." was questioned by Adam Smith. They argue that Adam Smith was expressing a bias against the service sector that holds to this day while Christina Romer lamented that there is a "feeling that is it better to produce 'real things' than services" (*New York Times*, February 4, 2012). Meanwhile, services, which already account for 70% of world GDP and 50% of world employment, have become an important part of global trade (Loungani et al., 2017a). These figures seem to vary with the IMF, WB and WTO (2017) figures that show services as 67% of global employment and GDP, and 25% of global trade. Figure 1 below shows a comparative analysis of trade in services as a percentage of GDP in SADC countries for 2014 with Seychelles leading (94%) followed by Mauritius (44%) while Malawi recording the lowest (6%). Many other countries fall between 9% and 26%. UNCTAD (2017a) reports that between 1980 and 2015, the services share of GDP rose, across all income levels, with developed economies increasing from 61% to 76% while developing economies increasing from 42% to 55%. UNCTAD (2017a) argues that the rise in services output for that period was met with a fall in developed countries` industrial productivity as well as a fall in developing countries` agricultural yield. In 2014, service exports accounted for nearly 25% of total exports (Loungani et al., 2017a) and had also come to play a pivotal role in global value chains and production networks.

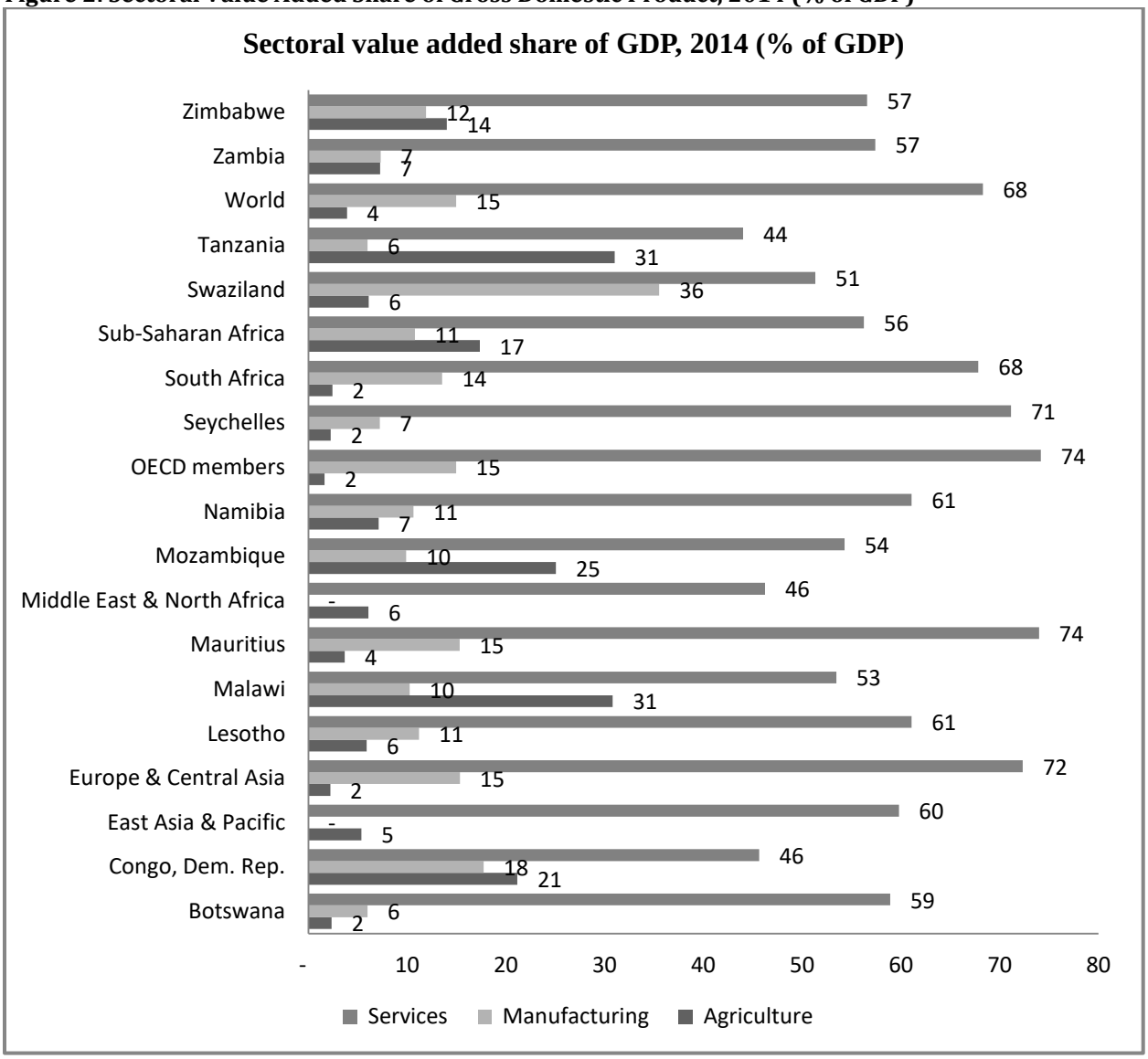
Figure 1: Trade in Services as a Percentage of GDP in 2014



Source: World Bank World Development Indicators

IMF, WB and WTO (2017) argue that despite substantial policy barriers to services trade, the sector recorded growth. According to IMF, WB and WTO (2017), services trade expansion have been supported by contemporary business models in ICT and financial services. Technological developments due to the Fourth Industrial Revolution no longer require the services provider closer to the consumer. The confluence of big data, artificial intelligence and connectivity have changed the way business is done especially in service provision. For example, consulting services can now be delivered from anywhere in the world. Service exports from developing economies have grown by 6 percentage points between 2005 and 2016 while service exports from advanced economies declined by the same percentage points during the same period. Loungani et al. (2017a) argue that this increase is not just due to higher exports of traditional services, but is also due to modern technology-enabled services as well, for example, business services (including R&D and consultancy), ICT services, financial services, and intellectual property. The growth in the service sector has also caused a lot of debate regarding the long-held notion regarding the impact of industry and agriculture on economic growth (Baumol, 1967 and Kaldor, 1967). SADC`s share of world service exports between 2005 and 2016 averages 0.7%. According to IMF, WB and WTO (2017), global commercial service imports increased by 5% per year between 2010 and 2015, compared to 1% increase in merchandise trade. Services value addition took the bigger chunk of GDP in sectoral contribution in SADC countries in 2014 (Figure 2). Service value addition takes more than 50% share of GDP in many countries except for Tanzania (44%), Middle East and North Africa (46%) and DRC (46%).

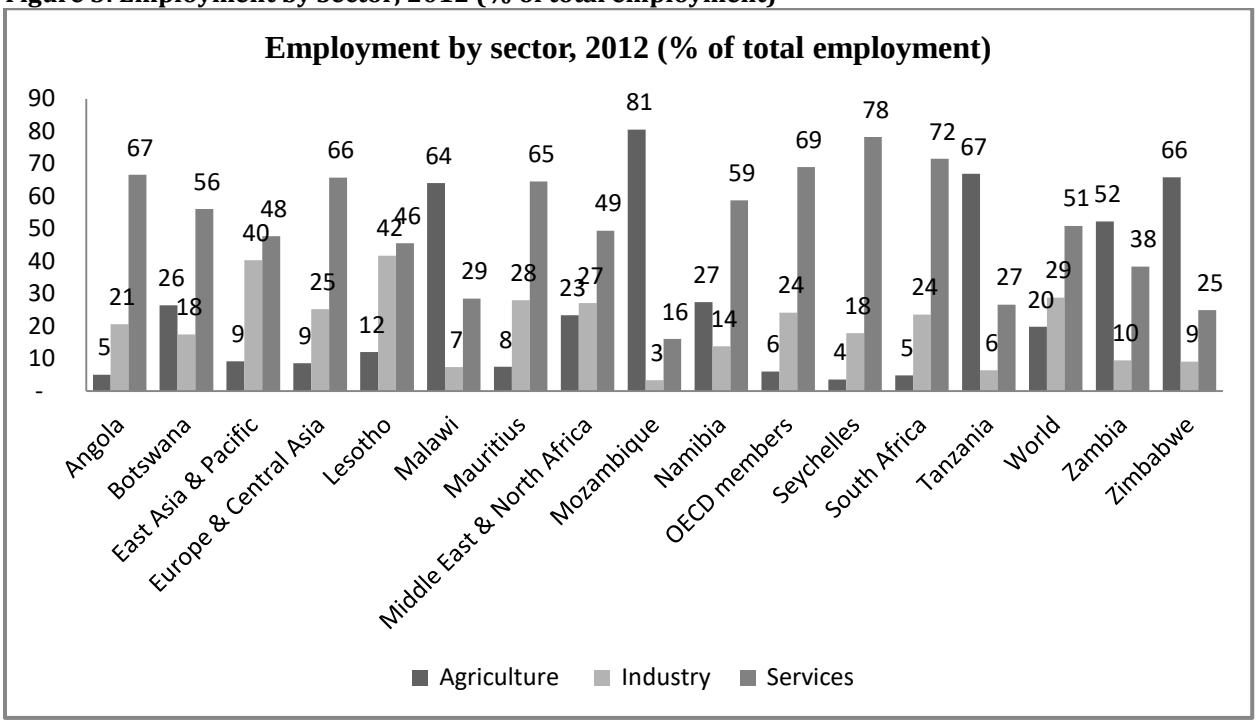
Figure 2: Sectoral Value Added Share of Gross Domestic Product, 2014 (% of GDP)



