BIDPA Working Paper 73

March 2020

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A Case Study of Botswana's Manufacturing Sector

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BOTSWANA INSTITUTE FOR DEVELOPMENT POLICY ANALYSIS

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BIDPA is part-funded by the Government of Botswana.

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ISBN: 99912 - 65 - 81 - 3

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Abstract

The paper examines the key determinants of industrial growth in Botswana, using manufacturing sector value added as the proxy for industrial growth. It employs the Autoregressive Distributed Lag (ARDL) cointegration approach using annual time series data for the period 1983 to 2015. Empirical results show that industrial growth is driven by financial sector development, human capital development, trade openness and foreign direct investment. Specifically, domestic credit to the private sector as a percentage of GDP and secondary school enrolment ratio are found to be significantly related to manufacturing value added as a percentage of GDP both in the long run and short run. While the relationship is limited to long run for total trade to GDP, it only exits in the short run for FDI net inflows. The study therefore recommends that policy makers should design and ensure proper implementation of financial sector development strategies that can help ease access to credit for manufacturing enterprises in the country. There is also a need for a holistic approach in the design and implementation of innovation and human resource development policies in order to provide a conducive environment for skills acquisition, innovation and technological advancements in the manufacturing sector. Trade policies and export promotion strategies should heighten productivity and value addition in the manufacturing sector, so as to make local firms internationally competitive. Finally, with regards to FDI, the Government of Botswana should create an environment that could entice multinationals to invest in the local manufacturing industry. This, however, should be coupled with protectionist policies to avoid crowding out local manufacturers and exposing them to foreign competition.

Keywords: Industrialisation, Industrial growth, Manufacturing sector, Botswana

1. Introduction and Background

Botswana, being one of the most natural resource endowed economies in Africa, has experienced outstanding growth for several decades. The abundance of diamonds has seen the country being transformed from a low income country to a middle income country. Contrary to the common ideology that resource-rich economies tend to fail in accelerating growth, Botswana has experienced the most remarkable economic performance in the region (Iimi, 2006). Coupled with good governance and political stability, Botswana was able to channel its resources towards development of its institutions and managed to avoid the resource curse.

Faced with the challenge of depletion of commercially viable extraction of diamond deposits, and in a bid to diversify the economy beyond diamonds, Botswana identified value addition as one of its main strategies to transform the economy. The country sought to spread the benefits of the exploitation of diamonds as broadly as possible to other sectors of the economy. The country embraced structural transformation towards manufacturing, a process commonly referred to as industrialisation. Just like other developing countries, Botswana realised that economic development should be accompanied by a process of structural change. This process encompasses shifts in production from low-productive traditional sectors (agriculture) to high-productive modern sectors such as manufacturing. As emphasised by United Nations (2011), the prospects for high and sustained growth in any country largely depend on the degree of structural transformation of the economy. Therefore, industrialisation, which is intended as the shift of the economy from agriculture to manufacturing (Guadagno, 2016), is considered vital for development.

Industrial development is fundamental for economic growth. Literature (Raphael & Gabriel, 2015) shows that rapid industrial growth facilitates attainment of national objectives such as income generation, employment creation and poverty alleviation. According to Mutambi (2011), it is through industrialisation that wealth can be created and high value incomes be realised. As emphasised by Sola et al. (2013), industry and, in particular, the manufacturing sub-sector is considered as the heart of the economy. Owing to its higher capital intensity, technological content and stronger linkages with the rest of the economy, the manufacturing sector has the potential to spearhead growth in all the other sectors of the economy (Gaudagno, 2016). The sector plays a catalytic role in the economy as manufactured goods are not only used as final products, but can be used as primary goods in other sectors (Muchingami, Monametsi & Paradza, 2017). Given the benefits that come with its development, manufacturing is thus widely considered to be the ideal sector to drive development in Africa, as it offers prospects of a growing availability of manufactured products and improved balance of payments, which will stimulate productivity, improve the standards of living of the people and thus spur economic growth (Ajudua & Ojima, 2016).

Taking into account the structural challenges that come with large-scale industrialisation, the Government of Botswana retained a central role in directing the manufacturing sector as the engine of growth. This is because markets alone cannot deliver structural change; hence the state has an important role to play to ensure industrial diversification (Moyo, 2016). With the vision of having diversified, sustainable and globally competitive industries (Government of Botswana, 2014), the attention is directed towards development of a private sector driven economy. Through the Industrial Development Policy of 2014, the Government is proactively promoting value addition and industrialisation in Botswana to the heights of high income countries. As reiterated in Government of Botswana (2016), the country envisions having a competitive manufacturing sector which will produce commercially viable, high value products targeted at the export market by 2036. The Government of Botswana, through National Development Plan 11 (NDP 11), also emphasises domestic and global competitiveness of businesses through technological advancements and relevant industry skills (Government of Botswana, 2011).

