Manufacturing Sector and Economic Growth in South Africa: A Time Series Test of Kaldor's First Growth Law

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Abstract: Recently, South Africa has experienced a slow economic growth coupled with population growth outpacing economic growth. To curb the socio-economic problems brought by this situation, more, better and sustainable jobs need to be generated. According to 'engine of growth' hypothesis, the manufacturing sector is touted as an important sector in this regard but it was found out that matched with other economic sectors this sector is not performing well in South Africa. Given the limited amount of literature available on this is issue, it is the intention of this study to contribute to this research gap by investigating the relationship between the manufacturing sector and economic growth in order to test Kaldor's first growth law in South Africa. As contribution to literature, this paper employed the Vector Error Correction to estimate the annual time series data from 1980 to 2016 obtained from World Bank. The empirical investigation revealed that manufacturing sector proxied by the manufacturing output has a positive and significant coefficient which confirmations that the sector contributes positively towards economic growth. The study recommends that the South African policy makers should consider advocating for strengthening and promoting this sector. Policies should be geared towards creating the environment which is more conducive for business expansion and investing in capital formation which will allow more job creation.

Keywords: Economic growth, Manufacturing sector, South Africa, Vector error correction model

1. Introduction

Industrialisation has attracted considerable interest in development economies in recent times. It is generally expected that it can play a role of a catalyst of diversification and transformation of the economy which leads a country to path of been self-sufficient. The proponents of the industrialised-led growth are of the opinion that it enables a country to exploit its factor endowment. The argument is that the route of industrialisation provides any country with a good advantage by adding value in terms of converting its raw materials into finished products; an endeavour perceived as noble for economic growth, sustainability and development of any economy. Most of the empirical studies are of the view that the manufacturing sector has a full potential of causing a turnaround towards the development of the economy therefore it plays in the health of an economy (Kniivilä 2007; Liveris 2012). This was mostly proven by some of the Asian Tigers who relied on manufacturing-led growth. In the case of South Africa all these advantages are further embellished by its proximity to the rest of Africa since this gives it a potential major boon for the manufacturing sector. At this point in time the continent is the fastest growing region in the world, therefore, South Africa stands a chance to grasp the opportunity to supply the continent (Ngulube, 2014).

This echoed by Lee & Mckibbin (2013) who maintains that in particular, during the adjustment the economy to higher services productivity growth, there is a significant expansion of the durable manufacturing sector that is required to provide the capita stock that accompanies the higher aggregate economic growth rate. This is particularly important for the aggregate adjustment in capital goods exporting economies such as South Africa. Zalk (2014) is of the opinion that as South Africa ponders its chronic unemployment problem, it is useful to set out a framework for thinking through the contribution of the manufacturing sector to growth and the generation of employment. In the same vein (Bhat 2014) argues that manufacturing is an export driver and it creates employment and business opportunities. Its continued growth is an absolute necessary for forward movement in economic development it has it been illustrated in several countries Japan, South Korea and China. Their growth was based on development of infrastructural facilities, encouragement to enterprises and creation new entrepreneurship, availability finance, and also on research and development particularly innovation in manufacturing.

The South African manufacturing sector is "at a crossroads" and there is a need for the country to reassess its strategy in relation to this sector. It has been note that the sector has been in a state of decline, facing challenges around productivity, costs, labour issues, skills shortages, efficiency and new technology. The manufacturing purchasing managers' index has averaged 49.7 in the first 10 months of 2015, indicative of a struggling economy as any reading below 50 reflects contraction (Makhene, n.d.). Similarly, Trading Economics (n.d.) points out that manufacturing production in fell 1.3% year-on-year in March of 2018, following a downwardly revised 0.5% gain in the previous month and well below market expectations of a 1% rise. This was the first descent since September of 2017, as output decreased in the mining sector.

As Szirmai (2012) pointed out, manufacturing has been important for growth in developing countries, but not all expectations of the 'engine of growth hypothesis' are borne out by the data. Given this perception, it is the intention of this study to contribute to this research gap by employing time series data to investigate the relationship between the manufacturing sector and economic growth in order to test Kaldor's first growth law in South Africa. This study also envisioned to contribute to the debate and policy imperatives around this issue. The major objective is therefore to examine the role of manufacturing sector on economic growth in South Africa and the rest of the paper is organised as follows: Section 2 focuses on the literature review which covers both the theoretical and perspective of human capital investment and growth. Section 3 the presents the empirical framework, that is data and the model used for analysis, section 4 reports and discusses the empirical results obtained from section 3 and section 5 is the conclusion.