Source: World Bank World Development Indicators

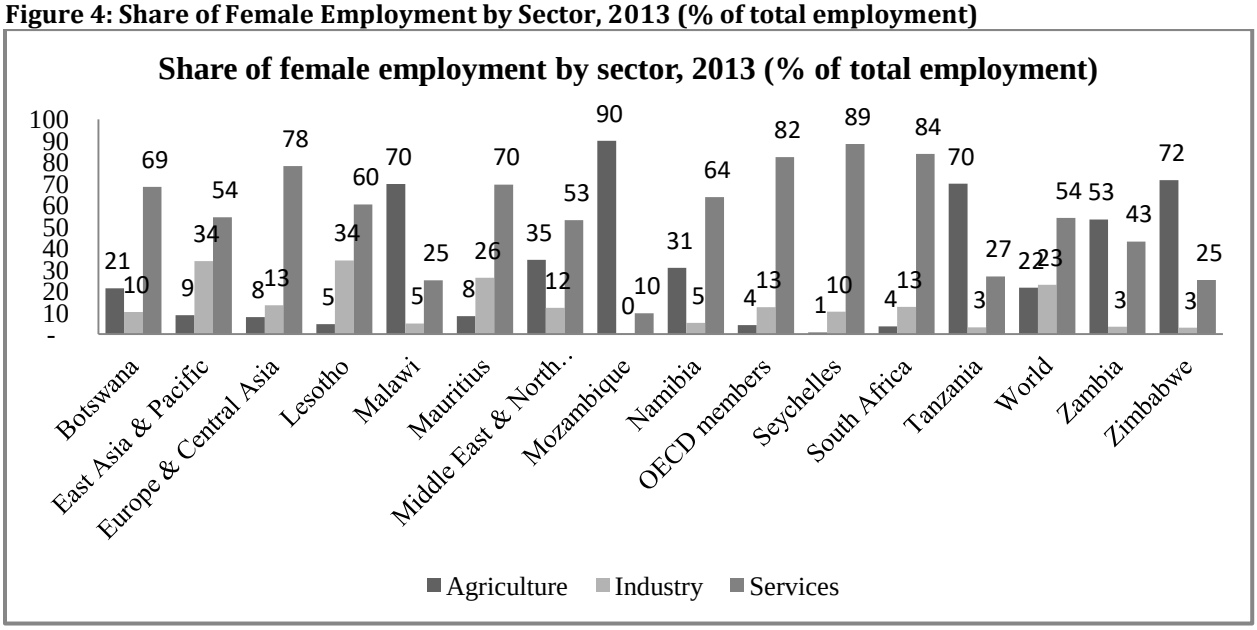
Services are also predominant in employment with 2010 estimated to have accounted for half (50.9%) of global jobs (figure 3) (Maune, 2017). UNCTAD (2017a) argues that the importance of services is highly evidenced in developed countries where services jobs represent 75% of total employment rather than in developing countries where 44% represents services jobs. Dihel and Goswami (2016) state that, the services sector has become the main employment provider since mid-2000s. This trend has also been witnessed during the 2008–2009 global economic depression. UNCTAD (2017a) further provides that from 2001–2016 the importance of the service sector in the global job market grew taking in developing countries. The service sector has seen more women, that is, 54% employed globally in the sector as of 2013 (figure 4). This is a milestone achievement towards gender parity. Figure 4 shows the share of female employment by sector in 2013 with many countries predominantly services except Zimbabwe, Tanzania, Zambia, Mozambique and Malawi which are predominantly agriculture. The services sector has recorded the highest number of women participation at 41% in developing countries outside the agricultural sector (UNCTAD, 2017a). Figure 3 below shows sectoral employment as a percentage of total employment with services dominating for many SADC countries with the exception of Zimbabwe, Zambia, Tanzania, Mozambique and Malawi where agriculture dominates the sectoral employment share as of 2012.

Figure 3: Employment by Sector, 2012 (% of total employment)



Source: World Bank World Development Indicators

Figure 4: Share of Female Employment by Sector, 2013 (% of total employment)



Source: World Bank World Development Indicators

Services also play a very pivotal role in attracting FDI inflows. According to UNCTAD (2015b), "in 2012, services accounted for 63% of global FDI stock, more than twice the share of manufacturing [and] the primary sector contributed less than 10% to global FDI stock." UNCTAD (2015b) reports that "in the period 2001–2012, the share of services in global FDI increased by 5% (to 63%) and offset by a comparable decrease in the share of manufacturing." UNCTAD (2015b) further states that, "overall, since 1990, the share of services in world FDI stock has gained 14% points (from 49% to 63%) with a corresponding decrease in manufacturing (from 41% to 26%), while the share of the primary sector has been stable (at about 7%)."

To UNCTAD (2015b), "this reflects an analogous trend in the distribution of global GDP as well as increased liberalization in the sector, enabling large FDI inflows, particularly in industries traditionally closed to foreign investment such as finance and ICTs." By 2015, services continue to hold over 60% of global FDI stock (UNCTAD, 2016) while the primary and manufacturing sectors accounting for 6% and 26% respectively. Table 1 below shows inward FDI stock in SADC countries from 1980 to 2016 as a percentage of GDP notable growth were in Angola in 2005 (112%), Lesotho in 2010 (166%), Mozambique in 2015 (194%) and 2016 (271%) and Seychelles in 2010 (175%), 2015 (203%) and 2016 (209%). Seychelles has the highest share of 78% followed by South Africa (72%). Mozambique is predominantly agriculture (81%) followed by Tanzania (67%) with Zimbabwe recording 66%. UNCTAD (2017b) reports that data "processing is another services industry whose representation among the top 100 MNEs is sharply increasing. The rapid international expansion of these companies, despite their asset-light nature, has been fuelled by rising global consumer demand for their high-tech products and services, and by the relative ease of expanding their sales abroad."

Table 1: Inward Foreign Direct Investment Stock in SADC, 1980-2016 (% of GDP)

	Foreign direct investment: Inward and stock, annual, 1980-2016 (% of GDP)								
Country	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2016**
Angola	1	7	8	44	65	112	49	30	42
Botswana	82	113	35	24	32	17	26	35	40
DRC	5	8	4	6	7	16	43	53	55
Lesotho	1	10	15	21	43	14	166	12	14
Madagascar	1	2	3	5	4	5	50	58	60
Malawi	6	9	7	9	11	17	17	17	21
Mauritius	2	4	6	6	15	12	48	37	39
Mozambique	0	0	1	14	25	34	45	194	271
Namibia	76	127	76	43	33	34	47	33	40
Seychelles	47	65	48	56	69	88	175	203	209
South Africa	20	15	8	10	31	38	48	40	47
Swaziland	30	19	27	28	31	25	22	13	14
Tanzania	4	3	6	8	21	24	30	39	41
Zambia	46	75	70	84	110	65	37	68	69
Zimbabwe	3	3	2	5	16	22	19	29	32

Source: UNCTAD Stat

Trends in Services Trade in Southern African Development Community: Table 2 below shows how SADC countries performed in service exports and imports in 2014 and 2015 as well as the value of each country`s share of global services. On the one hand, South Africa is leading the list of service exports followed by Tanzania then Mauritius with Lesotho at the bottom. Of note is the gap between South Africa and Tanzania. On the other hand, Angola is leading the list of service imports followed by South Africa then Mozambique with Malawi at the bottom.

