Does financial structure matter for economic growth: An evidence from South Africa

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DOES FINANCIAL STRUCTURE MATTER FOR ECONOMIC GROWTH: AN EVIDENCE FROM SOUTH AFRICA

Abstract:

Economists and policy makers have argued about the role of financial structure on economic development. The bank-based, the market-based, and the financial services view are the three competing views of financial structure. Stock market development and the banking sector are regarded as avenues through which growth can be supported by providing liquidity for firm financing. Hence establishing the contribution of the financial structure on economic performance in South Africa is of crucial importance to policy makers and government officials.

The study utilizes the autoregressive distributed lag model for econometric estimation. The data set covers the period 1975-2016. The results indicate financial structure does not matter for economic growth in South Africa. The results are robust to several sensitivity tests. The findings support the view that government should place an emphasis on improving the quality of the financial system as opposed to developing a particular financial system.

The contribution to the existing literature is that the results support the financial services theory. Thus, financial structure does not matter for economic development even for an emerging country like South Africa which is predominantly market based. The implication of the results is that there is the need to enhance the quality of financial services to create real economic growth in South Africa.

Keywords: Economic growth, Financial structure, Autoregressive distributed lag model.

1. Introduction

The relationship between financial structure and economic growth has long been debated in the literature. Markets and banks both foster economic growth but the way in which they affect the business cycle differ considerably. The role of the financial structure on economic expansion in South Africa is an important question which government needs to address because of the rising unemployment and low economic growth.

Financial structure is broadly defined as a combination of financial institutions, financial markets and financial instruments.

All financial system comprises both bank-based and market-based intermediation. While banks perform intermediation on their balance sheet, markets on the other hand issue and trade debts and equity securities.

The blend of these 2 intermediation channels differs across countries. The early contribution of Boyd and Smith (1998), Levine and Servos (1998) argue that financial intermediaries and markets are both important for economic growth.

Other scholars such as Demirgüç-Kunt and Levine (1996) and Levine (2002) conclude that it is the overall provision of services by banks and financial markets that is important for growth. They stress that financial structure per se does not matter.

The third strand of view is more complex because it argues that the impact of financial structure depends on the level of economic growth and financial development (see Demirgüç-Kunt, Feyen and Levine (2011). Given the role of financial system in the 2030s national development plan, it is important to examine its impact on the South African economy.

Investigating the financial structure and economic growth nexus in South Africa is crucial for many grounds. Those grounds are sustainable growth, unemployment reduction, and volatility reduction. Also, a cross-reading of the literature indicated that little studies has been committed to whether financial structure of countries matters for economic growth (Cihák, Demirgüč-Kunt, Feyen and Levine, 2013).

Most empirical literature on this issue attempt to investigate whether one type of financial system explains growth better than another. Those studies also focus on advanced economies (see Weinstein and Yafeh, 1998; Mork and Nakkamura, 1999). The contribution to the existing literature is twofold: First, the paper uses time series data for an emerging country like South Africa for the period 1975 to 2016 to determine whether financial structure matters for economic growth. This is important because panel study tend to ignore cross country

heterogeneity which does not produce efficient results when endogeneity tests are not performed (Arestisa, Luintel, and Luintel, 2010).

Secondly, it uses an autoregressive distributed lag model (ARDL) which is free of serial correlation. This approach also distinguishes between the dependent and the independent variables using a single reduced form equation as opposed to other methods used in previous studies which included South Africa (Luintel and Luintel, 2005; Rateiwa and Aziapkono, 2017). Thus, the study provides a useful insight for South Africa and for the rest of other African Countries.

The remainder of the article is organized as follows: In the next section we discuss the theoretical arguments and empirical evidence related to financial structure and economic growth. Section 3 outlines the model specification, the methodology and the data. Section 4 presents the results. Section 5 concludes.

2. Financial structure and economic growth

This section discusses the theoretical underpinning and the empirical evidence of the financial structure economic growth nexus. The last part of this section presents some stylized facts on financial structure in South Africa.