2. Literature Review

The emergence of manufacturing in developing countries was mainly driven by theoretical and empirical evidence for the proposition that industrialisation acts as an engine of growth. This proposition is based on Kaldor's (1966) first growth law which state that manufacturing is the engine of GDP growth. The law states that the growth of the GDP is positively related to the growth of the manufacturing sector. This is perhaps better stated in terms of GDP growth being faster the greater the excess of growth of industrial growth relative to GDP growth: that is when the share of industry in GDP is rising. Based on this law Cantore *et al*. (2017) argue that Kaldor's 'engine of growth' hypothesis advances the strengthening of the manufacturing sector, even if the sector offers no comparative advantage in the initial stage of development. The hypothesis was based on Kaldor's study on the impact of the manufacturing industry on the growth in the analysis he conducted on 12 countries between 1952-1954 and 1963-1964 which determined that the impact of the growth rate of manufacturing industry on the GDP is at a level of 61%.

That been the case, literature reveals that there is a mixture of performance and contributions of the manufacturing in different countries. Szirmai and Verspagen (2015) found that it has rather a moderate positive impact on growth but found a thought-provoking interaction effects with education and income gaps. Furthermore, in a comparison of the sub periods, it gave them the impression that since 1990, manufacturing is becoming a more difficult route to growth than before. In a more positive conclusion, the Department of Trade and Industry (DTI) and Board of Investments (BOI) of Philippines (DTI and BOI 2018), argues that the sector encompasses more than half of the Philippines's industrial sector and accounts for almost a quarter of its Gross Domestic Product (GDP). From an annual growth rate of 5.4% in 2012, the sector grew by 10.5% in 2013 and 8.1% in 2014 and its growth was felt throughout other sectors of the economy. The manufacturing industries have higher employment, income and output multipliers relative to the agriculture and services sectors. It also promotes stronger inter-industry and inter-sectoral linkages, firm productivity, technological development and innovation.

On the contrary, Rahardja *et al*. (2012) indicate that Indonesia's manufacturing sector which was a star performer, since the Asian crisis of 1997-98 has been under-performing both regional peers and other sectors of the economy. But, after a period of financial, economic and political crisis in the late 1990s, manufacturing activities fell into a 'growth recession' and contributed considerably less towards GDP growth. This decline is in sharp contrast to other manufacturing sectors in the region. Together with Malaysia and Thailand, Indonesia was considered one of the "new Asian Tigers" in the 1990s. These are the countries that had experienced rapid economic growth driven by the fast pace of industrialisation. It is generally agreed that there is need to revitalise Indonesian manufacturing, but debate centres on just how this is best achieved.

Rahardja *et al*. (2012) analysed the contribution of different economic sectors, namely, agriculture, manufacturing and services sectors to economic growth in China and India. Each sector was found to have a strong, positive and significant linear relationship with economic growth in both countries. However, the contribution of economic sectors to economic growth differs in China and India. Manufacturing sector contributes the highest to China's economic growth while services sector is the highest contributor to India's economic growth. A similar study by Hussin and Ching (2013) revealed that correlation analysis indicated that agriculture sector, manufacturing sector and service sector had positive relationship with GDP per capita in Malaysia and China. Their results also demonstrated that services sector generated the highest contribution to Malaysia's economic growth while manufacturing sector provided the biggest contribution to China's economic growth.

Another evidence of the influence of the manufacturing sector is the performance of the Indonesian economy has recorded relatively strong average growth over a number of decades. According to Elias and Noone (2011), a considerable structural change has taken place over this time, with Indonesia becoming increasingly industrialised and integrated into the global economy. With plans for substantial infrastructure spending over the next several years and favourable demographics, the Indonesian economy is widely expected to continue to grow at a strong pace over the next decade. This was achieved through a gradual process of industrialisation. Elias and Noone (2011) point out that urbanisation began in the late 1960s, and accelerated in the 1980s as falling oil prices saw the Indonesian government focus on diversifying away from oil exports and towards manufactured exports.