Table 2: Southern African Development Community Exports and Imports of Services, 2014 & 2015 (millions of dollars and percentage)

Services exporters	Value of service exports, 2014	Share of global service exports, 2014	Value of service exports, 2015	Share of global service exports, 2015	Services importers	Value of service imports, 2014	Share of global service imports, 2014	Value of service imports, 2015	Share of global service imports, 2015
South Africa	16,837	0.321	15,054	0.304	Angola	24,928	0.492	24,928	0.524
Tanzania	3,396	0.065	3,748	0.076	South Africa	17,042	0.337	15,531	0.326
Mauritius	3,190	0.061	2,843	0.057	Mozambique	3,657	0.072	3,345	0.070
Angola	1,681	0.032	1,256	0.025	DRC	3,082	0.061	2,026	0.043
Botswana	1,352	0.026	1,253	0.025	Tanzania	2,669	0.053	2,685	0.056
Namibia	1,039	0.020	923	0.019	Mauritius	2,498	0.049	2,241	0.047
Zambia	851	0.016	862	0.017	Zimbabwe	1,953	0.039	1,529	0.032
Seychelles	834	0.016	848	0.017	Zambia	1,644	0.032	1,644	0.035

Mozambique	725	0.014	723	0.015	Namibia	1,127	0.022	975	0.020
Zimbabwe	363	0.007	387	0.008	Botswana	774	0.015	628	0.013
DRC	315	0.006	173	0.003	Swaziland	649	0.013	649	0.014
Swaziland	291	0.006	266	0.005	Seychelles	503	0.010	498	0.010
Malawi	109	0.002	116	0.002	Lesotho	334	0.007	315	0.007
Lesotho	30	0.001	46	0.001	Malawi	269	0.005	269	0.006
Total	**31,013**	**0.591**	**28,497**	**0.575**	**Total**	**61,129**	**1.207**	**57,264**	**1.203**

Source: World Bank`s World Development Indicators, NB. The above excludes Madagascar.

Developing countries` service exports increasingly strengthened between 2005 and 2016 in comparison with those of the developed countries. Developing countries` service export share increased by 6% from 23% while developed economies declined from 75% to 68% during the same period SADC`s service exports during the same period declined from 0.7% to 0.6%. In 2008 service exports in SADC countries declined to 0.6% from 0.7% in 2007 before rising again to 0.7% in 2010. Table 3 below shows SADC countries` service exports as a percentage of total world exports from 2005 to 2016 with South Africa contributing the highest percentage though less than 1%. However, South Africa share of service exports declined from 0.45% in 2005 to 0.29% in 2016. Mauritius comes second after South Africa with 0.061% in 2005 to 0.06% in 2016. Exports of services have shown resilience compared to exports of goods during the 2009 global economic depression (UNCTAD, 2017a).

Table 3: Southern African Development Community Service Exports, 2005-2016 (% of total world)

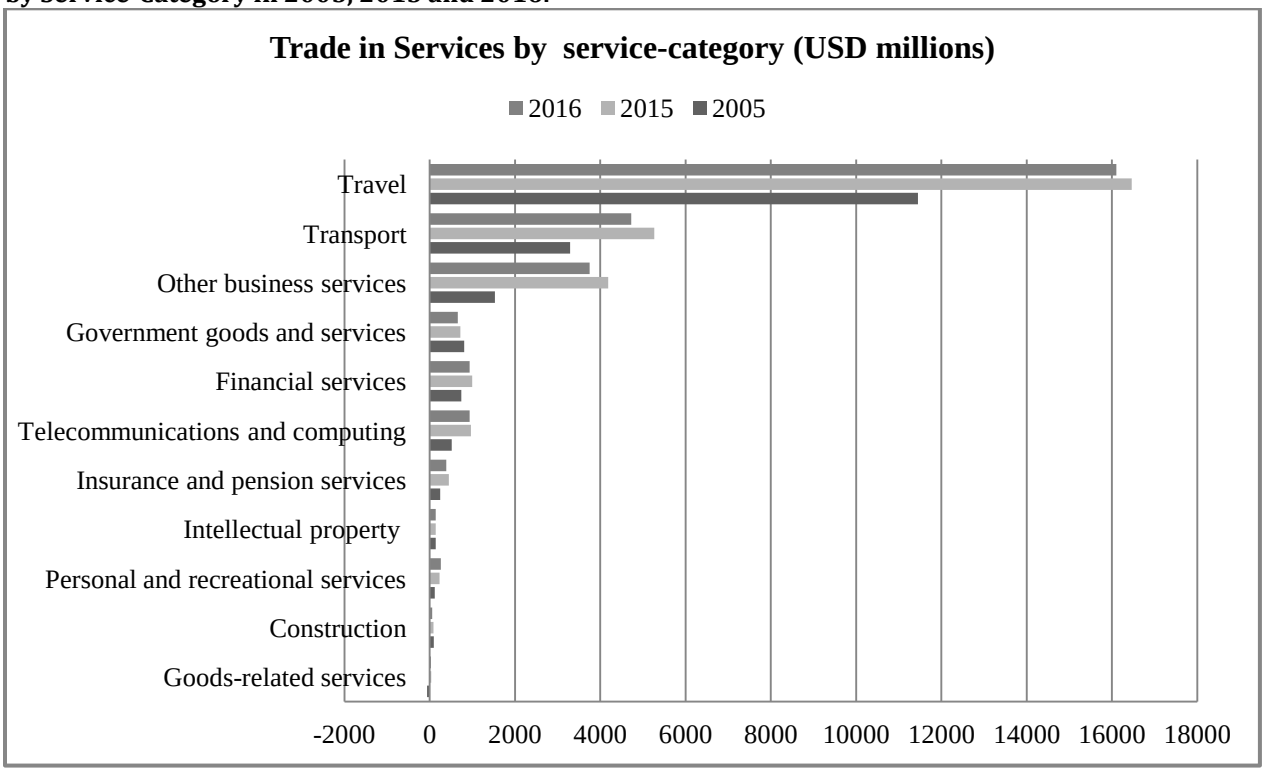
	Service exports, percentage of total world service exports, 2005-2016											
Country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Angola	0.007	0.006	0.009	0.008	0.017	0.022	0.017	0.017	0.027	0.033	0.026	0.024
Botswana	0.031	0.026	0.024	0.016	0.023	0.025	0.028	0.027	0.026	0.026	0.026	0.027
DRC	0.013	0.014	0.011	0.021	0.018	0.010	0.017	0.006	0.006	0.006	0.004	-
Lesotho	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Madagascar	0.019	0.022	0.028	0.032	0.024	0.026	0.027	0.029	0.026	0.025	0.022	0.020
Malawi	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Mauritius	0.061	0.056	0.062	0.063	0.062	0.069	0.074	0.075	0.058	0.062	0.058	0.059
Mozambique	0.013	0.013	0.013	0.014	0.017	0.006	0.008	0.017	0.013	0.014	0.015	0.009
Namibia	0.016	0.018	0.017	0.014	0.018	0.017	0.017	0.024	0.019	0.020	0.019	0.014
Seychelles	0.014	0.014	0.013	0.012	0.012	0.011	0.011	0.015	0.017	0.016	0.017	0.018
South Africa	0.446	0.436	0.415	0.348	0.368	0.410	0.394	0.389	0.349	0.327	0.310	0.294
Swaziland	0.008	0.009	0.014	0.006	0.006	0.007	0.007	0.005	0.005	0.006	0.005	0.003
Tanzania	0.048	0.051	0.052	0.050	0.052	0.052	0.052	0.062	0.066	0.066	0.077	0.076
Zambia	0.021	0.019	0.019	0.015	0.015	0.015	0.015	0.022	0.016	0.017	0.018	0.018
Zimbabwe	0.014	0.011	0.008	0.006	0.007	0.007	0.008	0.008	0.007	0.007	0.008	-

Source: UNCTAD Stat

SADC countries` service exports have shown a growth path especially in transport, travel and other business services (Table 5). It is worth noting that although travel, transport and other business services are the biggest classes in both developed and developing countries, travel and transport services remain the biggest classes in both transitional and developing countries (Maune, 2017). Developed countries are predominantly concentrated in categories, such as financial services and telecommunications that are high value. In SADC countries, travel has surpassed all other service-categories in 2005, 2015 and 2016 followed by transport then other business services with goods related services at the bottom of the list. Figure 6 below provides a regional comparison of some selected commercial services for 2016 as a percentage of total trade in services. Travel surpassed all other commercial services in 2016 with SADC countries having the highest share of 58% followed by Southern Africa with 56%. Following trade is transport with Northern Africa leading the list followed by Eastern Africa. Other business services come third in the list with Western Africa taking the lead. This is covered under GATS Article XVII on National Treatment. These barriers can be nondiscriminatory in nature as they are intended to limit/restrict value of transactions, number of service operators or suppliers