2.1 Theoretical considerations

A cross reading of the literature point that financial structure and economic growth can be examined on the basis of competing theories (the bank-based, the market-based and the financial services).

The bank-based theory stresses the advantages of banks on economic growth and points out the limitation of the market-based financial systems. The benefits of a bank-based system vary with the level of economic development (Ray and Chakraborty, 2006). The bank-based view underscores the convenience in mobilizing capital and selecting good projects that will be implemented. The theory stresses that banks can support development more effectively than markets (Levine, 1997). Proponents of the theory also argue that greater market development constitutes a barrier for innovative projects. Banks address this problem however because they build a long-run relationship with firms and they hide information from the public compared to a market-based system which reveal information to the public (Boot and Thakor, 1997). The problem with asymmetric information is therefore reduced in a bank-based system. Banks work

closely with firms and select promising entrepreneurs. This implies that corporate governance and allocation of resource can be improved in a bank-based system (Stiglitz, 1985).

Studies show that bank-based system appear to dominate in countries that have weak legal system (Bhattacharyya, 2013). This is because non-democratic rulers can use their discretion or power to build monopolistic banks.

Market-based theory stresses the benefits of promoting a stock market-based system. Proponents of this theory highlight the flaws of big banks, because they can prevent innovation by extracting informational rents and distort competition by protecting firms with close ties to the bank (Levine, 2002). The theory also claims that the financial structure of a country changes from a bank-based to a market based as development occurs. Highly liquid and well-functioning markets improves corporate governance, encourages growth through profit incentive. Thus, the theory argues that markets will reduce the inefficiencies associated with a bank-based system.

The financial services theory on the other hand underestimates the role of the bank-based and the market-based system. Levine (1997) notes that financial arrangements such as contracts, markets and intermediaries improves market imperfections and enhance financial services. The theory focuses on creating an environment which is conducive to sound financial practices. Hence, the debate around the bank-based theory and the market-based theory should end (Merton and Bodie, 1995). In a recent article, Peia and Roszbach (2014) point that when banks and the stock market are inefficient, the positive impact of finance on the economy can not be ensured. Because banks and markets offer different components of the financial system, they do not compete but enhance the financial system. This theory suggests that the emphasis should be put on building a financial structure which optimizes both systems.

2.2 Empirical evidence

Early empirical studies have focused on the role of financial structure on economic growth in advanced economies. The contribution of Goldsmith (1969) is that one can not assert that financial structure is responsible for the more rapid growth Germany experienced during the period 1864-1914, compared to the United Kingdom.

Weinstein and Yafeh (1998) have examined the advantages of Japan financial system in light of the poor economic performance the country suffered in the 1990s. Their results conclude

that the dependence of banks can result to higher costs for firms because banks extract rent from their corporate customers.

Levin (2002) in his work, attempts to examine the role of financial structure on economic growth using a panel of 48 advanced and developing economies. After conducting several robustness tests, his results reveal that financial structure is not relevant in explaining economic growth. However, as data become available and econometric techniques evolve researchers have developed alternative methods of assessing the impact of financial structure on economic growth.

A cross reading of the literature shows that as an economy progresses, the marginal benefit to economic growth declines when a financial system is bank-based, whereas that of the stock market expands. These studies however, do not conclude on the preferences of one financial structure over the other (see Kpodar and Singh, 2011; Demirgüç-Kunt, Feyen, and Levine, 2011).

Recent studies on African countries have also produced mixed results. Ahmed and Wahid, (2010) for instance find that financial structure influences economic growth in South Africa, Kenya, Cote d'Ivoire and Mauritius, whereas such evidence are not observed in Bostwana and Nigeria.