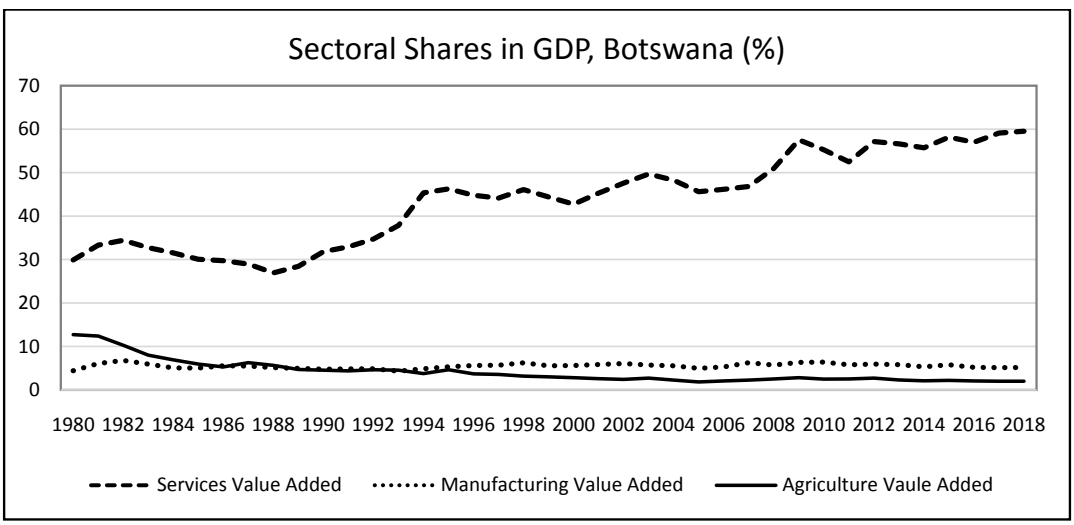
In order to infuse an entrepreneurial culture and foster a conducive environment for global competitiveness among citizen-owned businesses, the Citizen Economic Empowerment (CEE) Policy was formulated (Government of Botswana, 2012). The aim of the CEE Policy is to build capacity for the private sector to grow. On the part of market access and international competitiveness, the National Trade Policy was designed to facilitate free and reliable access to markets for the country's exports (Government of Botswana, 2009). Likewise, Botswana designed the Special Economic Zones Policy to attract a diversified range of manufacturing enterprises which will produce internationally competitive goods and services (Government of Botswana, 2010). The recently formulated National Entrepreneurship Policy also envisages development of the innovative entrepreneurs who can place Botswana among front ranking countries by 2036 (Government of Botswana, 2019). Other policies and strategies targeted towards growth of the manufacturing sector include, among others, the Economic Diversification Drive Strategy and the Private Sector Development Strategy.

Despite the different policies and strategies that have been formulated to advance industrial growth in Botswana, the manufacturing sector has been largely unsuccessful; its contribution to total output has not been very impressive. It is without doubt that Botswana faces a challenge of a shrinking manufacturing sector contribution to gross domestic product (GDP). Two possible explanations may give detail to this poor performance. Firstly, Botswana's manufacturing sector has been dominated by the Botswana Meat Commission; (a parastatal processing beef); which has not done well over the years. Secondly, the exceptional performance of the mining sector swamped the growth of other manufacturing activities in the country for many decades.

As shown in Figure 1, the contribution of the manufacturing sector to (GDP) has remained low and insignificant over the past decades. For instance, the share of the manufacturing sector in percent of real GDP declined from 6.35% at the end of 2009 to 5.16% in

2018. Interestingly since the 1990s, production has been shifting away from agriculture, but mostly into services, rather than manufacturing. Ideally, shares of manufacturing in value added should decrease only after a country has reached a specific level of income per capita, a phenomenon commonly termed as "deindustrialisation". This is normal for developed economies; and it comes as a natural result of sustained economic growth. But for a country that is still building its industrial profile such as Botswana, the reallocation of resources from agriculture to services, rather than manufacturing, may be undesirable.

Figure 1: Sectoral Value Added as Percentage of GDP



Source: Author, World Development Indicators

Therefore, if one thinks of the recent successes of the services sector, the debate about the manufacturing sector as an engine for economic growth may seem quite old and outdated. Similarly, there is no actual evidence that shows how the manufacturing sector varies in relation to other features of the economy of Botswana. Though there are many empirical studies (Haraguchi, Cheng & Smeets, 2016; Karami, Elahinia & Karam, 2019) that have examined the relationship between economic growth and manufacturing, there is little evidence to show the relationship between manufacturing sector growth and other important economic variables. Perhaps identification and proper harmonisation of factors that influence industrial growth are very crucial. This study therefore aims at identifying factors that drive successful manufacturing sector growth in Botswana. Determining the explanatory power of these variables is expected to contribute to the scanty literature and fill the policy and/or knowledge gap that currently exists in the study of industrialisation in Botswana.

The rest of this paper is organised as follows. Section 2 reviews the literature on key drivers of industrial growth, while Section 3 discusses the methodological approach used in the study. Empirical results and discussions are presented in Section 4, while Section 5 presents the conclusions and policy implications.

2. Review of Literature

Literature identifies several factors that drive the performance of the manufacturing sector. Among other factors, financial sector development, human capital development, trade openness and foreign direct investment have been accorded great importance in advancing industrial growth. Extensive literature on how these factors drive successful manufacturing sector performance as evidenced in other countries is presented below.

2.1 Financial Sector Development

According to Eric & Zhongxiu (2017), the financial system comprises a set of instruments, markets and institutions that allow for the flow of money. Financial sector development on the other hand, connotes improvement in the functioning of financial systems (Ewetan & Ike, 2014). As explained by Levine (2004), it involves production of information about possible investments; increased access to financial intermediaries; and better incentives for prudent lending. As a result, financial development broadens available financial services; and hence avails more funds for investment. A more diversified and resilient financial sector should enable the industry to access required funds for production purposes. Similarly, better financial systems increase the likelihood of successful innovation, enhance the rate of growth of productivity and thereby accelerate economic growth (King & Levine, 1993).

Ademola & Marshal (2018) examined the link between financial deepening and performance of manufacturing firms in Nigeria, using an Autoregressive Distributed Lag (ARDL) model. In order to capture financial deepening in the economy, the banking sector and the capital market respectively, the study used the ratio of broad money supply to GDP, the ratio of private sector credit to GDP and the ratio of market capitalisation to GDP. The study established that only financial deepening in the economy positively and significantly impacted performance of the manufacturing sector.

Eric & Zhongxiu (2017) investigated the impact of financial sector development on the growth of the industrial sector in Cameroon. Annual time series data covering the period of 1970 to 2014 was utilised. The study was based on the Autoregressive Distributed Lag (ARDL) cointegration approach. In order to capture financial sector development, the study included an array of variables such as broad money stock as a ratio of GDP, the nominal deposit rate, bank deposits and domestic credit to the private sector. The findings of the study showed that the nominal deposit rate was positively and significantly related to industrial output, confirming the theoretical underpinnings that financial development has an impact of industrial output.

