Southern African Development Community between Economic Advantages and Disparities

Romeo-Victor Ionescu[1]

Abstract: The paper is focused on analyzing the present economic disparities across SADC countries and on the opportunity of realizing SADC's goals until 2020 using four representative economic indicators: GDP growth rate, unemployment rate, inflation rate and balance of current account. Comparative analysis, regression, cluster approach and dedicated forecasting procedures are used in order to do it. The main conclusion of the paper is that the economic disparities across SADC countries will increase on short and medium terms. Moreover, the SADC countries should be analyzed under two specific clusters. This approach will be the best solution for the decision makers. The whole analysis in the paper and conclusions are supported by the latest official statistic data, by pertinent tables and diagrams.

Keywords: economic disparities; economic cohesion; cluster approach; economic forecasting; economic comparative analysis

JEL Classification: M21

1. Introduction

Southern African Development Community (SADC) was implemented in 1992 under the generous motto "Towards a Common Future" (Oosthuizen, 2006). Nowadays, it covers 9,882,959 km^2 and a population of 277 million. From the economic point of view, SADC's average GDP/capita was 4309 USD in 2013.

The 15 member states of SADC are focused on economic cooperation and integration. On the other hand, the political and security cooperation is very important.

The global crisis' impact was powerfully across SADC. As a result, the economic recovery is difficulty. On the other hand, the economic disparities between the member states increased.

According to the latest SADC Official Report, the real GDP growth rate fluctuated, from 4.1% in 2008, to 1.5% in 2009, 5.5% in 2010 and 4.7% in 2011to 5.1% in

¹ Professor, PhD, Dunarea de Jos University, Galati, Romania, Address: 47 Domnească, Str., Galati 800008, Tel.: +40744553161, Corresponding author: ionescu_v_romeo@yahoo.com.

2012 (Southern African Development Community, 2012). Unfortunately, it is very difficult to obtain statistic data related to SADC.

Inflation decreased from 13.1% in 2008, to 10.0% in 2009, 8.4% in 2010 and 8.3% in 2011 to 7.9% in 2012, but it was still high.

SADC faced to current account deficits during 2005-2012. These deficits decreased during 2009-2012. There are no data related to the unemployment rates across SADC in the Report. This means that unemployment is a great challenge for the organization.

A great challenge to SADC is its member states which have different economic development levels. According to the latest official statistic data, the Competitiveness Index for all 15 national economies is presented in Table 1 (Schwab, 2014).

Table 1. Global competitiveness index

Country	World rank	Country	World rank	Country	World rank
Angola	140	Malawi	132	South Africa	56
Botswana	74	Mauritius	39	Swaziland	123
DR Congo	No rank	Mozambique	133	Tanzania	121
Lesotho	107	Namibia	88	Zambia	96
Madagascar	130	Seychelles	92	Zimbabwe	124

The above Competitiveness Index is estimated using 12 pillars: institutional environment, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, market size, business sophistication and innovation.

According to Table 1 data and other economic analyses, Angola, Botswana, Democratic Republic of Congo, Mozambique, Tanzania, Zambia and Zimbabwe cover the transition economies from stage 1 (Factor-driven) to stage 2 (Efficiency-driven).

Lesotho, Madagascar and Malawi are less developed economies (stage 1), while Namibia, South Africa and Swaziland achieved stage 2 of development.

The most developed member states are Mauritius and Seychelles, which are under Transition from stage 2 to stage 3 (Innovation-driven).

The main goal of the research in the paper is to quantify the level and the trend of the economic disparities between SADC's members and to demonstrate SADC's viability.

2. Research Methodology

The analysis in the paper is focused on four representative economic indicators: GDP growth rate, unemployment rate, inflation rate and balance of current account. A real challenge for the analysis was to create the statistic data base for each SADC's member state, because the information is very difficult to obtain.

The analysis is built on three steps. A comparative analysis doubled by a regression one is useful in order to quantify the disparities between member states related to every above economic indicator. The analysis covers 2006-2013 and is focused on two important moments: 2008, as the starting year of the global crisis and 2013. The regression uses the individual values of the four indicators as dependent variables, time as independent variable and ANOVA conditions.