Mahonye and Ojah (2014) use the pooled OLS and fixed effects methods on 15 African countries for the period 1995-2011. They find that financial structure does not matter for the economic development of these African countries. Rateiwa and Aziapkono (2017) investigates the long run relationship between non-bank financial institution and economic growth in Nigeria, Egypt and South Africa over the period 1971-2013. Their study reveal that the long run relationship between non-bank financial institution and economic growth is strong in Egypt and South Africa, but it is weaker in Nigeria.
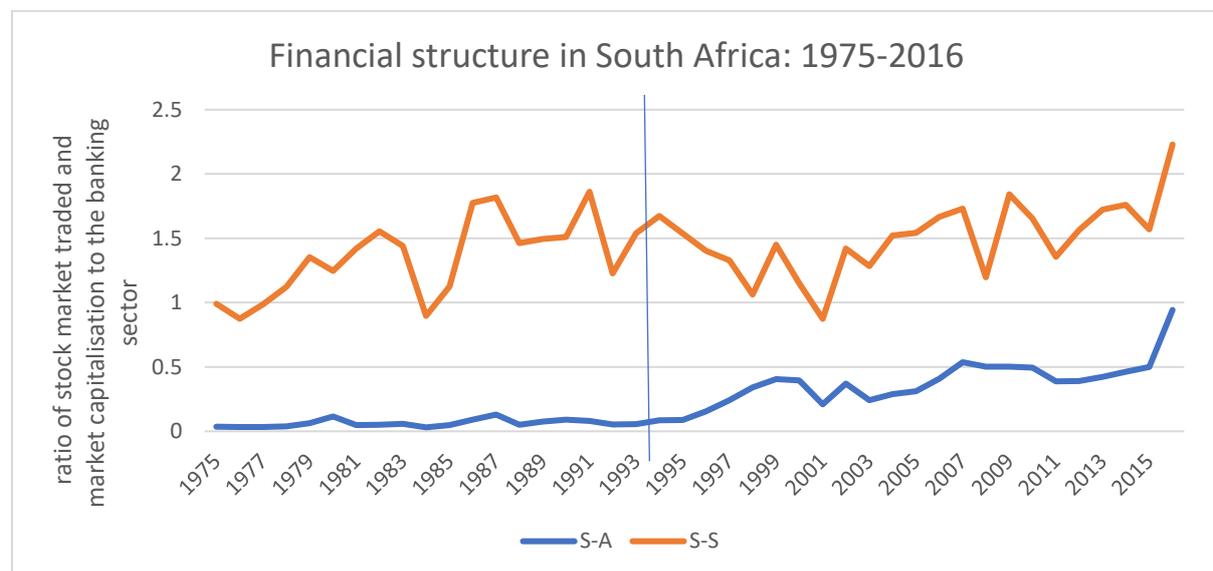
2.3 Structure of the financial system in South Africa

We refer to the definition of the financial structure suggested in the seminal work of Levine (2002) to present South Africa financial system. Structure activity is defined as a measure of the stock market activity relative to the banks. In the case of South Africa, it is the ratio of the total stock traded at the Johannesburg stock exchange over the bank credit to the private sector. Hence larger values of structure activity indicate that the financial system is market based while smaller values imply the dominance of a bank-based financial system.

An alternative measure of financial structure is referred as structure size. It is calculated by taking the ratio of market capitalization and the bank credit to the private sector. However, Levine (2002) stresses that structure activity is a better measure of financial structure because it is more efficient in predicting economic growth.

In figure 1 below, we present these two views of financial structure to assess whether South Africa can be treated as a market based or bank based financial system. The structure activity and structure size observed are for the period 1975-2016.

Figure 1: Financial structure in South Africa: 1975-2016

Note: S-A and S-S is structure activity and structure size, respectively

Source: World development indicators (2018)

Figure 1 shows that the market based is more prevalent in the financial system in South Africa. The graph clearly shows that the size of the stock market is almost twice as large as the banking sector. Figure 1 also shows a rise in the structure activity especially after 1994 (the post-apartheid era). This suggests that the stock market became more important in South Africa after 1994.