Likewise, Olagbaju *et al*. (2016) show that Nigeria has realised that economic development requires growth with structural change. They argue that productivity potentials are found within the manufacturing segment of the industrial sector, which could translate into the much needed growth and employment opportunities. The transfer of resources from agriculture to manufacturing provides a structural change bonus. Furthermore, Szirmai (2008) found that between 1950 and 2005 the sectoral productivity levels in 19 Latin American and Asian economies, value added in manufacturing was consistently much higher than in agriculture. A puzzling finding was that in post-war Latin America, value added per worker in services was higher than in manufacturing. This suggests that the structural change bonus for services might have been even higher than that manufacturing exceeded those in services. The implication is that the structural change bonus argument focuses on the dynamics of sectors hence manufacturing is assumed to be more dynamic than other sectors.

3. Research Methods

In order to investigate the relationship between the manufacturing sector and economic growth in South Africa the study employed Vector error correction model (VECM) technique to analyse an annual time series data traversing over a period from 1980-2016. The model of the study is based on Kaldor's first law of growth referred to as the 'engine of growth hypothesis' expressed the hypothesis as follows:

$$q = \alpha_1 + \alpha_2 m \tag{1}$$

where q = GDP and m manufacturing output. To be in line with the hypothesis the coefficient (α_2) is expected to be positive and less than a unity suggesting that the overall growth rate of the economy is associated with the excess of the growth rate of manufacturing output over the growth rate of non-manufacturing output (Olamade & Oni 2016).

In order to avoid the problem of spurious feedback relations arising, for example, from omitted variables omitted variables bias (Kirchgässner and Wolters 2007), three more variables, namely, foreign direct investment, exports and exchange rate are added into the system. Data on all variables is obtained from the World Bank and the expanded linear form of Equation 1 is presented as follows:

$$GDP_t = \alpha_0 + \alpha_1 EXCH_t + \alpha_2 EXP_t + \alpha_3 FDI_t + \alpha_4 MNFC_t + \varepsilon_t \tag{2}$$

where, GDP denotes Gross Domestic Product which is used as a proxy for economic growth. It was noted from literature review that some of the studies showed that there was a challenge in empirical analyses of the manufacturing-growth link as how to measure the link econometrically, henceforth some remained theoretical. In order to curb this problem this study used manufacturing output (value added); therefore, MNCF denotes manufacturing output; EXP symbolises exports, FDI represents foreign direct investment and EXCH is representing exchange rate.

Prior to employing the VECM analysis, the variables are taken through stationarity testing to determine the order of integration of the variables and the estimations are done by means of EViews 9.

3.1 Unit Root Testing

Many economic and financial time series data such as the one used in this study, exhibit trending behaviour in the mean which is said to be nonstationary in econometrics because it has a random walk or has a unit root problem. This type of data should therefore be transformed to stationary form prior to analysis in order to avoid the spurious results. The study utilized the Augmented Dickey Fuller (ADF) and Phillip Peron (PP) tests to perform the unit root test procedures in order to examine the order of integration of variables. The purpose is to determine their order of integration which is crucial for setting up an econometric model and to do inference. The unit root test was performed using three types of regression analysis but the best results were obtained "Constant, Linear trend" as illustrated in Tables 1 and 2.

3.2 Cointegration Analysis

To empirically analyse the long run relationships and dynamic interactions among the variables of interest, the model has been estimated by the Johansen cointegration analysis. It is preferred because it performs better in multivariate model. The existence of cointegration implies that there is some mechanism that drives the variables to their long run equilibrium relationship. This mechanism is modelled by an error-correction mechanism, in which the equilibrium error also drives the short-run dynamics of the variables (Radnia, 2014). The procedure uses two tests, the Maximum Eigen value test and the Trace test to determine the number of cointegration vectors in the system. The two tests may yield different results as indicated in Table 4 on page 398, and Alexander (2001) indicates that in this case the results of trace test should be preferred. The presence of cointegration means that we can run the VECM in order to model both the long run relationship and the short-run dynamics.