The second step is a cluster approach of the member states, according to the intermediate conclusions of the analysis. The paper uses a TwoStep cluster analysis, where the categorial variables are the above four economic indicators and the distance measure is log-likelihood. The clustering criterion is BIC (Schwarz's Bayesian Criterion) and the distance measure is Euclidean.

Finally, forecasting procedures are used in order to observe the economic evolution of the member states and to highlight if this organization will be able or not to realize the economic cohesion and to decrease economic disparities.

The forecast covers 2014-2020 in order to recover statistical data. The dependent variables in this forecast are the above four indicators' growth rates and the independent variable is time. The forecast method is ARIMA.

All analysis's intermediate and final conclusions are supported by the latest official statistic data and a dedicate IBM-SPSS software.

3. SADC's Current Economic Performances

The economic growth across the SADC members was often contradictory. The evolution of the GDP growth rate is presented in Table 2 (International Monetary Fund, 2014).

Table 2. GDP growth rate

Country	2006	2007	2008	2009	2010	2011	2012	2013
Angola	20.7	22.6	13.8	2.4	3.4	3.9	5.2	6.8
Botswana	8.0	8.7	3.9	-7.8	8.6	6.2	4.3	5.9
DR Congo	5.3	6.3	6.2	2.9	7.1	6.9	7.2	8.5
Lesotho	4.1	4.9	5.1	4.5	5.6	4.3	6.0	5.7
Madagascar	5.4	6.5	7.2	-3.5	0.1	1.5	2.5	2.4

Malawi	2.1	9.5	8.3	9.0	6.5	4.3	1.9	5.2
Mauritius	4.5	5.9	5.5	3.0	4.1	3.9	3.2	3.2
Mozambique	8.7	7.3	6.8	6.3	7.1	7.3	7.2	7.1
Namibia	7.1	5.4	3.4	-1.1	6.3	5.7	5.0	4.3
Seychelles	9.4	10.4	-2.1	-1.1	5.9	7.9	2.8	3.5
South Africa	5.6	5.5	3.6	-1.5	3.1	3.6	2.5	1.9
Swaziland	3.3	3.5	2.4	1.2	1.9	-0.6	1.9	2.8
Tanzania	6.7	7.1	7.4	6.0	7.0	6.4	6.9	7.0
Zambia	7.9	8.4	7.8	9.2	10.3	6.4	6.8	6.7
Zimbabwe	-3.6	-3.3	-16.4	8.2	11.4	11.9	10.6	3.3

As a general point of view, SADC countries faced to fluctuating evolution related to GDP growth rate. A relative increase in 2007 was followed by economic contraction during 2008-2009. Another positive economic trend in 2010 was countered by new contraction in 2011 and so on (see Figure 1).
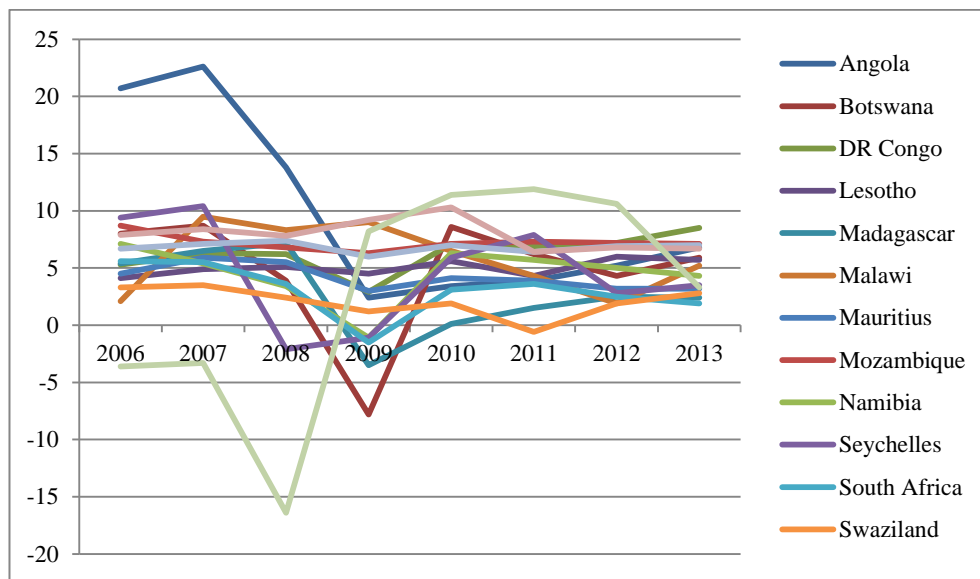
Figure 1. GDP growth rate trend (%)