3. Model specification, methodology and the data

3.1 Model specification and methodology

We adopt a Cobb-Douglas production function to investigate the financial structure economic growth nexus. Following the work of Levine (2002), the standard growth model takes the following form.

$$Q = F(AL^{\alpha}K^{\alpha-1}) \tag{1}$$

Where A stands for technological efficiency, K and L measures capital and labour, respectively. We then take the logarithm form of equation (1) and we augment the above equation. This leads to the following empirical model;

$$Q_{it} = a_0 + a_1SA_{it} + a_2X_{it} + \varepsilon_{it} \tag{2}$$

Where $i = 1,2,3,\ldots N$ and $t = 1,2,3,\ldots T$

SA_{it} = financial structure activity (total stock traded over bank lending)

X_{it} = control variables

ε_{it} = error term

We focus on equation (2) to determine the significance and the sign of a_1 because SA_{it} is used as the financial indicator variable. The choice for financial structure indicator is based on the discussions from the previous section. A significant a_1 means that financial structure matters for economic growth. A significant and positive value of a_1 implies that the financial system in South Africa is more of a market-based variety while a significant and negative value of a_1 means more of a bank based system.

Determining the sources of growth is an open research question, and there is no definite conclusion on the set of explanatory variables that must be included in a growth regression model (Levine and Renelt, 1992). Empirical growth model studies predict that there are other factors contributing to economic growth besides capital and labour used in the Solow model (Solow, 1956).

We incorporate lagged GDP per capita growth as a dependent variable to control for potential endogeneity in the model. We also include human capital as an explanatory variable as suggested by Levin (2002). Hence in this study, based on the availability of data X_{it} represents a set of standard growth variables such as per capita real physical capita stock, human capital, inflation, foreign direct investment and economic openness. After incorporating the conditioning set, equation (2) is expressed as:

$$Qit = a_0 + a_1SA_{it} + a_2(K/L) + a_3HC_{it} + a_4INF_{it} + a_5FDI_{it} + a_6TO_{it} + \varepsilon_{it} \tag{3}$$

In many empirical studies related to Africa, financial structure is not significant in explaining growth. In the same vein, we expect financial structure to be insignificant to economic growth. Thus, we are interested in the significance of a_1 rather than his sign.

Per capita real physical capita is capital over population. We expect per capita real physical capita stock to be positively correlated to economic growth. This implies that a_2 should be positively signed. Human capita is another important factor for economic growth. We expect a_3 to be positively signed.

Inflation indicates stable macroeconomic environment. High inflation discourages productive activity and slow down economic development. We expect it to be negatively signed. This implies that a_4 should be negative.

Foreign direct investment helps attract new capital for investment. This improves the balance of payment by raising potential exports. We expect a_5 to be positively signed. Economic openness allows a country to benefit from comparative advantage. Thus, we expect trade openness to contribute to economic growth. This implies that a_6 should be positively signed.

We employ the autoregressive distributed lag model (ARDL) to estimate both the short run and the long run dynamics of the underlying variables. The model is applicable when series are integrated of different orders I(1) and I(0) (Pesaran, Shin, and Smith, 1999). This helps to avoid classifying the variables in different orders of cointegration. The ARDL representation coefficient becomes more efficient if the Wald test establishes a single long run relationship and the data is finite or small.

We use the Akaike information criteria to determine the appropriate lag length criteria. The ARDL (1,1,1,1,1,1) is selected based on the lag selection criteria. The dynamic form of the ARDL is expressed as:

$$Q_{it} = \lambda Q_{it-1} + \delta_{10i}(K/L) + \delta_{20i}SA_{it} + + \delta_{30i}HC_{it} + \delta_{40i}INF_{it} + \delta_{50i}FDI_{it} + \delta_{60i}TO_{it} + \delta_{11i}(K/L) +$$
$$\delta_{21i}SA_{it-1} + \delta_{31i}SA_{it-1} + \delta_{41i}INF_{it-1} + \delta_{51i}FDI_{it-1} + \delta_{61i}TO_{it-1} + \varepsilon_{it} \quad (4)$$