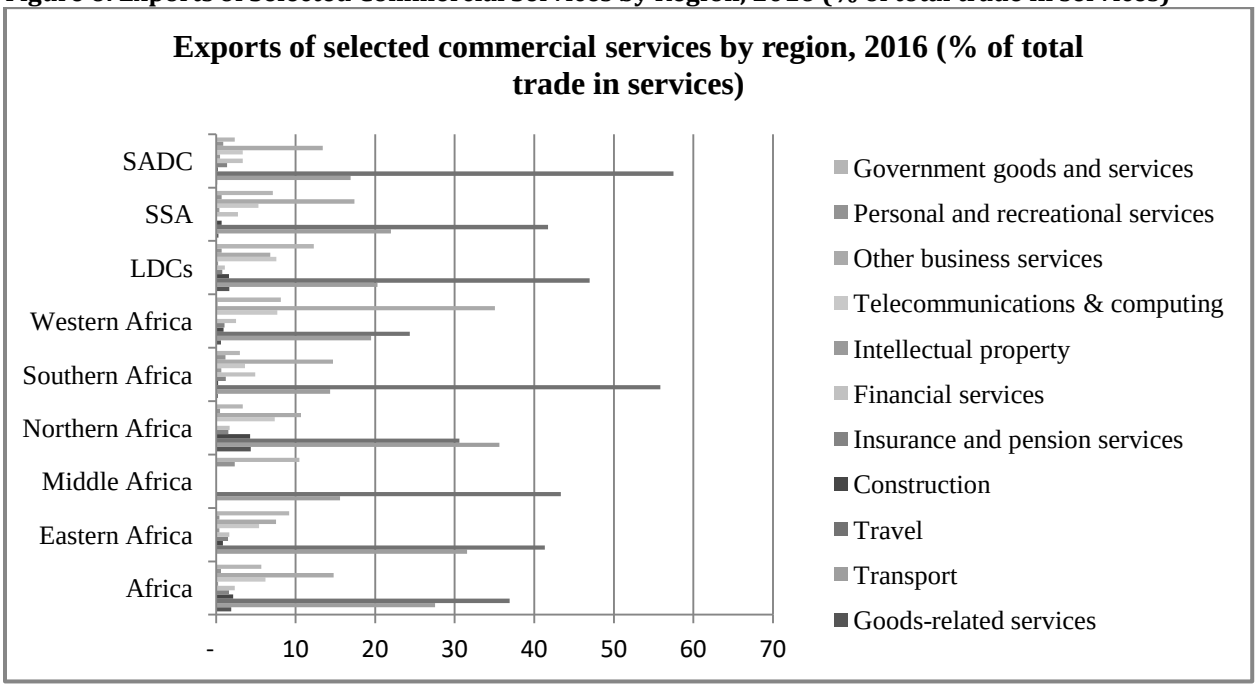
and the type of legal services an entity can provide. These types of barriers are covered under GATS Article XVI on Market Access.

Figure 5: Market Shares of Trade in Services of Southern African Development Community Countries by Service-Category in 2005, 2015 and 2016.



Source: UNCTAD Stat

Figure 6: Exports of Selected Commercial Services by Region, 2016 (% of total trade in services)



Source: UNCTAD Stat

Services Trade Policy Landscape in Southern African Development Community: In general services are inputs providers to all exports related industries. For this to succeed, it requires services trade policies that adequately facilitate the smooth flow of trade globally without unnecessary barriers and restrictions. According to OECD and WTO (2017), "services trade barriers are embedded in the legal and regulatory frameworks and these barriers mainly involve government measures discriminating foreign services or suppliers." The two barriers, that is, national treatment and market access largely determine a country`s service market competitiveness. Regulators can intentionally play around with the two to encourage contestability and market competition in a country. OECD and WTO (2017) list some of the forms of service trade barriers and these include; foreign investment discretionary screening, license caps, restrictions in the movement of natural persons, monopolies, foreign equity limits and discriminatory subsidies or licensing requirements. Literature has shown that barriers to services trade are high in many SADC countries and these restrictions have negatively affected foreign investment inflows and cross-border trade. The situation is further worsened by high cross-border trade costs.

Although trade restrictions are meant to protect domestic industries, the resultant effects are not that as intended as these protected domestic service providers' ends up charging exorbitant prices thereby harming the consumers in the process due to high production costs and low competition. This situation will cause smuggling of cheap foreign services and products that will result in the collapse of the domestic companies due to stiff competition. This has been the case in Zimbabwe after the introduction of Statutory Instrument 64. Local companies that were protected by government through restrictions in foreign imports went on to inflate prices and creating artificial shortages to the detriment of innocent consumers at the end. According to the Services Trade Restrictiveness by the World Bank, there are five categories that are defined by the restrictiveness level linked to a score. These scores are scaled from 0 to 100, with 100 the worst outcome and 0 being the best outcome. The five categories are:

- 0 - Completely open.
- 25 - Virtually open (with minor restrictions).
- 50 - Major restrictions.
- 75 - Virtually closed (with limited opportunities to enter and operate) and
- 100 - Completely closed.

Saez et al. (2015) argue that all these restrictions to service trade have unbearable effects on FDI inflows critical for economic growth and development. Borchert et al. (2012) argue that these restrictions can have a sectoral FDI reduction of USD2.2 billion over a period of seven years. A negative correlation actually exists between restrictiveness and indicators of regulatory quality. There is a serious need for governments to address barriers and restrictions to services trade so as to fully reap the benefits of trade liberalization even though reducing these impediments doesn't necessarily results in regulatory quality, it is necessary (Saez et al., 2015). Overall, based on the categories of service trade restrictiveness, many SADC countries have major restrictions with some completely closed in certain categories, for example, DRC - rail freight domestic, South Africa - maritime auxiliary services, Mozambique-telecommunications fixed line as well as Zambia. A de facto monopoly is still in existence in Zambia and Mozambique`s telecommunications market irrespective of its liberalization that has seen many mobile cellphone providers entering the market. The services sector`s professional services have become a key input provider for many productive sectors in the value chain remaining high at above 30 across all SADC countries with Namibia recording the highest (65).

Zimbabwe scored above 50 on all service categories with the highest of 75 in retail, fixed line, road freight domestic and rail freight domestic. Zimbabwe has been critically affected by its unclear economic empowerment policy that requires foreign ownership up to 49% and in some sectors completely closed to foreign ownership. Table 5 provides critical data that shows how key sectors are restricted in SADC countries. Table 4 provides regulatory quality indicator scores for SADC countries from 1996 to 2015. "Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution ranging from approximately -2.5 to 2.5" (World Bank, *Worldwide Governance Indicators*). Almost all SADC countries scored negatively except for Botswana Mauritius, South Africa and Namibia though it scored negatively in 2014 and 2015.

Table 4: Southern African Development Community Regulatory Quality Indicator Score (-2.5 to 2.5)

Country	1996	1998	2000	2005	2010	2011	2012	2013	2014	2015
Angola	(1.46)	(1.72)	(1.83)	(1.29)	(1.02)	(1.08)	(0.96)	(1.05)	(0.98)	(0.91)
Botswana	0.76	0.70	0.64	0.67	0.46	0.50	0.62	0.58	0.58	0.49
DRC	(1.83)	(2.41)	(2.11)	(1.62)	(1.58)	(1.52)	(1.49)	(1.23)	(1.36)	(1.34)
Lesotho	(0.37)	(0.44)	(0.39)	(0.64)	(0.60)	(0.60)	(0.52)	(0.35)	(0.41)	(0.39)
Madagascar	(1.05)	(0.82)	(0.45)	(0.24)	(0.56)	(0.52)	(0.56)	(0.65)	(0.69)	(0.76)
Malawi	(0.29)	(0.23)	(0.22)	(0.47)	(0.57)	(0.70)	(0.70)	(0.68)	(0.78)	(0.82)
Mauritius	(0.02)	0.40	0.58	0.44	0.90	0.85	1.00	0.94	1.12	1.09
Mozambique	(0.54)	(0.29)	(0.16)	(0.65)	(0.39)	(0.42)	(0.45)	(0.40)	(0.40)	(0.49)
Namibia	0.38	0.16	0.27	0.12	0.08	0.04	0.08	0.09	(0.01)	(0.08)
Seychelles	0.28	(0.57)	(0.91)	(0.35)	(0.54)	(0.42)	(0.29)	(0.29)	(0.34)	(0.09)
South Africa	0.34	0.27	0.40	0.67	0.36	0.40	0.38	0.42	0.30	0.30
Swaziland	(0.21)	(0.44)	(0.44)	(0.57)	(0.60)	(0.63)	(0.55)	(0.35)	(0.45)	(0.50)
Tanzania	(0.42)	(0.41)	(0.25)	(0.45)	(0.41)	(0.40)	(0.39)	(0.32)	(0.32)	(0.36)
Zambia	(0.42)	(0.12)	(0.26)	(0.70)	(0.48)	(0.42)	(0.41)	(0.47)	(0.49)	(0.42)
Zimbabwe	(0.98)	(0.79)	(1.46)	(2.21)	(2.06)	(1.92)	(1.88)	(1.84)	(1.90)	(1.65)