Ewetan & Ike (2014) postulated that financial sector development is usually accompanied by relaxation of the credit access constraint facing the domestic industry. The paper examined the relationship between financial sector development and industrialisation in Nigeria. A multivariate cointegration approach was conducted over the period 1981 to 2011. The ratio of private sector bank credit to GDP and the ratio of broad money stock to GDP were selected to proxy financial sector development. It was found that credit has a significant and positive effect on industrial output; while the ratio of broad money stock to GDP has a negative relationship with industrial output.

2.2 Human Capital Development

Human capital development is considered a major driving force behind industrial development. It is primarily a key driver of competitiveness and innovation in manufacturing since value addition relies upon technical capabilities of individuals and their specialised skills. According to United Nations (2011), the availability of an educated labour force is central to the development of an industrial structure. Therefore, investing in human capital that produces scientifically and technically sound personnel leads to a competitive industrial environment and enhances the attractiveness of local investments (Ejaz, Ullah & Khan, 2015). Investments directed towards the provision of a well-trained labour force are vital in ensuring a sustainable industrialisation process.

Literature (Fessehaie & Rustomjee, 2018) suggests that human capital development provides a terrain for technological upgrading. This qualifies high technical skills as well as production capabilities as prerequisites for competitiveness in the manufacturing sector (COMESA, 2013). According to Samouel & Aram (2016), human capital in the form of sufficient technically and scientifically qualified personnel provides the base for a competitive industrial sector and improves the attractiveness of investments. By using a dynamic model describing the relationship between industrialisation and different determinant factors for 35 African countries over the period 1970 to 2012, Samouel & Aram (2016) show that, indeed, human capital is a clear determinant of industrialisation in Africa. The secondary school gross enrolment ratio was found to be significantly and positively related to the industry value added as a share of GDP.

In their study, Martorano, Sanfilippo & Haraguchi (2017) analysed the drivers of successful industrialisation in developing countries. Two different periods; 1971 to 1990 and 1991 to 2014 were used to account for pre and post trends in manufacturing. A multivariate analysis of manufacturing value added as a regressor and several explanatory variables, including human capital, was undertaken. The results showed that human capital endowments, measured by the number of years of education, are among the key factors contributing to a rapid industrialisation process.

2.3 Trade Openness

Usually measured by the ratio of total trade (exports plus imports) to GDP, trade openness is an indicator of the relative importance of international trade in a country. It strengthens the competitiveness of the country and boosts investment (Tabi & Ondoa, 2011). According to Samouel & Aram (2016), trade openness allows access to large markets which encourage large scale industrialisation. As the scope of the domestic industrial sector expands, unit costs of production may decline thus leading to increased business profits. This is because local manufacturers may have at their disposal cheaper raw materials from the international market. Moreover, trade openness promotes competition which in turn propagates pressure for increased efficiencies and product improvement (Adenutsi, 2007). Increased competition also may motivate domestic firms to take up modern technology. According to Ali, Alam & Islam (2016), openness of the domestic market causes technological progress in that foreign capital goods may have embodied in them better technologies, thus encouraging technology uptake among the local market.

In spite of the benefits that come with it, trade openness may have negative effects on industrial growth. While it increases access to imported inputs at free trade prices; the reduction in import prices may lead to stagnation of the volume of exports as well as expose local manufacturers to foreign competition. This may coerce domestic firms to serve the local market by importing finished products from low-cost countries, rather than making goods locally. As a result, the process of trade liberalisation should be gradual and be accompanied by a strategy of industrial restructuring and upgrading in order to allow firms to prepare for the challenges arising from liberalisation, (United Nations, 2011).

Against this backdrop, different empirical studies have found contradictory results about the impact of trade openness on industrial growth. Advocates for trade openness, Ejaz, Ullah & Khan (2015) postulated that trade augments specialisation in production of commodities with comparative advantage, which results in higher revenue generation for further investments. Their study investigated the impact of political and economic factors on industrial growth for India, Pakistan, Sri Lanka and Bangladesh. The fixed-effect panel regression was conducted for a period ranging from 1990 to 2015, using industry value added as the dependent variable. It was found that trade openness has a significant positive effect on industrial growth, which indicates that it is essential for a country to build ties with other countries in order for it to develop its industrial base.

In their study in which they sought to measure the importance of trade openness in driving productivity, Umoh & Effiong (2013) also show that trade openness has a significant positive impact on manufacturing productivity. The study employed an ARDL cointegration approach to establish this relationship for the period between 1970 and 2008. Adamu & Dogan (2017) also investigated the long run and short run relationship

between industrial production and trade openness in Nigeria during the period 1986 to 2008. The study, which also employed an ARDL bounds testing approach, found that trade openness has a significant and positive impact on industrial production.

In contrast, Otula & Anderu (2015) found that trade openness exhibits an inverse relationship with industrial output in Nigeria, implying that opening the Nigerian economy to the world might not positively influence industrial growth. Hence, the protectionist theory of trade was recommended to safeguard the interest of the existing industry. In another study, Tabi & Ondoa (2011) also found conflicting results about trade openness as a key driver of industrial growth. The study which employed the Error Correction Model approach and used time series data of over 40 years (1967 – 2007) showed that the long term relationship between trade openness (measured as the ratio of total imports and exports to GDP) and industrialisation is not stable and that trade openness negatively affects the manufacturing sector of Cameroon.

2.4 Foreign Direct Investment

Foreign Direct Investment (FDI) is believed to play an important role in reallocating global economic resources and stimulating productive capabilities (Popovici, 2018). It has a vital role in augmenting domestic capital as it does not put pressure on public budgets. In terms of industrialisation, FDI is beneficial through its spill over effects (Ayodele & Tunde, 2017). Technically, it stimulates the host country's industrial growth by transferring technology and knowledge to domestic enterprises (Samantha & Haiyum, 2018). According to Soreide (2001), FDI may contribute to the upgrading of both managerial and technological effectiveness as well as improve human capital which triggers industrialisation. Moreover, an inflow of foreign capital could act positively on growth and exports and consequently reinforce the industrialisation process in a country (Samouel & Aram, 2016).