Expressing the dynamic equation above in the error correction model:

$$\Delta Q_{it} = \phi_i (Q_{it-1} - \phi_{oi}(K/L) - \phi_{1i}SA_{it} - \phi_{2i}HC_{it} - \phi_{i\,3i}INF_{it} - \phi_{i\,4i}FDI_{it} - \phi_{i\,5i}TO_{it}) + \delta_{i01}(K/L) +$$
$$\delta_{i02}\Delta SA_{it-1} + \delta_{i03}\Delta HC_{it-1} + \delta_{i04}\Delta INF_{it-1} + \delta_{i05}\Delta FDI_{it-1} + \delta_{i06}\Delta TO_{it-1} + \varepsilon_{it}$$

$$(5)$$

Where $\phi_{0i} = \mu_i / (1 - \lambda_i)$

$\phi_{1i} = \delta_{10i} + \delta_{11i} / (1 - \lambda_i)$

$\phi_{2i} = \delta_{20i} + \delta_{21i} / (1 - \lambda_i)$

$\phi_{3i} = \delta_{30i} + \delta_{31i} / (1 - \lambda_i)$

$\phi_{4i} = \delta_{40i} + \delta_{41i} / (1 - \lambda_i)$

And $\phi_i = - (1 - \lambda_i)$

3.2 The data

The dataset used in the study initially covers 57 (1961-2016) observations. However, for some variables the data span is short. Data on human capital, foreign direct investment, structure activity and structure size are missing during the period 1961-1975. Hence our data sources consist of time series data for South Africa for the period 1975-2016. Data on Gross Domestic Product, total stock market traded, market capitalization, private credit by deposit bank, Human capital, Foreign direct investment, population and trade openness (imports plus exports) are obtained from the world bank development indicators. Data on inflation on the other hand is obtained from the IMF.

The main variables of interest comprise GDP per capita (GDP/ population) which is our proxy for economic growth and structure activity (total stock market traded/ private credit by deposit bank) which is our proxy for financial structure. Structure activity as suggested by Levin (2002) measures the activity of the stock market relative to the banks.

4. Empirical Results

4.1 Unit root tests

In order to test the order of integration of the series, we use the augmented dicker fuller and the Phillips-Perron unit roots tests. The unit root tests results are shown in Table 2. The results show that all of the variables are stationary at first difference. The next step is to determine whether there is a long run relationship among the variables.

4.2 Cointegration test

Cointegration tests show the existence of a single or multiple long run relationship between the variables (Brooks, 2014). We test the long run relationship between the underlying variables by computing the bound F-statistic. If there is a single long run relationship the ARDL model can be implemented. On the other hand if there is multiple long run relationship the Yohansen and Juselius becomes the appropriate method (Nkoro and Uko, 2016).

The bound F-statistic is carried out on each of the underlying variables. The lower bound critical bound assumes all the variables are I(0), thus there is no cointegration between the variables. The bound test results display in Table 3 show that cointegration exist between the underlying variables at 1 per cent. Hence, there is a single long run relationship.

Once the single long run relationship has been established and the ARDL method can be applied, the next step is to identify the appropriate lag length selection criteria. We use 3 selection criterion such as the Akaike Information Criterion (AIC), the Hannan-Quinn Information Criterion (HIC) and the Schwarz Information Criterion (SIC). The values of AIC, HIC, and SIC are displayed in Table 4.

4.3 Baseline results

The ARDL (1,1,1,1,1,1) is the preferred model because Table 4 shows that a maximum lag of 1 has a smallest AIC, HIC, and SIC. The baseline results are shown in Table 5. The results show that the structure activity is positively signed and has no significant effect on economic growth in the short run and the long run. The findings are consistent with the existing literature (see Mathenge and Nicholaidou, 2018; Levine, 2002). This suggests that financial structure does not matter for growth. The findings support the existing literature in the sense that there is no economic relevance in classifying a country's financial system as bank-based or market based.

In the short run all the variables in the study except structure activity and foreign direct investment are significant at 1 per cent. The influence of foreign direct investment on economic growth is null. This is supported by the findings of (Almfraji and Almsafir, 2014).