3.3 Vector Error Correction Model (VECM)

The choice if this approach is influenced by (Shijaku and Kalluci, 2013) who maintain that it has the advantages that it combines long run and short run information in the data by exploiting the cointegration property of the model. In this system, the cointegrating vector is interpreted as a long run equilibrium relationship whilst the estimates of the short run dynamics symbolise the process of adjustment towards equilibrium. The two elements of the model are calculated simultaneously and the model is run through a system of equations, eliminating problems with endogeneity, omitted

Table 1: ADF Unit Root Test Results

Variables	CONSTANT, LINEAR TREND						Results
		t-statistic	Critical values			Probability	
			1%	5%	10%		
GDP	At level	-1.219254	-3.632900	-2.948404	-2.612874	0.6550	I (0)
	1st difference	-3.469012	-3.632900	-2.948404	-2.612874	0.0150	I (1)
MNCF	At level	-1.399774	-3.626784	-2.945842	-2.611531	0.5716	I (0)
	1st difference	-4.579725	-3.632900	-2.948404	-2.612874	0.0008	I (1)
EXP	At level	-1.819521	-3.632900	-2.948404	-2.612874	0.3652	I (0)
	1st difference	-5.030611	-3.639407	-2.951125	-2.614300	0.0002	I (1)
FDI	At level	-3.214668	-3.626784	-2.945842	-2.611531	0.0273	I (0)
	1st difference	-6.925890	-3.646342	-2.954021	-2.615817	0.0000	I (1)
EXCH	At level	0.970990	-3.626784	-2.945842	-2.611531	0.9954	I (1)
	1st difference	-3.868263	-3.632900	-2.948404	-2.612874	0.0055	I (1)
* denotes the rejection of the null hypothesis at 10% level of significance, ** denotes the rejection of the null hypothesis at 5% level of significance, *** denotes the rejection of the null hypothesis at 1% level of significance							

Source: Authors' own calculations with Eviews 8.1

Table 2: Phillip-Peron Unit Root Test Results

Variables		CONSTANT, LINEAR TREND					Results
		t-statistic	Critical values			Probability	
			1%	5%	10%		
GDP	At level	-0.840068	-3.626784	-2.945842	-2.611531	0.7953	I (0)
	1st difference	-3.387220	-3.632900	-2.948404	-2.612874	0.0183	I (1)
MNCF	At level	-1.480507	-3.626784	-2.945842	-2.611531	0.5319	I (1)
	1st difference	-4.615099	-3.632900	-2.948404	-2.612874	0.0007	I (1)
EXP	At level	-1.363421	-3.626784	-2.945842	-2.611531	0.5891	I (0)
	1st difference	-4.094875	-3.632900	-2.948404	-2.612874	0.0030	I (1)
FDI	At level	-3.120633	-3.626784	-2.945842	-2.611531	0.0339	I (0)
	1st difference	-13.72839	-3.632900	-2.948404	-2.612874	0.0000	I (1)
EXCH	At level	0.649158	-3.626784	-2.945842	-2.611531	0.9892	I (1)
	1st difference	-3.740592	-3.632900	-2.948404	-2.612874	0.0076	I (1)
* denotes the rejection of the null hypothesis at 10% level of significance, ** denotes the rejection of the null hypothesis at 5% level of significance, *** denotes the rejection of the null hypothesis at 1% level of significance							

Source: Authors' own calculations with Eviews 8.1

Table 3: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-3282.479	NA	6.64e+77	193.3811	193.6056	193.4577
1	-3113.230	278.7637	1.40e+74	184.8959	186.2427*	185.3552
2	-3074.725	52.09470*	6.99e+73*	184.1015	186.5706	184.9435*
3	-3047.767	28.54429	8.25e+73	183.9863*	187.5777	185.2111
* indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion						

Source: Authors

variables and serial correlation. They further claim that estimated coefficients obtained are unbiased and efficient under such specification. The VECM of the study is presented as follows:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1 \Delta GDP_{t-i} + \sum_{i=1}^{m} \alpha_2 \Delta EXCH_{t-i} + \sum_{i=1}^{m} \alpha_3 \Delta EXP_{t-i} + \sum_{i=1}^{m} \alpha_4 \Delta FDI_{t-i} + \sum_{i=1}^{m} \alpha_5 \Delta MNFC_{t-i} + \lambda EC_{t-i} + \varepsilon_t \quad (3)$$

where Δ is the first difference operator, EC_{t-1} is the error correction term lagged one period, λ is the short run coefficient of the error correction term.

4. Findings and Discussion

The results of all the econometric tests are presented in this section.