However, according to Iddrisu, Adam & Halidu (2015), the extent of the impact of FDI on host economies depends on the ability to annex and absorb the benefits that comes with it. As observed by United Nations (2011), one of the challenges facing African countries is how to channel foreign investments into productive sectors, such as manufacturing. The major challenge however is creating a fair playing ground for both domestic and foreign investors. In most cases, the multinationals tend to be too large for domestic firms to compete with, thereby crowding out local firms (Iddrisu, Adam & Halidu, 2015). Furthermore, an increase in imports needed to produce goods by those multinational companies may hamper trade performance (Popovici, 2018).

Empirical studies, however, have found inconclusive results about the impact of FDI on industrial growth. Adegboye, Ojo & Ogunrinula (2016) advocate for the inflow of FDI into the African region. Their study, which examined how the flow of FDI to the

African region has impacted industrial performance, found that FDI is positively and statistically significant in relation to industrial performance. Similarly, Bitzer & Gorg (2005) established that inward FDI is positively associated with domestic productivity at the industry level. Akpan & Eweke (2017) examined the impact of FDI and industrial sector performance on economic growth for Nigeria. The study employed a Vector Autoregressive Regression (VAR) on annual time series data between 1981 and 2015 and found a bi-directional relationship between FDI and industrial sector output. On the other hand, Samantha & Haiyum (2018) investigated the effect of FDI on industrial sector growth for Sri Lanka for the period 1980 to 2016. The study, which employed an ARDL model, failed to establish any significant relationship between FDI and industrial sector growth.

3. Research Methodology

3.1 Analytical Framework

This paper aims at identifying factors that influence industrial growth in Botswana. For meaningful policy insights, the study offers a sector-specific analysis with a focus on the manufacturing sector. As a result, we use manufacturing value added to measure industrial growth in Botswana. By definition, manufacturing value added provides an estimate of the net output of the entire manufacturing sector in the country; that is, the sum of the value added of all manufacturing activities. As such, the basic equation which exemplifies industrial growth and its potential determinants is specified as follows;

$$MVA_t = \alpha_0 + \alpha_1 CRED_t + \alpha_2 EDU_t + \alpha_3 TOP_t + \alpha_4 FDI_t + \alpha_5 GFCF_t + \alpha_6 INF_t + \alpha_7 EXR_t + e_t \quad (1)$$

Where; MVA represents industrial growth; and its potential drivers include financial sector development (CRED), human capital development (EDU), trade openness (TOP), foreign direct investment (FDI), gross fixed capital formation (GFCF), the inflation rate (INF) and the official exchange rate (EXR).

3.2 Data Sources

The study uses yearly time series data for the period of 33 years (1983 to 2015) to estimate factors that drive industrial growth in Botswana. World Bank Development Indicators (2019) were used as the main data source; except for data on education which was mainly collected from Statistics Botswana Secondary Education Statistics Briefs. Table 1 provides a brief description of selected variables.

Table 1: Data Description

Variable	Description
Dependent Variable	
MVA	*Manufacturing value added as % of GDP; proxy for industrial growth*
Key Drivers of Industrial Growth	
CRED	*Domestic credit to the private sector as % of GDP; proxy for financial development*
EDU	*Secondary school gross enrolment ratio; proxy for human capital development*
TOP	*Total trade as % of GDP; proxy for trade openness*
FDI	*Foreign Direct Investment, net inflows as % of GDP*
Control Variables	
GFCF	*Gross Fixed Capital Formation, as % of GDP*
INF	*Inflation, consumer prices, annual %*
EXR	*Official exchange rate (Local Currency Unit per US$, period average)*

3.3 Econometric Analysis

3.3.1 Stationarity Test

It is imperative to determine the order of integration of selected variables before conducting any econometric analysis. This is also important in examining the potential presence of cointegration among the variables. There are a number of statistical tests, commonly known as unit root tests, that can be employed to determine the order of integration of selected variables. This study employs the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests to ascertain the stationarity of variables to be used in the model. As shown in Table 2, only MVA and FDI are stationary at levels I(0), while the rest of the variables are stationary after first difference I(1). Since the selected variables are a combination of I(0) and I(1), the Autoregressive Distributed Lag (ARDL) - Bounds Test is the appropriate model to investigate the key drivers of industrial growth.

Table 2: Unit Root Tests

	AUGMENTED DICKEY-FULLER TEST		PHILLIPS-PERRON TEST	
VARIABLE	**I(0)**	**I(1)**	**I(0)**	**I(1)**
MVA	*-3.568(0.012)***	*-6.934(0.000)****	*-3.719(0.008)****	*-7.489(0.000)****
CRED	*0.614(0.988)*	*-5.058(0.000)****	*0.512(0.985)*	*-5.080(0.000)****
EDU	*-0.617(0.463)*	*-3.124(0.003)****	*-1.476(0.534)*	*-6.779(0.000)****
TOP	*-1.792(0.378)*	*-5.623(0.000)****	*-1.817(0.366)*	*-5.663(0.000)****
FDI	*-4.013(0.004)****	*-7.406(0.000)****	*-3.988(0.004)****	*-8.697(0.000)****
GFCF	*-1.499(0.521)*	*-4.182(0.003)****	*-2.399(0.143)*	*-4.882(0.000)****
INF	*-1.431(0.555)*	*-2.919(0.054)***	*-2.399(0.149)*	*-8.515(0.000)****
EXR	*1.293(0.998)*	*-4.291(0.002)****	*2.055(0.999)*	*-4.104(0.004)****

*Notes: *, **, *** indicate significance at 10%, 5% & 1%, respectively.*
P-values are in parenthesis.