The error correction term is negative and significant, indicating that there is a stable long run relationship between the variables. In the long run the other controlled variables such as human capital, inflation and per capita real physical capita stock have the expected signed and are significantly correlated to economic growth. Inflation impact growth negatively while per capita real physical capita stock contributes positively to economic growth. This is similar to

the study of Santos (2015) who show that foreign direct investment has an insignificant impact on economic growth. Economic openness is positive and significant in the short-run but it is not significantly related to growth in the long run. This is supported by the findings of (Mahonye and Ojah, 2014) who examine the role of financial structure on economic development. A possible explanation is that in the long run South Africa enters in a competitive market with other countries. Hence, only countries that have a comparative advantage in terms of trade will be able to fully utilize the exports opportunities.

The correlation coefficient (appendix A.2) results show that the measures of financial structure proxied by structure activity has a positive influence on economic growth. Structure activity is highly correlated with economic growth which means that the stock market activity dominates over the banking sector. Another measure of financial structure (structure size) has also a positive correlation with economic growth.

The correlation coefficient of inflation and human capital are negative. This means that higher inflation and human capital are negatively associated with economic growth. The other growth determinants, trade openness, foreign direct investment, and per capita real physical capita stock have a positive association with economic growth. Trade openness is highly correlated with economic growth. This strengthens the need to include this variable in our regression model.

4.4 Robustness Checks

In this section, we explore the sensitivity of the results using different estimation procedures. We looked at the impact of financial structure and economic growth by first augmenting the model (see Table 6), by using different indicators for financial structure (see Table 7), and finally by using the simple ordinary regression model (Table 8).

The results are robust to the various sensitivity checks applied. From Table 6-8, the results are similar to the baseline result. This leads to the conclusion that financial structure does not matter for economic growth in South Africa.

In Table 6, we investigate the impact of financial structure on economic growth after controlling for government expenditure and savings. The results show that structure activity activity is not significant in the short and in the long run. This suggests that financial structure does not matter for economic growth.

In Table 7, we examine the impact of financial structure on economic growth by using structure size which is another indicator of financial structure on the variables we used in Table 6. The structure size coefficient is not significant in both the short and the long run model implying that and structure size does not impact economic growth. Hence financial structure does not have any influence on economic growth.

In Table 8, we use the simple ordinary least square method. The probability of the estimation is less than 1 per cent which means that the overall result of the model is significant. The R-squared is also high implying that the explanatory variables contribute significantly to economic growth. The results show that financial structure does not significantly affect economic growth.

5. Conclusion

The paper contributes to the impact of financial structure on economic growth in South Africa. An argument often mentioned in the literature is that as development occurs in a country, its financial system tends to be predominantly market based. The study explores the relationship between financial structure and economic growth in South Africa in order to shed light on the debate. The results suggest that none of the financial structure (market based indicators or bank based indicators) matters for economic growth. The results are not aligned with the market based or the bank-based view of the financial system. These results contribute to the existing literature in the sense that financial structure does not matter for economic growth.

Hence the study recommends that policy makers in South Africa should not focused on one financial system to the detriment of the other. Rather, they should improve the quality of the market-based and the bank-based system to foster economic development. The findings can be applicable to other emerging African countries whose stock market is rapidly growing.

Another important notice in the study is that trade openness appears to be positive and significant in the short run for all our estimations. However, it becomes negative in the long run. This suggests that government should be cautious in relying on the opening of the economy to be the main source of economic development.

Improving the quality of the financial system as a complement to the growing market based and banking system will play an important role in mobilizing and allocating resources to its most efficient use for a country like South Africa.

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Table 1: Descriptive statistics

Variable	N	Mean	SD	Min	Max
Y	25	1.980	1.542	-1.395	5.090
S-A	25	0.353	0.192	0.056	0.943
FDI	25	1.340	1.345	-0.065	5.978
INF	25	6.718	3.209	0.209	14.650
K/L	25	3.192	5.361	-7.716	12.902
HC	25	87.760	9.573	65.006	103
TO	25	54.256	8.637	39.123	72.865