4.1 Unit Root Tests

After experimenting with all the formulae of the unit root testing, the best unit results were obtained under intercept and the results are presented in Tables 1 and 2 respectively.

The unit results in Tables 1 and 2 designate that most of the variables are nonstationary at levels and they all become stationary at first difference under both the ADF and the PP tests. The two tests confirm stationarity of each variable at first differencing under intercept therefore all the variables are integrated at order one, that is they are all I (1).

4.2 Cointegration Analysis Results

Since all the variables are all I (1), the next step is conducted the Johansen cointegration test to determine the presence of the long run relationship among the series. In order to determine the proper lag length of the cointegration analysis, lag length selection criteria were employed and the results are presented in Table 3. The results indicate that the best criterion is AIC with lag 2.

Table 4: Johansen Cointegration Tests

Tests	Hypothesized no. of CE(s)	Eigen value	Trace statistic	0.05 Critical value	Probability value
Trace	None *	0.645328	88.75189	69.81889	0.0008
	At most 1	0.536992	53.50875	47.85613	0.0134
	At most 2	0.416749	27.32837	29.79707	0.0938
	At most 3	0.178162	8.997672	15.49471	0.3656
	At most 4	0.066137	2.326461	3.841466	0.1272
Maximum Eigen value	**Hypothesized no. of CE(s)**	**Eigen value**	**Max-Eigen statistic**	**0.05 Critical value**	**Probability value**
	None *	0.645328	35.24314	33.87687	0.0342
	At most 1	0.536992	26.18038	27.58434	0.0747
	At most 2	0.416749	18.33070	21.13162	0.1180
	At most 3	0.178162	6.671211	14.26460	0.5287
	At most 4	0.066137	2.326461	3.841466	0.1272
* denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values Trace test indicates 2 cointegrating eqn(s) at the 0.05 level, Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level					

Source: Authors

Table 5: Normalised Cointegrating Coefficient (Standard Error in Parentheses)

GDP	EXCH	EXP	FDI	MNCF
1.000000	-2.08E+10	27.00406	-10.60525	-4.355999
	(4.7E+09)	(12.4261)	(5.79281)	(1.20687)

Source: Authors

The Johansen cointegration analysis was based on lag 2 of the lag selection, since it was the lag order selected by most of the criteria and the results are presented in Table 4.

Based on the results in Table 4, trace tests indicate that there are (2) cointegrating equations at 5% level whilst the Max-Eigen tests depict the presence of a one (1) cointegrating equation at 5% level. This implies the rejection of the null hypothesis of no cointegration of the series which is illustrated by the values of the Trace statistic of 88.75189 and 53.50875 being greater than the critical values of 69.81889 and 47.85613 respectively. These results are further confirmed by the probability values of 0.0008 and 0.0134 which are also significant at 5%. Comparably, the same conclusion is drawn from the Maximum Eigen test results since the Max-Eigen value of 35.24314 is greater than the critical value of 33.87687 and its probability value of 0.0342 being significant at 5%, consequently backing up the evidence for the presence of cointegration amongst the variables.

In order to conclude the long run relationship, the normalised cointegrating coefficient from the Johansen cointegration analysis are presented in Table 5.

From Table 5, the estimated cointegrated vectors together with the associated coefficients represent the long run influence of manufacturing sector on the economic growth. The coefficients are therefore infused into Equation 2 in order to illustrate the impact of each and every variable on economic growth as illustrated in Equation 4:

$$GDP_t = -0.285844 + 2.08\text{E}\ EXCH_t - 27.00406\ EXP_t + 10.60525\ FDI_t + -4.355999\ MNFC_t + \varepsilon_t \quad (4)$$

From Equation 4, EXP is negatively related to GDP whilst the all other variables, namely, EXCH, FDI and MNFC are positively related to GDP. Finally, the MNFC with a coefficient of about 4.355999 % implies that there will roughly be a 4% increase of GDP if the manufacturing sector changes by 1%. This illustrates a significant contribution made by this sector towards economic growth in South Africa.