3.3.2 Optimal Lag Length Selection

Prior to estimating an autoregressive model such as an ARDL, it is important to determine the autoregressive lag length. Commonly referred to as optimal lag length selection, this step is crucial because including too many lagged values reduces the degrees of freedom and may increase the likelihood of multicollinearity. As popularly adopted in most economic studies, this study employs the Akaike Information Criterion (AIC) to determine the optimal lag length, with smaller values of the information criterion being preferred as shown in Table 3.

Table 3: Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-8.506057	NA*	0.166057	1.031629	1.398063*	1.153091
1	-7.217160	1.852790	0.163863	1.013573	1.425811	1.150218
2	-5.564514	2.272389	0.158268*	0.972782*	1.430825	1.124610*
3	-5.553352	0.014650	0.169634	1.034584	1.538431	1.201595
4	-4.898269	0.818853	0.174946	1.056142	1.605793	1.238336

*Notes: * indicates lag order selected by the criterion*
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike Information Criterion
SC: Schwarz Information Criterion
HQ: Hannan-Quinn Information Criterion

3.3.3 ARDL Bounds Test for Cointegration

Cointegration testing is imperative in establishing whether a model displays any significant long run relationship between the variables. As developed by Pesaran et al. (2001), the ARDL bounds testing approach has become an important instrument for exploring cointegration over the past decade. This approach supersedes others because it can be used irrespective of the order of integration of the series. Similarly, the approach can be used to derive both long run and short run dynamics of the model. As displayed in Table 4, the computed F-statistic is greater than the upper bound critical value; hence we reject the null hypothesis of no cointegration. This means that there is a cointegrating relationship between the dependent variable and explanatory variables; hence the ARDL model can be used to estimate the long run relationship between the dependent variable and explanatory variables.

Table 4: F-Bounds Test Results

Critical Value	Lower Bound Value: I(0)	Upper Bound Value: I(1)
1%	2.73	3.9
5%	2.17	3.21
10%	1.92	2.89
F-statistic value	9.631	
k	7	

3.3.4 ARDL Model Specification

Since the F-Bounds tests lead to the conclusion that there is cointegration among the variables, the estimated model can therefore be used to establish the long run relationship and the short-run dynamics using an error correction regression of an ARDL model. The empirical model is therefore specified as follows:

$$\begin{aligned}\Delta(MVA_t) = {} & \partial_0 + \sum_{i=1}^{n1} \alpha_{1i}\Delta(MVA_{t-i}) + \sum_{i=1}^{n2} \alpha_{2i}\Delta(CRED_{t-i}) + \sum_{i=1}^{n3} \alpha_{3i}\Delta(EDU_{t-i}) + \sum_{i=1}^{n4} \alpha_{4i}\Delta(TOP_{t-i}) \\ & + \sum_{i=1}^{n5} \alpha_{5i}\Delta(FDI_{t-i}) + \sum_{i=1}^{n6} \alpha_{6i}\Delta(GFCF_{t-i}) + \sum_{i=1}^{n7} \alpha_{7i}\Delta(INF_{t-i}) + \sum_{i=1}^{n8} \alpha_{8i}\Delta(EXR_{t-i}) \\ & + \beta_1(MVA_{t-1}) + \beta_2(CRED_{t-1}) + \beta_3(EDU_{t-1}) + \beta_4(TOP_{t-1}) + \beta_5(FDI_{t-1}) \\ & + \beta_6(GFCF_{t-1}) + \beta_7(INF_{t-1}) + \beta_8(EXR_{t-1}) + \varepsilon_t \end{aligned} \quad \textbf{(2)}$$

Where; Δ is the difference operator, ∂ is a constant, α and β represent the short run and long run coefficients to be estimated respectively, t represents the time period, n1, …. n8 represent the optimal lag lengths and ε is the random disturbance term. All other variables are as previously defined.

4. Empirical Results and Discussions

Before analysing the relationship between industrial growth and explanatory variables, we first examine the statistical properties and diagnostic results of our estimated regression. As reported in Table 5 below, the estimated model is, overall, significant. This is as shown by the F-statistic of 15.831, which is significant at 1% level of significance; demonstrating that all the explanatory variables have a joint effect on the regressand. The estimated model also generated high values of the R-squared and the Adjusted R-squared. In a model, the R-squared measures the deviation in the dependent variable that is explained by explanatory variables. Our results show that 98 percent of the variation in the manufacturing value added is explained by the independent variables.

Furthermore, it is evident that there is no presence of heteroscedasticity in the estimated regression results. This is shown by the Breusch-Pagan-Godfrey (BPG) probability value of 0.804 percent, which is greater than 5%, implying that we fail to reject the null hypothesis of no heteroscedasticity in the model. The Breusch-Godfrey (B-G) LM Test, which is used to test for the presence of serial correlation, was also conducted. We failed to reject the null hypothesis of no serial correlation, since the B-G Serial Correlation LM probability value was greater than 5%, inferring that there is no serial correlation in the model. We also conducted the Ramsey RESET Test over the estimated regression results to check for any specification error. The probability value of the test was 0.181, which is greater than 5%; implying that the model is correctly specified. The Jarque-Bera Test for normality also showed that the series is normally distributed as the probability value was greater than 5%.