Source: Personal contribution

At the beginning of the global crisis, SADC countries faced to great disparities related their economic growth rates (see Figure 2).
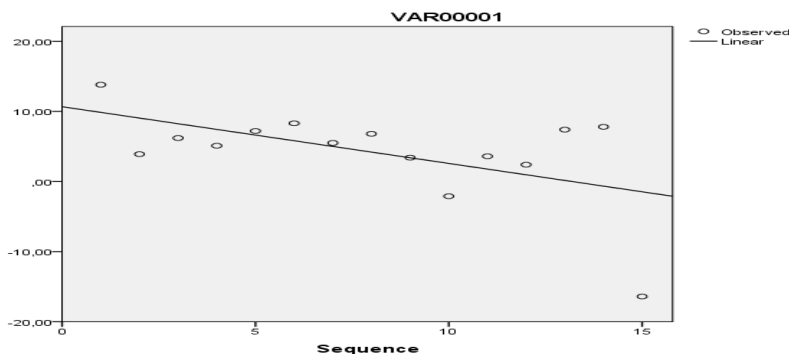
Figure 2. Real GDP growth rate's disparities in 2008

Source: Personal contribution using IBM-SPSS software

According to Figure 2, the analysis in the paper can be built on two clusters: countries with economic growth rates less than 5% (Botswana, Namibia, Seychelles, South Africa, Swaziland and Zimbabwe) and countries with economic growth rates greater than 5% (Angola, DR Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Tanzania and Zambia. The viability of this two clusters approach is demonstrated in Figure 3. The cluster approach quality is good (0.9), even that the ration of the clusters' sizes is high.
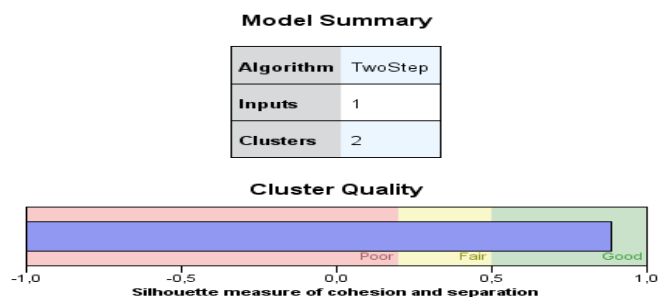
Figure 3. Real GDP growth rate under cluster analysis

Source: Personal contribution using IBM-SPSS software

The same cluster criteria may be applied in 2013. Moreover, 83.33% of the clusters' structure in 2008 is maintained in 2013. On the other hand, the economic growth rates' values are better grouped in 2013 than in 2008.

It is very difficult to obtain data about the unemployment in SADC countries. Useful information can be obtained by comparing the unemployment rates in Sub-Sahara Africa and world average. During 2007-2013, for example, the