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Table 2: Unit root tests

ADF Chi-Square				
Variables	**Levels**		**First difference**	
	Intercept	**Trend and intercept**	**Intercept**	**Trend and intercept**
Y	0.8673	0.8330	0.0051*	0.0151**
K/L	0.0011*	0.0053*	0.0000*	0.0000*
HC	0.7060	0.7487	0.0000*	0.0000*
INF	0.5057	0.0023*	0.0000*	0.0000*
FDI	0.0239**	0.0012*	0.0000*	0.0000*
SAV	0.4819	0.7922	0.0000*	0.0000*
Govtcons	0.3868	0.5433	0.0000*	0.0000*
TO	0.3916	0.4759	0.0000*	0.0000*
S-A	0.9837	0.6231	0.0006*	0.0022*
S-S	0.0253**	0.0157**	0.0122**	0.0554***
PP Chi-Square				
Y	0.9389	0.9095	0.0046*	0.0177**
K/L	0.0014*	0.0072*	0.0000*	0.0000*
HC	0.5816	0.5606	0.0000*	0.0000*
INF	0.1003	0.0025*	0.0000*	0.0000*
FDI	0.0319**	0.0014*	0.0000*	0.0000*
SAV	0.5014	0.7913	0.0000*	0.0000*
Govtcons	0.3770	0.5606	0.0000*	0.0000*
TO	0.4309	0.5527	0.0000*	0.0000*
S-A	0.9837	0.6450	0.0006*	0.0022*
S-S	0.0302**	0.0151**	0.0000*	0.0000*

Where *,,*** indicates 1%, 5%, 10% significance level, respectively**

Source: Author's own calculations

Table 3: Bound tests

Country	F-statistic	
South Africa	8.04	
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.61
1%	3.15	4.43

Table 4: Lag selection criteria

Lag	FPE	AIC	HIC	SIC
ARDL (0,0,0,0,0,0)	473.72	26.02	26.12	26.35
ARDL (1,1,1,1,1,1)	0.205461*	18.16*	18.98*	20.83*

FPE: Final prediction error, AIC: Akaike information criterion, HIC: Hannan-quinn information criterion, SIC: Schwarz information criterion. * indicates optimum lag selection

Table 5: Baseline results

Variables	Coefficient	Std. Error	T-statistic	Prob.
Long run				
S-A	0.036	0.041	0.865	0.396
FDI	0.003	0.014	0.245	0.808
INF	-0.032**	0.011	-2.774	0.011
K/L	0.017**	0.008	2.123	0.045
HC	-0.009*	0.003	-2.843	0.009
TO	0.003	0.004	0.860	0.399
C	11.758*	0.708	16.606	0.000
Short Run				
COINTEQ01	-0.125*	0.040	-3.096	0.005
S-A	0.004	0.005	0.840	0.409
FDI	0.0004	0.001	0.250	0.804

INF	-0.004*	0.001	-3.680	0.001
K/L	0.001*	0.0004	3.116	0.005
HC	-0.001*	0.0003	-3.192	0.004
TO	0.002*	0.0005	3.632	0.001

Where *, indicates 1 % and 5% significance level, respectively**

Table 6: structure activity and economic growth including government consumption expenditure and saving

Variables	Coefficient	Std. Error	T-statistic	Prob.
Long run				
S-A	0.024	0.029	0.840	0.407
FDI	0.005	0.0048	1.270	0.21
INF	-0.009**	0.004	-2.215	0.034
K/L	0.008	0.005	1.566	0.127
HC	-0.0005	0.001	-0.299	0.766
TO	-0.010*	0.003	3.280	0.002
Govtcons	0.0294**	0.015	1.900	0.049
SAV	0.021**	0.009	2.175	0.037
C	9.384*	0.589	15.907	0.000
Short Run				
COINTEQ01	-0.220*	0.055	-4.003	0.0004
S-A	0.005	0.006	0.855	0.399
FDI	0.001	0.0009	1.254	0.219
INF	-0.003**	0.076	-2.326	0.038
K/L	0.002**	0.0009	0.686	0.505
HC	-0.0001	0.0004	-0.294	0.770
TO	0.002*	0.0007	2.916	0.006
Govtcons	0.006	0.003	1.645	0.110
Sav	0.004**	0.239	2.522	0.050