Table 5: Statistical Properties and Post Diagnostic Results

Statistical properties of results		Post diagnostic test results	
R-squared	0.988	BPG Heteroskedasticity (F-stat)	0.628
Adjusted R-squared	0.926	BPG Heteroskedasticity Prob.	0.804
F-statistic	15.831	B-G Serial Correlation LM (F-stat)	3.046
Prob. (F-statistic)	0.003	B-G Serial Correlation LM Prob.	0.189
Durbin-Watson stat	3.381	Ramsey RESET (F-stat)	2.623
Akaike Info Criterion		Ramsey RESET Prob.	0.181
ARDL Best Model	(3,3,3,3,3,1,1,3)	Jargue-Bera Stat	3.026
		Jargue-Bera Prob.	0.220

4.1 ARDL Model Estimates

As reported in Table 6, the long run estimates of the Autoregressive Distributed Lag (ARDL) model revealed that a unit increase in domestic credit to the private sector as a ratio of GDP leads to a 0.252 percent increase in manufacturing value added as a percent of GDP. This result implies that credit is positively and significantly related to manufacturing value added. This finding empirically qualifies development of the banking industry as a key driver of manufacturing sector output growth. That is, financial sector development directly influences industrial growth. As such, increased access to funds from financial institutions should propel growth of the manufacturing sector. The result confirms the findings of Ewetan & Ike (2014), who found that financial sector development positively influences growth of the manufacturing sector.

The results also show that a unit increase in secondary school gross enrolment ratio will lead to 0.135 percent increase in manufacturing value added as a percent of GDP in the long run. The coefficient for this variable is positive and significant at 1 % level, signifying a direct relationship between human capital development and manufacturing sector growth. The result conforms to the expectation as well as findings from the literature (Samouel & Aram, 2016) that human capital development is a major driving force behind industrial development. This result implies that increased investments into the education sector and intensified skills development should be able to boost growth of the manufacturing sector in particular.

The ARDL results further show that industrial growth is influenced considerably by trade openness in the long run. A unit increase in the ratio of total trade to GDP will induce a 0.067 percent increase in manufacturing value added as a percent of GDP. This result is consistent with the findings of Umoh & Effiong (2013) that trade openness has a positive and significant impact on industrial growth. As trade liberalisation is characterised by its potential to expand the domestic industrial base, promote competition and stimulate technological advancements, it is likely that it may explain growth patterns in the manufacturing sector. Given the positive impact, trade policies geared towards an open economy should enhance growth of the manufacturing sector.

The ratio of foreign direct investment net inflows to GDP is insignificant, implying that FDI does not vary with industrial growth in the long run. This result is inconsistent with the findings of the literature that FDI positively and significantly influences industrial growth. A plausible explanation for this result is that, in the long run, foreign investors may crowd out local firms and the local industry may not realise the expected benefits. This may also be due to the fact that most FDI in Botswana goes into mining, thus not making much of an impact on the manufacturing sector.

In order to control for variables that may have an impact on industrial growth except for the four (4) identified key drivers, we have included a set of factors including gross fixed capital formation, inflation and the exchange rate. Our results indicate that gross fixed

capital formation, which is normally used as a proxy for capital, is directly linked with industrial growth. A unit increase in the ratio of gross fixed capital formation to GDP will lead to a 0.164 percent increase in manufacturing value added as a percent of GDP in the long run. On the other hand, inflation does not have any impact on industrial growth in the long run, as shown by an insignificant coefficient. Though literature (Otula & Anderu, 2015) depicts an indirect and significant relationship between inflation and manufacturing value added, our results find a weak evidence for this. The coefficient for the exchange rate variable is significant and negative, suggesting that an increase in the exchange rate will lead to a decline in the manufacturing value added as a percentage of GDP. A plausible explanation for this is that since local manufacturers import most of their raw materials, a depreciation of the exchange rate means imports become expensive including raw materials leading to low production.

Table 6: Long Run Estimates
Dependent Variable: MVA

Variable	Coefficient	Std. Error	t-statistic	Prob.
CRED	0.252	0.044	5.714	0.002***
EDU	0.135	0.029	5.225	0.003***
TOP	0.067	0.022	3.063	0.028**
FDI	0.046	0.029	1.544	0.183
GFCF	0.164	0.028	5.916	0.002***
INF	-0.092	0.053	-1.743	0.142
EXR	-2.041	0.327	-6.24	0.002***
C	-14.092	4.076	-3.457	0.018**

Note: *, **, *** indicate significance at 10%, 5% & 1%, respectively

The results of the short run dynamic coefficients are reported in Table 7 below. The error correction term, ECM (-1), which is the most important parameter in the short run model, is well specified and correctly signed. This parameter captures the speed of adjustment to equilibrium; that is, it shows how quickly or slowly errors in the short run are corrected back to equilibrium in the long run. The coefficient of ECM (-1) is negative (-0.20) and significant at 1% level of significance (0.000), suggesting the existence of a co-integrating relationship between the independent variables and the dependent variable.

In the short-run, the coefficient of domestic credit to the private sector remains positive and significant after second period lag, implying that financial sector development has a direct relationship with manufacturing sector growth. Human capital development also has a direct relationship with industrial growth in the short run, as symbolised by a

positive and significant coefficient of the ratio of secondary school enrolment. Foreign direct investment, which was insignificant in the long run, has a positive and significant effect on manufacturing value added even after first and second period lags. However, trade openness does not vary with manufacturing value added in the short run.

Table 7: Short Run Estimates
Dependent Variable: MVA

Variable	Coefficient	Std. Error	t-statistic	Prob.
ΔMVA(-1)	0.655	0.061	10.750	0.000
ΔMVA(-2)	-0.123	0.044	-2.758	0.039
ΔCRED	-0.013	0.012	-1.047	0.343
ΔCRED(-1)	-0.184	0.013	-14.687	0.000
ΔCRED(-2)	0.068	0.011	6.226	0.002***
ΔEDU	0.059	0.007	9.039	0.000***
ΔEDU(-1)	-0.056	0.007	-8.361	0.000
ΔEDU(-2)	-0.033	0.005	-6.454	0.001
ΔTOP	-0.051	0.004	-11.708	0.000
ΔTOP(-1)	-0.091	0.006	-15.023	0.000
ΔTOP(-2)	-0.072	0.005	-14.270	0.000
ΔFDI	0.143	0.011	13.547	0.000***
ΔFDI(-1)	0.142	0.010	14.027	0.000***
ΔFDI(-2)	0.206	0.011	18.989	0.000***
ΔGFCF	0.334	0.019	16.717	0.000***
ΔINF	-0.139	0.009	-15.202	0.000
ΔEXR	-0.278	0.050	-5.547	0.003
ΔEXR(-1)	1.371	0.090	15.184	0.000***
ΔEXR(-2)	0.259	0.056	4.628	0.006***
ECM(-1)	-0.202	0.013	-15.012	0.000***