unemployment rate was constant higher in SADC countries than world average (see Figure 4) (International Labour Organization (2014).
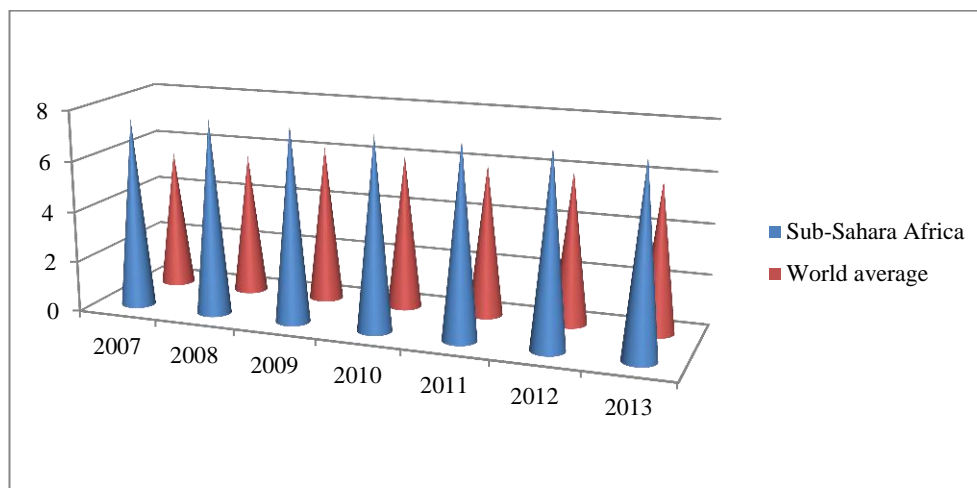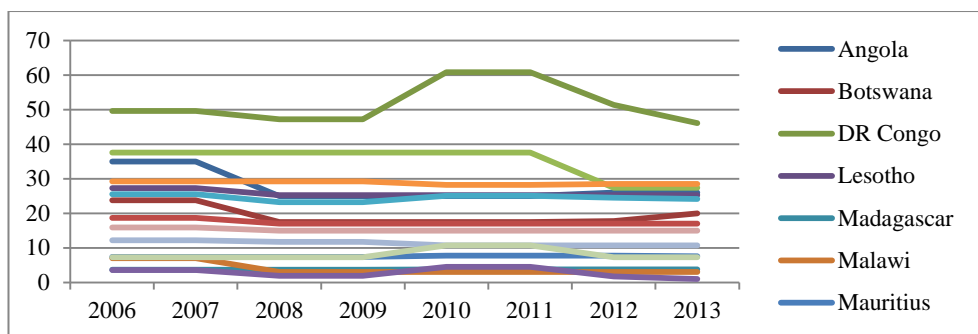

Figure 4. Unemployment rate (%)

Source: Personal contribution

The available data for unemployment across SADC countries are presented in Table 3 (http://www.tradingeconomics.com/). A lot of data in this table are at least controversial.

Table 3. Unemployment rate

| Country	2006	2007	2008	2009	2010	2011	2012	2013
Angola	35.0	35.0	25.0	25.0	25.0	25.0	26.0	26.0
Botswana	23.8	23.8	17.5	17.5	17.5	17.5	17.8	20.0
DR Congo	49.6	49.6	47.2	47.2	60.8	60.8	51.4	46.1
Lesotho	27.3	27.3	25.3	25.3	25.3	25.3	25.3	25.3
Madagascar	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8
Malawi	7.0	7.0	3.0	3.0	3.0	3.0	3.0	3.0
Mauritius	7.4	7.4	7.4	7.4	7.8	7.8	7.8	7.6
Mozambique	18.7	18.7	17.0	17.0	17.0	17.0	17.0	17.0
Namibia	37.6	37.6	37.6	37.6	37.6	37.6	27.4	27.4
Seychelles	3.6	3.6	1.9	1.9	4.5	4.5	1.7	1.0
South Africa	25.5	25.5	23.2	23.2	25.1	25.1	24.5	24.1
Swaziland	29.2	29.2	29.2	29.2	28.2	28.2	28.5	28.5
Tanzania	12.2	12.2	11.7	11.7	10.7	10.7	10.7	10.7
Zambia	15.9	15.9	15.0	15.0	15.0	15.0	15.0	15.0
Zimbabwe	7.3	7.3	7.3	7.3	10.7	10.7	7.3	7.3

The unemployment rate leads to great disparities across SADC countries. The ratio between the lowest and the highest unemployment rates was 1: 46.1 in 2013. 11 countries had two double-digit unemployment rates in the same year, 2013 (see Figure 5).