Source: World Bank`s Worldwide Governance Indicators (WGI)

Table 5: Southern African Development Community`s Services Trade Restrictiveness Index, 2015 (score 0 to 100)

Category	BWA	DRC	LSO	MDG	MWI	MUS	MOZ	NAM	ZAF	TZA	ZMB	ZWE
Overall	38	52	27	19	34	17	19	37	35	31	21	64
Financial	30	40	0	31	35	9	17	27	20	23	8	56
Telecommunications	50	50	25	25	50	0	75	50	25	25	75	63
Fixed-line	50	50	25	25	50	0	100	25	25	25	100	75
Mobile	50	50	25	25	50	0	50	75	25	25	50	50
Retail	25	75	50	0	25	0	0	25	25	25	0	75
Transportation	55	55	23	6	32	31	6	30	41	29	10	68
Air Passenger International	68	50	60	35	50	53	35	29	36	60	35	50
Maritime Shipping International		33		0	0	0	0	8	8	0		
Maritime Auxiliary Services		50		0	0	75	0	25	100	50		
Road Freight Domestic	50	50	0	0	25	0	0	50	25	0	0	75
Rail Freight Domestic	50	100		0	25		0	25	25	50	0	75
Professional	47	36	37	38	38	42	30	65	62	52	44	60
Accounting & Auditing	45	10	20	40	30	25	28	45	40	40	40	55
Legal	48	53	48	36	43	53	32	78	77	59	47	63

Source: World Bank`s Services Trade Restrictiveness Database

Empirical Evidence: Empirically, a growing number of studies have examined the nexus between trade and economic growth. Exports-growth nexus has been a subject of extensive debate since the 1960s. It is surprising that there is no clear consensus between the export-led growth hypothesis (ELG) and growth led-exports hypothesis (GLE) even though early cross-section studies preferred the earlier, it should probably be the latter instead of the past. However, the findings from these studies have been a mixed bag across methodologies and countries. Lee and Huang (2002) cite ELG as a key factor in promoting economic growth. Rigobon and Rodrik (2005) study that found a negative though significant influence of trade on income levels. Chia (2016) argues that many researchers have done ELG using diverse econometric techniques. In the analysis Chia (2016) found that causal relationships vary with, (1) period of study, (2) econometric methods used, (3) variable treatment, and (4) inclusion of other associated variables in the estimated equation. Chia (2016) states "that positive productivity effects estimated by ELG hypothesis don't necessarily occur in developing countries." This is due to heavy dependence on exports of primary commodities in many developing economies. Chia (2016) further examined the validity of ELG in three African countries from 1985 to 2014 using FMOLS, DOLS, panel unit-root tests and co-integration approaches. The findings show non-stationarity of variables in level and stationarity in the first difference. A long-run nexus was presented by the panel co-integration estimation between the variables.

The impact of ELG was, however, positive and highly significant statistically. According to Medina-Smith (2001), "ELG postulates that export expansion is one of the main determinants of growth. It holds that the overall growth of countries can be generated not only by increasing the amounts of labour and capital within the economy but also by expanding exports. According to its advocates, exports can perform as an 'engine of growth'". According to World Bank (1993), "phenomenal growth rates achieved by the south-east Asian countries between 1970s and 1990s following successful implementation of the ELG strategy provide evidence in support of the superiority of ELG strategy." "Although a substantial part of the earlier studies found evidence of a correlation between exports and growth which was used to support the ELG, this tends to hold only for cross-section studies" (Medina-Smith, 2001). Medina-Smith (2001) further argues that "the recent evidence on time series, which makes extensive use of cointegration techniques, casts doubts on the positive effects of exports on growth in the long run, and is thus not as conclusive as it was previously thought to be." The study by Pazim (2009) on ELG was coherent with studies by Fosu (1990) and Ukpolo (1994) that were done in the African context.

In his study Kónya (2004), investigates the possibility of ELG and GLE by testing for Granger causality between the logarithms of real exports and real GDP in twenty-five OECD countries. Kónya (2004) found "no causality between exports and growth in Luxembourg and in the Netherlands, exports cause growth (ECG) in Iceland, growth causes exports (GCE) in Canada, Japan and Korea, and there is two-way causality between exports and growth in Sweden and in the UK." Although with less certainty, Kónya (2004) concludes "that there is no causality in Denmark, France, Greece, Hungary and Norway, ECG in Australia, Austria and Ireland, and GCE in Finland, Portugal and the USA." However, in the case of Belgium, Italy, Mexico, New Zealand, Spain and Switzerland, Kónya (2004) `s results are contentious to make a simple choice. In his study in 35 countries from 1860 to 1963, Goldsmith (1969) finds "a rough correlation between financial development (as measured by total domestic credit over GDP) and growth. Goldsmith further uses the ratio of the value of financial intermediary assets to GNP to gauge financial performance and enters it in regression with economic growth as the dependent variable."

Since then, Jung (1986) and Odedokun (1991) have found that "the depth and growth of financial markets had a significant effect on growth in developing countries." Dash and Parida (2013) examine the linkages between inward FDI, services trade and economic output using co-integration and VECM causality test. The empirical findings confirm the long-run relationship among these variables. Causality results indicate the presence of bi-directional causal relationship between FDI and economic output as well as between service exports and economic output. The results by Dash and Parida (2013) also bring out feedback relationship between service exports and FDI, reconfirming the presence of complementary relationship between the two. Sang-Chul (2017) examined, "using country-level panel data and System Generalized Method of Moments technique, the nexus between trade openness and growth. A sample of 25 Asian economies during the period 2005 to 2013 was selected. The estimation results showed that services trade openness had a negative and statistically significant effect on GDP, while trade openness had a positive and statistically significant effect on

GDP for the Asian countries. The results are indicative of negative strong growth effects of openness in services trade in high-income countries, while weak in the low-income countries."

El Khoury and Savvides (2006) "examine the relationship between openness in services trade and economic growth via the threshold regression model to test for a differential impact between low- and high-income countries. Results confirm the existence of a two-regime split." El Khoury and Savvides (2006) conclude that the greater openness in services trade is associated with higher growth. A study by Tekin (2012) of 27 African LDCs resulted in no causality linking three variables, that is, trade openness, foreign aid and GDP per capita. A study by Ajmia et al. (2013) tested causality between exports and GDP in South Africa. They used both linear and non-linear tests and the findings showed a cointegrating nexus among the two, and unidirectional causality from GDP to exports. In their conclusion, they argued that exports have a positive influence on GDP through increased incomes, employment and the development of technology. In an analysis by Asfaw (2014), trade openness was found to be a stimulant for both economic growth and investment. The study focused on the effect of trade liberalization on growth in 47 sub-Saharan African countries. A study by Fenira (2015) shows a weak nexus between trade openness and GDP. Sakyi, Villaverde, and Maza (2015) provide "evidence of a positive bi-directional causal relationship between trade and economic growth for a sample of 115 developing countries."