Notes: *, **, *** indicate significance at 10%, 5% & 1%, respectively

5. Conclusion and Recommendations

This study examined key drivers of industrial growth in Botswana, with emphasis on the growth of the manufacturing sector. Based on the Autoregressive Distributed Lag (ARDL) model, the paper established that the ratio of domestic credit to the private sector relative to GDP has a direct and significant impact on manufacturing value added both in the long run and short run. Hence, it is concluded that manufacturing sector growth is driven by financial sector development in Botswana. Since financial sector development involves better incentives for prudent lending, it is imperative that policy makers design and ensure proper implementation of financial sector development strategies that can help ease access to credit for manufacturing enterprises in the country. Policy makers may consider using existing or new development finance institutions (DFIs) to extend financial assistance to the manufacturing industry.

With regards to human capital development, the study recognised that the secondary school gross enrolment ratio is directly and significantly related to manufacturing value added as a percent of GDP in the long run and in the short run. It is, therefore, concluded that human capital development has a significant impact on the performance of the manufacturing sector in Botswana. Manufacturing sector competitiveness and innovation relies on high technical skills which are vital for production of quality goods that can succeed in the face of international market competition. There is need, therefore, for policy makers to build synergies between human resource development policies and innovation policies so as to provide a conducive environment for skills acquisition, innovation and technological advancements in the manufacturing sector.

However, the ratio of total trade to gross domestic product only varied with manufacturing value added as a percent of GDP in the long run. Trade openness displayed a direct and significant relationship to manufacturing value added only in the long run. It is thus concluded that industrial growth is driven by trade openness only on a long term basis. A plausible explanation for this is that as firms enter the foreign market for the first time, they may be prone to challenges arising from liberalised trade. As a result, it may take time until they are familiar with the process of international trade. Usually, cheaper import prices may entice manufacturers to buy finished goods and forgo their operations which in the end may stifle the volume of exports. As a result, there is need for trade policies and export promotion strategies to reinforce productivity and value addition in the manufacturing sector, so as to make local firms internationally competitive.

Foreign direct investment net inflows did not vary with manufacturing value added in the long run. It is only in the short run that a positive and significant relationship was established between foreign direct investment and manufacturing value added. This therefore qualifies foreign direct investment as a key driver of industrial growth in Botswana. It is, therefore, recommended that government should create a conducive environment that could entice multinationals to invest in the local manufacturing industry. The promotion of FDI should be target-specific to manufacturing activities, in order to realise the desired impact on the sector. However, it should be in the interest of policy makers to protect the local industry from foreign competition.

References

Adamu, F.M., & Dogan, E. (2017). Trade Openness and Industrial Growth: Evidence from Nigeria. *PANOECONOMICUS*, Vol. 64, No. 3, pp. 297-314.

Adegboye, F.B., Ojo, J.A.T., & Ogunrinola, I.I. (2016). Foreign Direct Investment and Industrial Performance in Africa. *The Social Sciences*, Vo. 11, No. 24, pp. 5830-5837.

Ademola, A.F., & Marshall, O.T. (2018). Financial Deepening and the Performance of Manufacturing Firms in Nigeria. *Canadian Social Science*, Vol. 14, No. 6, pp. 87-96. DOI: 10.3968/10395.

Adenutsi, D.E. (2007). Effects of Trade Openness and Foreign Direct Investment on Industrial Performance in Ghana. MPRA Paper No. 37116 (10 May 2007).

Ajudua, E.I., & Ojima, D.J.P. (2016). Modelling the Determinants of Output in the Nigerian Manufacturing Sector. *International Journal of Innovative Finance and Economics Research*, Vol. 4, No. 1, pp. 1–12.

Akpan, E.S., & Eweke, G.O. (2017). Foreign Direct Investment and Industrial Sector Performance: Assessing the Long-Run Implication on Economic Growth in Nigeria. *Journal of Mathematical Finance*, Vol. 7, pp. 391-411. https://doi.org/10.4236/jmf.2017.72021.

Ali, S., Alam, K.J., & Islam, S. (2016). Effects of Trade Openness and Industrial Value Added on Economic Growth in Bangladesh. *International Journal of Sustainable Development Research*, Vol. 2, No. 3, pp. 18-23. doi: 10.11648/j.ijsdr.20160203.11.

Ayodele, M.A., & Tunde, M.G. (2017). Industrialisation Drivers, Causality and Economic Development in Nigeria. *Greener Journal of Economics and Accountancy*, Vol. 6, No. 1, pp. 001-011, https://doi.org/10.15580/GJEA.2017.1.021617027.

Bitzer, J., & Gorg, H. (2005). The Impact of FDI on Industry Performance. *Lever Hulme Centre for Research on Globalisation and Economic Policy*, Research Paper No. 2005/9.

COMESA. (2013). Unlocking the potential of the manufacturing sector in the COMESA region. *COMESA Business Council*. Presented at the 1st COMESA Manufacturers' Regional Dialogue, Kigali, Rwanda.

Ejaz, Z., Ullah, M.A., & Khan, M.U. (2015). Determinants of Industrial Growth in South Asia: Evidence from Panel Data Analysis, 97-110.

Eric, D.D., & Zhongxiu, Z. (2017). Financial Sector Development and Industrialisation in Cameroon (1970-2014). *Journal of Business and Economics*, Vol, 8, No. 1, pp. 105-114.

Ewetan, O.O., & Ike, D.N. (2014). Does Financial Sector Development Promote Industrialisation in Nigeria*? International Journal of Research in Social Sciences*, Vol. 4, No. 1, pp. 17-25.