Where *, indicates 1 % and 5% significance level, respectively**

Table 7: structure size and economic growth including government consumption expenditure and saving

Variables	Coefficient	Std. Error	T-statistic	Prob.
Long run				
FDI	0.005	0.003	1.524	0.138
INF	-0.009*	0.005	-2.485	0.010
K/L	0.008***	0.004	1.748	0.090
HC	-0.0003	0.002	-0.183	0.855
TO	0.011*	0.002	5.567	0.000
Govtcons	0.02	0.0155	1.347	0.187
SAV	0.015***	0.009	1.748	0.090
S-S	0.104	0.067	1.561	0.128
C	9.447*	0.490	12.255	0.000
Short Run				
COINTEQ01	-0.238*	0.055	-4.331	0.0002
FDI	0.001	0.0008	1.499	0.144
INF	-0.002**	0.0009	-2.411	0.022
K/L	0.0019**	0.00087	2.104	0.043
HC	-0.0069	0.0004	-0.181	0.857
TO	0.002*	0.0005	4.693	0.0001
Govtcons	0.005	0.004	1.248	0.221
Sav	0.003	0.0022	1.668	0.105
S-S	0.025	0.016	1.531	0.136

Where *,**,*** indicates 1 %, 5% and 10% significance level, respectively

Table 8: structure activity and economic growth (OLS results)

Variables	Coefficient	Std. Error	T-statistic	Prob.
S-A	0.026	0.013	1.923	0.062
FDI	0.003	0.002	1.201	0.237
INF	-0.005**	0.002	-1.942	0.05
K/L	-0.001	0.002	-0.626	0.535
HC	-0.002**	0.001	-2.523	0.016
TO	0.007*	0.001	4.796	0.000
C	10.649*	0.208	51.021	0.000
Prob > F = 0.000 **R-squared = 0.78** **Observations = 41**				

Where *,**,*** indicates 1 %, 5% and 10% significance level, respectively

APPENDIX

A.1: Description of the variables

Variables	Definition
Y	It is the logarithm of Real GDP per capita
Stock traded	It is the total number of shares traded both domestic and foreign multiplied by their respective prices
Private credit by deposit bank	It refers to financial resources provided to the private sector by other depository corporations
K/L	It is the logarithm of Gross capital formation over population
INF	It refers to annual growth rate of inflation or GDP deflator. We use the logarithm of inflation
HC	It is the gross intake ratio of the last grade of primary education. It is an upper estimate of the actual primary completion rate. We use the logarithm of human capita.
FDI	It is the net inflow of investment in an economy. It brings new capital for investment. We use the logarithm of FDI.
Population	It refers to all residents regardless of citizenship or legal status
TO	It is the total value of exports and imports expressed as a percentage of GDP. We use the logarithm of trade openness.
Market capitalization	It is the share value of all listed domestic companies
SAV	Gross Saving is gross national consumption minus consumption plus net transfer
Govtcons	It is final consumption expenditure which includes all government expenditure including compensation of employees. We use the logarithm of final consumption expenditure.
S-A	It is stock traded over private credit by deposit bank . We use the logarithm of Structure activity.
S-S	It is market capitalization over private credit by deposit bank. We use the logarithm of structure size.

Source: Compiled by author

A.2 Correlation coefficients

Panel B: Correlation matrix								
	Y	S-A	FDI	INF	K/L	HC	TO	S-S
Y	1							
S-A	0.679*	1						
FDI	0.600*	0.609*	1					
INF	-0.431*	-0.628*	-0.543*	1				
K/L	0.085	0.087	0.106	-0.127	1			
HC	-0.114	0.413*	0.295***	-0.561*	0.216	1		
TO	0.818*	0.566*	0.563*	-0.301***	0.232	-0.172*	1	
S-S	0.339*	0.527*	0.202	-0.170	-0.018	0.127	0.106	1
Where *,** indicates 1 % and 5% significance level, respectively								