Were (2015) finds that "trade exerts a positive and significant effect on economic growth rate in developed and developing countries, but its effect is not significant for least developed countries which largely include African countries?" Trejos and Barboza (2015) provide robust empirical evidence that trade openness is not the main engine of the Asian economic growth "miracle." A study by Brueckner and Lederman (2015) found that trade openness increases growth in the short and long run. Their study employed an instrumental variable approach on 41 sub-Saharan African countries. In an investigation by Musila and Yiheyis (2015) in Kenya, trade openness was found to have a positive effect on investment ratio and not on growth. In a more related study in South Africa, Polat et al. (2015) find that trade openness impedes growth. Sakyi, Commodore, and Opoku (2015) investigated the long-run impact of FDI and trade openness on economic growth in Ghana (1970–2011) and found that the interaction of FDI and exports has been crucial in fostering growth. A study by Lawal et al. (2016) found a two-way causality between trade openness and growth as well as a negative and positive effect in the long and short run respectively. The study applied the ARDL methodology in Nigeria. Abdullahi, Safiyanu, and Soja (2016) in their study analyze the relationship between international trade and economic growth in West Africa from 1991- 2011. Based on the panel data of 16 out of 17 countries in the region, the study found that a one percent rise in export variable leads to 5.11% growth in GDP. Import, on the other hand, had a positive but insignificant impact on GDP growth.

3. Research Methodology

Data Sources and Research Approach: Kuhn (1962) defines research methodology as the "philosophical framework and the fundamental assumptions of research." How are issues and things studied? This study took a quantitative approach. The study used econometric regression models to analyse panel data obtained from the World Bank`s world development indicators and UNCTAD Stat databases. Secondary data for the period 1992 to 2015 from ten selected SADC countries[1] was used. Data was also tested for outliers and their impact on the results. The period under study was selected on the basis of data availability for all selected countries. Why was panel data used? Klevmarken (1989) and Hsiao (2003) list many advantages attained through the use of panel data and these include but not limited to controlling individual heterogeneity. Through panel data, firms, states, countries and individuals are heterogeneous. Moulton (1986 & 1987) argues that "cross-section and time-series studies that do not control this heterogeneity run the risk of obtaining biased results." GDP per capita was the dependent variable while service exports and imports were explanatory variables with goods exports and imports as controlling variables. The use of an econometric regression model was justified as it serves to highlight and interpret the dependency of the dependent variable on the explanatory variables. The model was used to predict the future value of the dependent variable as given by Vercellis (2009).

[1] The selected countries were Angola, Botswana, Lesotho, Malawi, Mauritius, Namibia, Seychelles, South Africa, Swaziland and Tanzania.

Natural Logarithms Transformation: All the variables were first transformed according to Brooks (2008). Brooks (2008:608) states that "there are at least three reasons why log transforms may be useful. First, taking a logarithm can often help to rescale the data so that their variance is more constant, which overcomes a common statistical problem. Second, logarithmic transforms can help to make a positively skewed distribution closer to a normal distribution. Third, taking logarithms can also be a way to make a non-linear, multiplicative relationship between variables into a linear, additive one." To avoid compromising the model`s significance, the equation was shown in a 'double logarithmic form' to render the elasticities of the coefficient estimates.

The Econometric Model: The econometric model took the following reduced form:

$$\ln Y_{it} = \alpha_t + \beta_1 \ln X_{it} + \beta_2 \ln X_{it} + \beta_3 \ln X_{it} \cdots + \beta_k \ln X_{kt} + u_{it}, \quad i = 1,\ldots,K;\ t = 1,2,\ldots,T \tag{1}$$

Now let $Y_{it} = lnY_{it}$, $X_{it} = lnX_{it}$, $X_{it} = lnX_{it}$, $X_{it} = lnX_{it}$ and $X_{kt} = lnX_{kt}$

$$Y_{it} = \alpha_t + \beta_1 X_{it} + \beta_2 X_{it} + \beta_3 X_{it} \ldots \beta_k X_{kt} + u_{it}, \tag{2}$$

Where the variables $x_{it}, x_{it}, \ldots, x_{kt}$ are a set of $k - 1$ explanatory variables which influence y_{it}, and the coefficient estimates $\beta_1, \beta_2, \ldots, \beta_k$ are the parameters which quantify the effect of each of these explanatory variables on y_{it} and to make the model more realistic, a random disturbance term, denoted by u_{it}, is added to the equation to represent unobserved shocks in each time period. Each coefficient is known as a partial regression coefficient, interpreted as representing the partial effect of the given independent variable on the dependent variable, after holding constant, or eliminating the effect of, all other independent variables. The i subscript, therefore, denotes the entity dimension whereas t denotes the time-series dimension, α is a scalar and β *is K*1* and X_{it} is the it^{th} observation on K explanatory variables. The presence of the parameters α_t, which represent different intercepts in each year, allows for aggregate economic growth to change over time. The following multiple regression model was obtained after replacing the variables:

$$gdp_{it} = \alpha_t + \beta_1\, servicesexp_{it} + \beta_2\, servicesimp_{it} + \beta_3\, goodsexp_{it} + \beta_4\, goodsimp_{it} + u_{it} \tag{3}$$

4. Data Analysis and Interpretation

Panel Unit-Root Tests: Panel unit root test was conducted to perform a variety of tests for unit roots (or stationarity) in panel datasets using the Fisher-type (Choi, 2001) and Hadri (2000) Lagrange multiplier (LM) tests on each of the variables for the entire period of 1992 to 2015. The results are presented in Table 6 below. The results reveal overwhelming evidence against the null hypothesis of all panels containing unit roots with the exception of goods exports under the Fisher-type unit root test based on Philips-Perron. This means there are no unit roots in the panels under the given test conditions. The null hypothesis of a unit root is rejected in favour of the stationary alternative under the ADF because the test statistic is more negative than the critical value. The variables are therefore stationary, hence no need for co-integration analysis.

Table 6: Panel Unit Root Test of Each Variable

	Fisher-type Augmented Dickey-Fuller test		Hadri LM test	Fisher-type PPerron test	
Variable	**z(t)**	**p-value**	**z(t)**	**z(t)**	**p-value**
Gdp	-5.4282	0.0000	8.1936	-1.4934	0.0677
Services exp	-6.4476	0.0000	5.7222	-5.4064	0.0000
Services imp	-5.6089	0.0000	9.4256	-3.1391	0.0008
Goods exp	-4.4453	0.0000	18.5945	1.8749	0.9696
Goods imp	-3.5390	0.0002	22.7829	-1.8370	0.0331

Source: Author`s compilation from STATA/SE 12.0

Correlation Matrix: This matrix shows a positive nexus amongst the variables, that is, dependent and explanatory though the relationship is weak except for service exports (Table 7). The correlation doesn't infer causativeness. Keho (2017) argues that "a positive relationship between trade variables and GDP fits well with the trade-led growth hypothesis, the growth-led trade hypothesis or a two-way causality amongst trade variables and GDP."

Table 7: Correlation Matrix, Influence of Trade on Economic Growth in Selected SADC Countries

```
. correlate lngdp lngoodsexp lngoodsimp lnservicesexp lnservicesimp
(obs=235)

                |     lngdp lngoo~xp lngoo~mp lnser~xp lnser~mp
----------------+------------------------------------------------
          lngdp |    1.0000
     lngoodsexp |    0.2997   1.0000
     lngoodsimp |    0.2972   0.9518   1.0000
   lnservice~xp |    0.5626   0.7034   0.7696   1.0000
   lnservice~mp |    0.2932   0.9279   0.8968   0.7483   1.0000
```

Source: Extract from STATA/SE 12.0

Main Regression Model Results: A multiple regression was run using panel data to predict the impact of trade on economic growth in SADC countries. GDP per capita was the dependent variable with service exports and imports being the explanatory variables, while goods exports and imports were the controlling variables. The Stat result below (table 8) summarizes the regression coefficients estimates and statistics. The ANOVA table is shown on the upper left part together with mean sum squares (MS), degrees of freedom (DF) and sum squares (SS). Out of the SS of 356.78, 144.70 is explained by the model while 212.08 remains unaccounted, that is, residual. The SS explained by the model is the SS after taking out the means as a result of the effect of the regression constant. Also reported is the total DF of 234 (i.e. 235 less 1 being mean removal), from which 4 is explained by the model while 230 is the residual. The MS results from dividing SS by DF. F-statistic and R^2 are summarized on the upper right part of table 8. F-statistic is that is derived from the upper left part of the ANOVA table. The ratio is thus, F = (Model SS/df_{Model}) **/ (**Residual SS/$df_{Residual}$). Therefore, F = 36.17 / 0.922 = 39.23, with 4 numerator df and 230 denominator DF. The F-statistic is, therefore, a test of combined null-hypothesis, that is, regression model coefficients excluding the constant are zero.