Table 6: Vector Error Correction Model (VECM)

Variables	Coefficients	Standard Error	t-statistic
GDP	0.822184	(0.63666)	[1.29141]
EXCH	-2.08E+10	(4.7E+09)	[-4.44810]
EXP	27.00406	(12.4261)	[2.17317]
FDI (-1)	-10.60525	(5.79281)	[-1.83076]
MNFC	-4.355999	(1.20687)	[-3.60932]
ECT	-0.285844	(0.10797)	[-2.64750]
C	16.28039		
R-squared	0.743496	S.E. equation	1.56E+10
Adj.R-squared	0.615244	F-statistic	5.797140

Source: Authors

4.3 Short Run Analysis Results

Since cointegration was established amongst, the VECM was used to determine the short run relationship in the system and the results are presented in Table 6.

According to Adamopoulos (2010), the size of the error correction term (ECT) indicates the speed of adjustment of any disequilibrium towards a short run equilibrium state. In Table 6 the estimated coefficient of ECT of -0.285844 indicates the speed and it has a theoretically correct sign (negative sign) and it has a high absolute t-statistic of (0.10797). For equilibrium to be restored it is expected to be negative and it confirms that there is no problem in the long run equilibrium relationship between the dependent and the independent variables. The results from VECM indicate that the variables are able to adjust back to equilibrium after an external shock.

5. Conclusion

The purpose of study was to investigate the relationship between the manufacturing sector and economic growth in order to test Kaldor's first growth law in South Africa. In order to achieve this objective, the VECM was employed to estimate the annual time series data from 1980 to 2016 obtained from World Bank. The negative association between exports and GDP found in this study is line with both the Keynesian theoretical findings and Taspinar (2010) found the equivalent results in Poland. As far as FDI is concerned, the implication is that FDI towards manufacturing sector must be taken as the first priority to get the best out of the sector. This is based on the notion that by exporting more, more opportunities are being opened and which is good for job creation. As far as exchange rate is concerned, its positive association with GDP is important since a better exchange rate, means earning more of foreign currency which will improve the country's trade balance.

The empirical investigation also revealed that manufacturing sector proxied by the manufacturing output has a positive and significant coefficient. The results are in line with Kaldor's first growth law which states that manufacturing is the engine of GDP growth. The law states that the growth of the GDP is positively related to the growth of the manufacturing sector, therefore, the 'engine of growth' hypothesis holds for South Africa. The similar association between these two variables was also found by Hussin and Ching (2013) in Malaysia. Based on these results, we recommend that the South African policy makers should consider advocating for strengthening and promoting this sector. As it was indicated by Zalk, (2014) this can be achieved through a structural shift towards higher growth. Therefore, a more value-adding and higher labour absorbing manufacturing sector is essential for South Africa to shift to a development path which generates more growth and higher levels of employment. Therefore, policies should be geared towards creating the environment which is more conducive for business expansion and investing in capital formation which will allow more job creation.

References

Adamopoulos, A. 2010. Financial Development and Economic Growth an Empirical Analysis for Greece. *International Journal of Economic Sciences and Applied Research,* 3(1):75-88.

Alexander, C. 2001. *Market Models: A Guide to Financial Data Analysis*. Wiley. Available at: https://www.wiley.com/en-za/market+Models:+A+Guide+to+Financial+Data+Analysis-p-9780471899754. Accessed on 27 May 2018.

Bhat, T.P. 2014. *India Structural Changes in the Manufacturing Sector and Growth Prospect*. New Delhi. Available at: http://isid.org.in. Accessed on 13 May 2018.

Cantore, N., Clara, M., Lavopa, A. & Soare, C. 2017. Analysis of the Organic Food Trade Using a Gravity Model View Project Manufacturing as an Engine of Growth: Which is the Best Fuel? *Structural Change and Economic Dynamics,* 42:56-66. Available at: https://www.researchgate.net/publication/316832438. Accessed on 26 May 2018.

DTI and BOI. 2018. Securing The Future of Philippine Industries. *Department of trade and industry and Board of Investments*. Available at: http://industry.gov.ph/category/manufacturing/. Accessed on 13 May 2018.

Elias, S. & Noone, C. 2011. *The Growth and Development of the Indonesian Economy Economic Developments*. Available at: http://www.rba.gov.au/publications/bulletin/2011/dec/pdf/bu-1211-4.pdf. Accessed on 13 May 2018.

Hussin, F. & Chee Wuan Ching. 2013. The Contribution of Economic Sectors to Economic Growth: The Cases of Malaysia and China. *International Journal of Academic Research in Economics and Management Sciences,* 2(2): 2226-3624. Available at: www.hrmars.com/journals. Accessed on 21 May 2018.