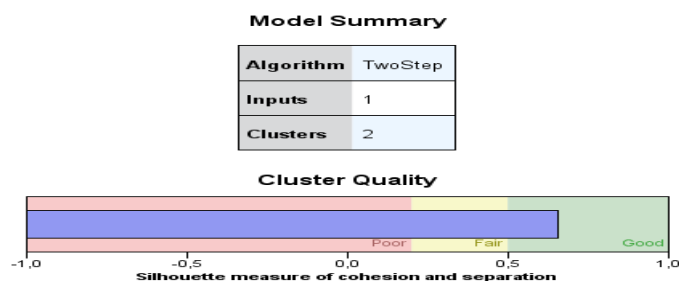**Figure 5. Unemployment rate trend (%)**

Source: Personal contribution

The regression analysis supports the same idea (see Figure 6). As a result, two clusters can be built in 2008. First cluster covers those countries with unemployment rates less or equal to 20% (Botswana, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, Tanzania, Zambia and Zimbabwe), while the second cluster is formed from countries which faced to unemployment rates greater than 20% (Angola, DR Congo, Lesotho, Namibia, South Africa and Swaziland).
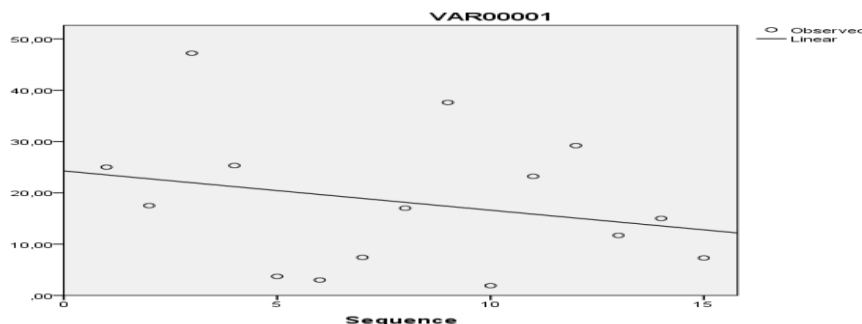
Figure 6. Unemployment rate's disparities in 2008

Source: Personal contribution using IBM-SPSS software

The viability of this new approach is supported by Figure 7. The cluster quality is good enough (0.7). Moreover, the same cluster structure is available in 2013. An intermediary conclusion of the analysis is that the two cluster approach is correct at least for the first two economic indicators.

Model Summary

Algorithm	TwoStep
Inputs	1
Clusters	2

Cluster Quality

Figure 7. Unemployment rate under cluster analysis

Source: Personal contribution using IBM-SPSS software

The third economic indicator analysed in the paper is the inflation rate. The evolution of this indicator is presented in Table 4 (International Monetary Fund, 2014).

Table 4. Inflation rate

Country	2006	2007	2008	2009	2010	2011	2012	2013
Angola	12.3	11.2	11.5	12.7	13.5	12.5	9.3	7.8
Botswana	10.6	6.1	11.6	7.1	5.9	7.5	6.5	4.8
DR Congo	12.2	15.7	17.0	45.2	22.5	14.5	1.1	-0.2
Lesotho	5.1	7.0	9.7	6.4	2.6	4.0	5.2	4.3
Madagascar	9.8	9.4	8.2	8.0	8.3	9.0	4.8	4.8
Malawi	12.9	7.0	7.7	7.4	6.4	6.6	20.3	27.3
Mauritius	7.9	7.8	8.7	1.5	1.9	5.5	2.9	2.5
Mozambique	12.2	7.2	9.3	2.3	11.7	9.4	1.1	3.2
Namibia	4.0	5.5	8.1	8.5	3.9	4.0	5.7	4.6
Seychelles	-2.9	-9.6	36.0	30.7	-3.4	1.6	6.1	3.3
South Africa	3.7	6.1	10.5	6.1	3.3	4.0	4.7	4.8
Swaziland	4.2	7.1	11.7	6.4	3.5	5.1	7.9	4.6
Tanzania	6.3	6.0	9.3	11.1	6.2	11.7	15.0	6.9
Zambia	8.0	9.7	11.4	12.4	7.5	7.7	5.6	6.0
Zimbabwe	32.0	-73.7	156.0	5.2	2.0	2.5	2.7	0.6