F-statistic associated p-value provides a chance to observe F-statistic that is larger or large, or given as 0. Hereafter the null hypothesis strongly rejects the whole model because of its highly significance. A table of estimated coefficients is shown below the statistics summary. The first item (lngdp) on the table denotes the explained/dependent variable. The coefficients (Coef.), together with standard error (Std. Err.), t and P > |t| (p-values) denotes the marginal effects estimates of explanatory variables and the intercept (Table 8). For example, the t-value estimates the coefficient/standard error ratio, thus in lngoodsexp, t-value equals to 0.6153432 / 0.1536532 = 4. The ratio is greater than the rule of thumb of 2 showing a highly significant coefficient. The p-value of zero attests to that. The confidence intervals for the coefficients are shown on right side of the p-values. The impact of lngoodsexp and lnservicesexp on growth was positive while those of lngoodsimp and lnservicesimp were negative as well as highly significant as was anticipated from literature, with lnservicesexp registering an impact almost triple that of lnservicesimp and greater than lngoodsexp as well. The constant intercept also is significant. After inputting the coefficients the multiple linear regression equation will be:

$$gdp_{it} = 4.3437 + 0.7183servicesexp_{it} - 0.3995servicesimp_{it} + 0.6153goodsexp_{it} - 0.7402goodsimp_{it} + u_{it} \quad (4)$$

The results of this study are in line with the findings of other researchers, such as, Lee and Huang (2002), Asfaw et al. (2014), Asfaw (2014), Brueckner and Lederman (2015), Sáez et al. (2015), UNECA (2015), Abdullahi et al. (2016) and Loungani et al. (2017a & b). Loungani et al. (2017a) write preliminary evidence suggests that movements in exports of services exhibit a higher correlation with country-level GDP growth outcomes than those in the exports of agricultural or manufacturing goods. This was also the view of Loungani et al. (2017b) in their research findings that show a steeper slope for services and GDP compared to the slope between agriculture and manufacturing. Loungani et al. (2017b) add that the "magnitude of the correlation coefficient between services growth and per capita GDP growth was 0.60, compared to 0.24 for manufacturing growth versus per capita GDP growth. In addition, the R-square for service value added plot was 0.51 and the R-square for manufacturing value added was 0.19." The magnitude of the coefficient on services export growth was substantially higher than other sectors.

Table 8: Regression Analysis, Influence of Trade on Economic Growth in Selected SADC Countries (including South Africa)

```
. reg lngdp lngoodsexp lngoodsimp lnservicesexp lnservicesimp

      Source |       SS       df       MS              Number of obs =     235
-------------+------------------------------           F(  4,   230) =   39.23
       Model |  144.696095     4  36.1740238           Prob > F      =  0.0000
    Residual |  212.087092   230  .922117789           R-squared     =  0.4056
-------------+------------------------------           Adj R-squared =  0.3952
       Total |  356.783187   234  1.52471447           Root MSE      =  .96027

------------------------------------------------------------------------------
        lngdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lngoodsexp |   .6153432   .1536532     4.00   0.000     .3125954     .918091
   lngoodsimp |  -.7402098   .1703004    -4.35   0.000    -1.075758   -.4046616
lnservicesexp |   .7183332   .0652834    11.00   0.000     .5897032    .8469632
lnservicesimp |  -.3994556   .1265637    -3.16   0.002    -.6488281   -.1500831
        _cons |   4.343669   1.190188     3.65   0.000     1.998605    6.688734
------------------------------------------------------------------------------
```

Source: Extract from STATA/SE 12.0

After excluding South Africa as an outlier from the model, the results show a slight change with F (4, 206) = 30.73, Prob > F = 0.0000, R-squared = 0.3737 and an Adj. R-squared = 0.3615 (Table 8). Trade remains significant in influencing GDP in SADC countries despite the exclusion of South Africa that is considered an outlier. The results still show that trade has a significant influence on economic growth in SADC countries. The results still show that trade imports though significant its influence on economic growth in SADC are negative; hence the need to reduce imports and promote exports of both goods and services. The results of the study also show that service exports have a greater influence on economic growth than goods exports (Table 8 & 9) in line with findings by Loungani et al. (2017a & b). Therefore, the results obtained are indeed valid for the entire SADC. These results have a wider implication on government policy, economic framework and scientific research. SADC countries must be seen promoting initiatives that have a strong bearing on exports of goods and services. It is also critical to note at this point the importance of trade in services to both agricultural and manufacturing sectors.

Table 9: Regression Analysis, Influence of Trade on Economic Growth in Selected SADC Countries (excluding South Africa)

```
. reg lngdp lngoodsexp lngoodsimp lnservicesexp lnservicesimp

      Source |       SS       df       MS              Number of obs =     211
-------------+------------------------------           F(  4,   206) =   30.73
       Model |   124.93045     4  31.2326124           Prob > F      =  0.0000
    Residual |  209.371077   206  1.01636445           R-squared     =  0.3737
-------------+------------------------------           Adj R-squared =  0.3615
       Total |  334.301526   210  1.59191203           Root MSE      =  1.0081

------------------------------------------------------------------------------
        lngdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lngoodsexp |   .6320665   .1639313     3.86   0.000     .3088684    .9552646
   lngoodsimp |  -.7178029   .1950772    -3.68   0.000    -1.102407    -.333199
lnservicesexp |   .7315326   .0695913    10.51   0.000     .5943302     .868735
lnservicesimp |  -.4217744   .1337807    -3.15   0.002    -.6855292   -.1580195
        _cons |    3.72032   1.744511     2.13   0.034      .280935    7.159704
------------------------------------------------------------------------------
```

Source: Extract from STATA/SE 12.0

UNCTAD (2015a) shows that a 0.63 correlation coefficient exists between real GDP and services sector growth and a 0.19 correlation coefficient between exports and services growth. The coefficients of services and goods imports are in line with findings by Rigobon and Rodrik (2005) `s study that found a negative though significant influence of trade on income and growth. The study explored the Lagrange multiplier test for random effects as well as the Hausman test to select the model that best fits the data. The results of these tests are shown in tables 10 to 13 below.

Fixed Effects Model: The FE model is:

$$Y_{it} = \alpha_t + \beta_1 X_{it} + \beta_2 X_{it} + \beta_3 X_{it} + \beta_4 X_{it} + u_{it}, \quad (5)$$

The results on the marginal effects are more or less the same as those of the main regression model except that in this case, all the coefficients are positive. The constant intercept estimate is, however, different and negative though significant at 5%. The R^2s are reported as, within, between and overall. The findings show the similarity in properties between R^2 within and the usual R^2. Other two R^2s are correlations squared. Therefore, 0.5955 was the usual R^2 in this model and the overall R^2 is 0.1219. Poolability test is reported right below the findings and it is denoted by *u_i* (Table 10). The F-test rejects the null hypothesis of zero country-heterogeneity. Hereafter, FE was selected against pooled regression. S*igma_u, sigma_e,* and *rho* were reported also (Table 10). In the model μ denotes the heterogeneity intercept, with *e* denoting the random error term *v* in the one-way-error component model. Table 10 shows that the error terms are correlated thereby render FE unsuitable since inferences may not be correct calling for the need to model the relationship using random-effects probably. This is the main rationale for the Hausman test in table 13. Table 10 below shows the summary results of the FE model from Stata.