Kaldor, N. 1966. *Causes of the Slow Rate of Economic Growth of the United Kingdom. An Inaugural Lecture*. London: Cambridge University Press.

Kirchgässner, G. & Wolters, J. 2007. *Introduction to Modern Time Series Analysis*. Berlin: Springer-Verlag. Available at: http://rupertstudies.weebly.com/uploads/9/5/8/4/9584887/introduction_to_modern_time_series_analysis-kirchgssner_and_wolters_springer_2007.pdf. Accessed on 15 May 2018.

Kniivilä, M. 2007. Industrial Development and Economic Growth: Implications for Poverty Reduction and Income Inequality. In *Industrial Development for the 21st Century: Sustainable Development Perspectives*, 295-332. Available at: http://www.un.org/esa/sustdev/publications/industrial_development/3_1.pdf. Accessed on 20 May 2018.

Lee, J.-W. & Mckibbin, W.J. 2013. Service Sector Productivity and Economic Growth in Asia. In *Asia: Challenges of Stability and Growth.* 26 September 2013. Available at: https://www.imf.org/external/np/seminars/eng/2012/korea/pdf/lee.pdf. Accessed on 13 May 2018.

Liveris, A. 2012. *Make It in America: The Case for Re-Inventing the Economy*. Wiley.

Makhene, M. SA Manufacturing Sector "at a Crossroads". *Fin24*. Available at: https://www.fin24.com/economy/sa-manufacturing-sector-at-a-crossroads-20151111. Accessed on 13 May 2018.

Ngulube, B. 2014. Frontier Advisory *what is the future of manufacturing in South Africa?* Johannesburg. Available at: https://www2.deloitte.com/content/dam/Deloitte/za/Documents/manufacturing/za_what_is_the_future_of_manufacturing_summary_20082014.pdf. Accessed on 11 May 2018.

Olagbaju, I., Obembe, O.B. & Falade, O.E. 2016. Structural Change, Economic Growth and Industrial Policy in Nigeria. *Ife Social Sceince Review* (Special Issue), 341-52.

Olamade, O. & Oni, O. 2016. Manufacturing and Economic Growth in Africa: A Panel Test of Kaldor's First Growth Law. *Journal of Economics and Sustainable Development,* 7(22):26-40.

Radnia, K. 2014. The Impacts of Oil Price and Selected Macroeconomic Variables on Consumer Price Index in IRAN (1971-2010). *European Journal of Business and Management,* 6(2):154-166. Available at: https://iiste.org/Journals/index.php/EJBM/article/viewFile/10397/10595.

Rahardja, S. *et al*. 2012. *Picking up the Pace: Reviving Growth in Indonesia's Manufacturing Sector*. Jakarta 12910. Available at: http://www.worldbank.org/content/dam/Worldbank/document/Indonesia-ExecSum-Manufacturing-ENG.pdf. Accessed on 13 May 2018.

Shijaku, G. & Kalluci, I. 2013. Determinants of Bank Credit To the Private Sector: The Case of Albania. *Working Paper Bank of Albania,* 9(48):1-36. Szirmai, A. 2008. *Explaining Success and Failure in Development*. Maastricht.

Szirmai, A. 2012. Industrialisation as an Engine of Growth in Developing Countries, 1950-2005. *Structural Change and Economic Dynamics,* 23(4):406-20. Available at: https://www.sciencedirect.com/science/article/pii/S0954349X1100018X. Accessed on 20 May 2018.

Szirmai, A. & Verspagen, B. 2015. Manufacturing and Economic Growth in Developing Countries, 1950-2005. *Structural Change and Economic Dynamics,* 34:46-59. Available at: https://www.sciencedirect.com/science/article/pii/S0954349X15000351. Accessed on 20 May 2018.

Taspinar, A. 2010. Causal Relationship Between Export and Economic Growth: The Poland and Sweden Case.Trading Economics. South Africa Manufacturing Production. Available at: https://tradingeconomics.com/south-africa/industrial-production. Accessed on 11 May 2018.

Zalk, N. 2014. What is the Role of Manufacturing in Boosting Economic Growth and Employment in South Africa. *Department of Trade and Industry There,* 1-7. Available at: http://www.econ3x3.org/article/what-role-manufacturing-boosting-economic-growth-and-employment-south-africa.