Fessehaie, J., & Rustomjee, Z. (2018). Resource-based Industrialisation in Southern Africa: Domestic Policies, Corporate Strategies and Regional Dynamics. *Development Southern Africa*, Vol. 35, No. 3, pp. 404-418.

Government of Botswana. (2009). National Trade Policy for Botswana, *Ministry of Trade and Industry*, July 2009.

Government of Botswana. (2010). Special Economic Zones (SEZ) Policy for Botswana, *Ministry of Trade and Industry*, September 2010.

Government of Botswana. (2012). The Citizen Economic Empowerment (CEE) Policy for Botswana, *National Assembly*, Government Paper No 1 of 2012.

Government of Botswana. (2014). Industrial Development Policy (IDP) for Botswana, *Ministry of Trade and Industry*, 30 July 2014.

Government of Botswana. (2016). Vision 2036: Achieving Prosperity for All, *Vision 2036 Presidential Task Team*, July 2016.

Government of Botswana. (2017). National Development Plan 11, *Ministry of Finance and Economic Development*, 10 April 2017.

Government of Botswana. (2019). National Entrepreneurship Policy (NEP) for Botswana, *Ministry of Investment, Trade and Industry*, August 2019.

Guadagno, F. (2016). The Determinants of Industrialisation in Developing Countries, 1960-2005. *UNI-MERIT* Working Paper No. 31.

Haraguchi, N., Cheng, C.F.C., & Smeets, E. (2016). The Importance of Manufacturing on Economic Development: Has this Changed? *UNIDO, Department of Policy Research and Statistics,* Working Paper No. 1 of 2016.

Iddrisu, A., Adam, B., & Halidu, B.O. (2015). The Influence of Foreign Direct Investment (FDI) on the Productivity of the Industrial Sector in Ghana. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 5, No. 3, pp.1-13.

Iimi, A. (2006). Did Botswana Escape the Resource Curse? *International Monetary Fund*, Working Paper No. 138.

Karami, M., Elahinia, N., & Karam, S. (2019). The Effect of Manufacturing Value Added on Economic Growth: Empirical Evidence from Europe. *Journal of Business, Economics and Finance,* Vol. 8, No. 2, pp. 133-146.

King, R.G., & Levine, R. (1993). Finance, entrepreneurship and growth. *Journal of Monetary Economics*, Vol. 32, No. 3, pp. 513-737.

Levine, R. (2004). Finance and Growth: Theory and Evidence. *National Bureau of Economic Research*, Working Paper No. 10766, September 2004.

Martorano, B., Sanfilippo, M., & Haraguchi, N. (2017). What Factors Drive Successful Industrialisation? Evidence and Implications for Developing Countries. *United Nations Industrial Development Organization*, Department of Policy, Research and Statistics, Working Paper 7/2017.

Moyo, T. (2016). Promoting Industrialisation in Mauritius, South Africa and Botswana: Lessons for the Future. *Africa Development*, Vol. 41, No. 3, PP. 139-163.

Muchingami, L., Monametsi, G.L., & Paradza, I. (2017). Bank Lending and Manufacturing Sector Growth in Zimbabwe. *International Journal of Innovative Research in Sciences, Engineering and Technology*, Vol. 6, No. 4, pp. 5119-5125.

Mutambi, J. (2011). Stimulating Industrial Development in Uganda through Open Innovation Business Incubators. *Blekinge Institute of Technology*, Licentiate Dissertation Series No. 2011:10.

Otula, J.A., & Anderu, K.S. (2015). An Assessment of the Determinants of Industrial Sector Growth in Nigeria. *Journal of Research in Business and Management*, Vol. 3, No. 7, pp. 01-09.

Pesaran, M.H., Shin, Y., & Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships, *Journal of Applied Econometrics*, Vol. 16, No. 3, pp. 289-326.

Popovici, O.C. (2018). The Impact of FDI on EU Export Performance in Manufacturing and Services: A Dynamic Panel Data Approach. *Romanian Journal of Economic Forecasting*, Vol. 21, No. 1, pp. 108-123.
Raphael, A.I., & Gabriel, A.A. (2015).

Effect of Financial Sector Development on Manufacturing Output Growth in Nigeria (1986-2012): A Vector Auto Regression Approach. *Journal of Applied Economics and Business Research*, Vol. 5, No. 1, pp. 35-55.

Samantha, N.P.G., & Haiyum, L. (2018). The Effect of Foreign Direct Investment on Industrial Sector Growth: Evidence from Sri Lanka. *Journal of Asian Development*, Vol. 10, No. 10, pp. 88-106.

Samouel, B., & Aram, B. (2016). The Determinants of Industrialisation: Empirical Evidence for Africa. *European Scientific Journal*, Vol. 12, No. 10, pp. 219-239, https://doi.org/10.19044/esj.2016.v12n10p%p.

Sola, O., Obamuyi, T.M., Adekunjo, F.O., & Ogunleye, E.O. (2013). Manufacturing Performance in Nigeria: Implications for Sustainable Development. *Asian Economic and Financial Review*, Vol. 3, No. 9, pp. 1195-1213.

Soreide, T. (2001). FDI and Industrialisation: Why technology transfer and new industrial structures may accelerate economic development. CMI Working Paper No. 3.

Tabi, H.N., & Ondoa, H.A. (2011). Industrialisation of the Manufacturing Sector and Trade Opening in Cameroon. *Research in World Economy*, Vol. 2, No. 1, pp. 58-68.

Umoh, O.J., & Effiong, E.L. (2013). Trade Openness and Manufacturing Sector Performance in Nigeria. Margin: *Journal of Applied Economic Research*, Vol. 7, No. 2, pp. 147-169. https://doi.org/10.1177/0973801013483505.

United Nations. (2011). Fostering Industrial Development in Africa in the New Global Environment. Economic Development in Africa Report 2011. Special Issue.

World Bank. (2019). World Development Indicators 2019, *World Bank*, Washington D.C., USA.

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