Table 10: Fixed Effects Model

```
. xtregar lngdp lngoodsexp lngoodsimp lnservicesexp lnservicesimp, fe rhotype(dw)

FE (within) regression with AR(1) disturbances  Number of obs      =        230
Group variable: country                         Number of groups   =         10

R-sq:  within  = 0.5955                         Obs per group: min =         23
       between = 0.0524                                        avg =       23.0
       overall = 0.1219                                        max =         23

                                                F(4,216)           =      79.51
corr(u_i, Xb)  = -0.4858                        Prob > F           =     0.0000

------------------------------------------------------------------------------
         lngdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
   lngoodsexp  |   .2412152   .0558963     4.32   0.000     .1310432    .3513872
   lngoodsimp  |   .2643958   .0566847     4.66   0.000     .1526699    .3761217
lnservicesexp  |   .0929276   .0258055     3.60   0.000     .0420648    .1437903
lnservicesimp  |   .1386422   .0386204     3.59   0.000     .0625212    .2147632
         _cons |  -8.025783   .1919009   -41.82   0.000    -8.404021   -7.647544
---------------+--------------------------------------------------------------
       rho_ar  |  .78331182
      sigma_u  |   1.368086
      sigma_e  |  .10746414
      rho_fov  |  .99386762   (fraction of variance because of u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(9,216) =    120.35                  Prob > F = 0.0000
```

Source: Extract from STATA/SE 12.0

Random Effects Model: The RE model is:

$$Y_{it} = \alpha_t + \beta_1 X_{it} + \beta_2 X_{it} + \beta_3 X_{it} + \beta_4 X_{it} + u_{it} + \varepsilon_{it} \quad (6)$$

It is critical to appreciate the logic behind the RE model. Different from FE model, the RE model varies across countries and uncorrelated and random with independent variables in the model though random. The R^2 and intercept are more or less equal to the ones reported under FE model as shown above. The F statistic test of significance was not reported in this model because the model estimator had asymptotic properties only. However, the Wald chi-square test indicated the overall model significance (Table 11). The results assumed

that Cov(X_{it}, μ_i) = 0. The report was shown as corr(u_i, X) = 0 (assumed). Sigma_u, sigma_e, and rho were reported as; σ_μ = 0.9527 and σ_v = 0.1593 and rho = 0.9728 (Table 11). We have seen that if σ_μ^2 = 0, the composite error term variance reduces to Var(u_{it}) = σ_v^2; and since there is no variance amongst the RE and pooled regression models; the data can be pooled and the regression run. Currently, given that σ_μ = 0.9527, that cannot be done. Therefore, the Breusch and Pagan Lagrangian multiplier test for RE was carried out (Table 12).

Table 11: Random Effects GLS Regression Model

```
. xtregar lngdp lngoodsexp lngoodsimp lnservicesexp lnservicesimp, re rhotype(dw)

RE GLS regression with AR(1) disturbances        Number of obs      =       240
Group variable: country                          Number of groups   =        10

R-sq:  within  = 0.8925                          Obs per group: min =        24
       between = 0.0544                                         avg =      24.0
       overall = 0.1266                                         max =        24

                                                 Wald chi2(5)       =    385.00
corr(u_i, Xb)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
         lngdp |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
   lngoodsexp  |   .1990377    .053657     3.71   0.000      .093872    .3042034
   lngoodsimp  |   .2609805   .0570438     4.58   0.000     .1491767    .3727843
lnservicesexp  |   .0986654   .0265553     3.72   0.000      .046618    .1507128
lnservicesimp  |   .1373415   .0396526     3.46   0.001     .0596238    .2150592
         _cons |  -7.117905   .7874957    -9.04   0.000    -8.661369   -5.574442
---------------+--------------------------------------------------------------
        rho_ar |  .78331182   (estimated autocorrelation coefficient)
       sigma_u |  .95265697
       sigma_e |  .15925389
       rho_fov |  .97281452   (fraction of variance due to u_i)
         theta |  .86324792
------------------------------------------------------------------------------
```

Source: Extract from STATA/SE 12.0

Lagrange Multiplier Test for Random: The results in table 12 below reject the null of σ_μ^2 = 0; that is, select RE rather than pool the data. In the prior context, FE model was preferred (pooled regression vs. FE); however, in this current scenario (pooled regression vs. RE), RE model is selected.

Table 12: Breusch-Pagan Lagrangian Multiplier Test for Random Effects

```
Breusch and Pagan Lagrangian multiplier test for random effects

        lngdp[country,t] = Xb + u[country] + e[country,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+-----------------------------
                   lngdp |   1.525625        1.235162
                       e |   .0267708         .163618
                       u |   1.245814         1.11616

        Test:   Var(u) = 0
                             chibar2(01) =  1614.04
                          Prob > chibar2 =   0.0000
```

Source: Extract from STATA/SE 12.0

Fixed or Random: Hausman Test: To decide between fixed or random effects the researcher had to use the Hausman test to select the appropriate model.
Where:
H_0: Random effects model is appropriate
H_1: Fixed effects model is appropriate.

The Hausman test basically tests whether the unique errors (u_i) are correlated with the regressors. The null hypothesis is, they are not. The Prob > chi^2 of 0.6352 in table 13 below is > 0.05 (i.e. insignificant) hence; the random effects model is the model that fits data the best.

Table 13: Hausman`s Fixed Random Effect Test

```
. hausman fe re

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |      fe           re          Difference          S.E.
-------------+----------------------------------------------------------------
  lngoodsexp |   .2412152     .1990377        .0421775        .0156629
  lngoodsimp |   .2643958     .2609805        .0034153               .
lnservice~xp |   .0929276     .0986654       -.0057378               .
lnservice~mp |   .1386422     .1373415        .0013007               .
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtregar
            B = inconsistent under Ha, efficient under Ho; obtained from xtregar

    Test:  Ho:  difference in coefficients not systematic

                  chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        2.55
                Prob>chi2 =      0.6352
                (V_b-V_B is not positive definite)
```

Source: Extract from STATA/SE 12.0

5. Conclusion and Recommendations

The article analysed the trade in services led growth in ten selected SADC countries using econometric regression models. The study unveiled the uncharted prospective of trade in services led growth as well as determining the contribution and role of trade in services to economic growth. The study also provides an understanding of the challenges affecting trade in services in SADC countries. Econometric models exposed the relationship that exists between trade in services and economic growth, which relationships are critical in informing policy formulation and implementation in Africa. The study carried out some data tests such as panel unit root test for variables to test for unit roots or stationarity in the panel datasets. The variables were found to be stationary and therefore there was no need for co-integration analysis. The main regression model was run with the overall results summarized in table 8 above. The regression model shows the total SS of 356.78, of which 144.70 is explained by the model while 212.08 remains unaccountable (residual). Also reported is the total DF of 234 (i.e. 235 less 1 being mean removal), from which 4 is explained by the model while 230 is the residual. The model strongly rejects the null hypothesis thereby rendering it highly significant as a whole. The constant intercept is significant as well. The study further explored the Lagrange multiplier test for random effects as well as the Hausman test to select the model that best fits the data with the results summarized in table 10 up to table 13 above. Table 10 rendered FE unsuitable due to the correlation of error terms resulting in RE being used to model the relationship as shown by the Hausman test in table 13.

The Hausman test was used to help the researcher to select the appropriate model that fits the data the best. It is critical at this point to note the positive and significant contribution shown by the coefficient, services exports in table 8 and 9. This is actually in line with what literature has shown with regards to the services sector being a critical component of economic growth and development. This notion has, however, challenged long-held theories of economic development the world over. Prior researches and theories had found the typical steps out of poverty to be increased agricultural productivity followed by growth in the manufacturing sector. However, the past years have seen the world experiencing a different trajectory in economic growth and development with manufacturing sector instead of growing as theory might have anticipated, remained stagnant while agriculture`s share of GDP declined. However, services have been on an increase as measured by its share of total employment, exports and GDP. Trade in services has been argued to be the driver of value addition and provider of critical inputs to boost other economic activities. Services have become predominant in employment with 2010 estimated to have accounted for half (50.9%) of global jobs. The share of female employment by sector in 2013 was predominantly services except for Zimbabwe, Tanzania, Zambia, Mozambique and Malawi which are predominantly agriculture. Although empirically the results show the significance of service exports on economic growth in SADC as a whole, it is of critical importance. To identify

service categories critical for each country so that each country can concentrate on those categories where she has comparative and competitive advantage rather than focusing on the whole services sector.

Figure 5 shows that a lot has been done or is being realized from travel, transport and other business services categories in that order. However, there is a lot of potential lying in other categories such as financial services, telecommunications & computing, insurance & pension services, intellectual property and construction. Figure 6 shows exports of selected commercial services by region and travel ranks high in SADC, SSA, LDCs, Southern Africa, Middle Africa, Eastern Africa and Africa as a whole. There are quite a number of benefits that have accrued due to the developments in services trade although it`s potential is being hampered by a number of policy restrictions. Governments need to seriously consider remove services trade restrictions and avoid over-regulating the sector to fully realize it`s potential. Given the technological developments in this Fourth Industrial Revolution, the services sector is becoming a critical sector in the development of economies. More researches need to be carried out to have better knowledge and understanding of trade in services, its potential and challenges to economic development in Africa. The impact of cyber security risk needs to be taken seriously as it poses greater threats to trade in services across the globe. This risk can, however, be taken as an opportunity by innovators through coming up with solutions that counter the threats. Policy-makers and government need to clearly define their service agenda and strategy in their policies. A three-legged approach that involves government, private sector and academia is critical in formulating and designing trade-in service policies.

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