There is no rule in the inflation's trend in SADC countries during 2006-2013. High inflation rates are followed by low rates or disinflation (see Figure 8).
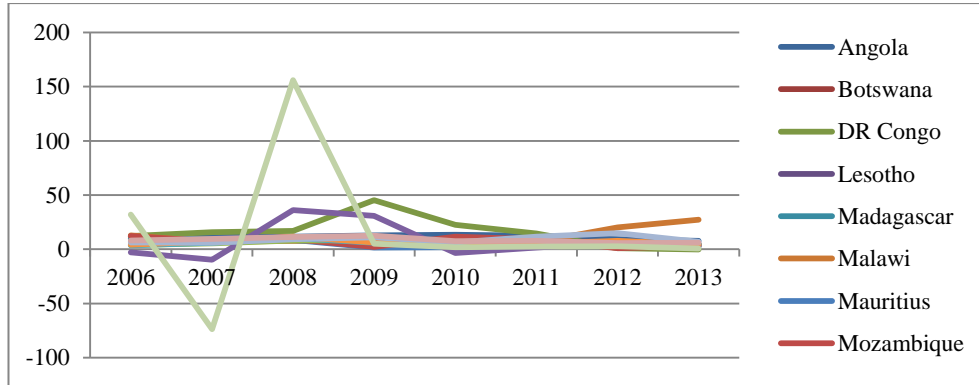
Figure 8. Inflation rate trend (%)

Source: Personal contribution

As a result, the inflation rate disparities are fantastic. The regression analysis' result is relevant in this respect (see Figure 9). In 2008, for example, the obsolete disparity is 1: 20.26. The situation improved in 2013, when only Malawi faced to two-digit inflation rate and DR Congo to disinflation.
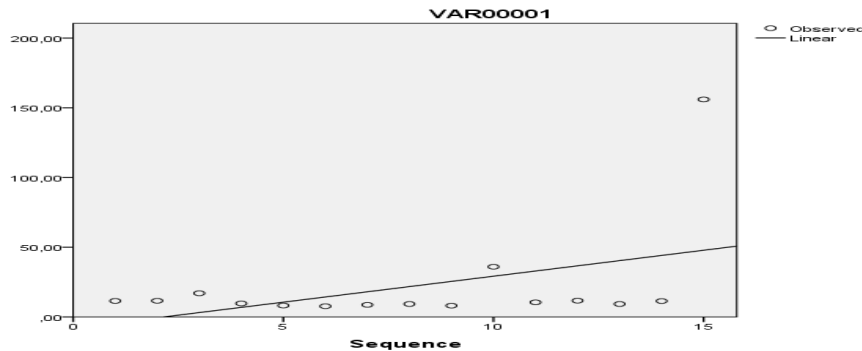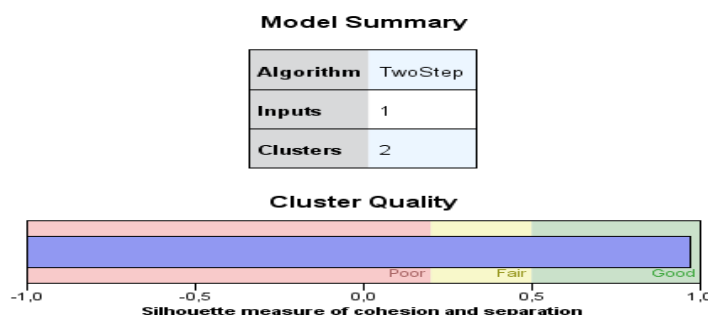

Figure 9. Inflation rate's disparities in 2008

Source: Personal contribution using IBM-SPSS software

The initial assumption of grouping SADC countries in two clusters leads to: countries with inflation rates lower than 10% (Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia and Tanzania) and countries facing to inflation rates higher than 10% (Angola, Botswana, DR Congo, Seychelles, South Africa, Swaziland, Zambia and Zimbabwe).

The improving of the monetary policy in 2013, led to new clusters criteria: countries with inflation rates lower than 5% (Botswana, DR Congo, Lesotho, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, South Africa,

Swaziland and Zimbabwe) and countries facing to inflation rates higher than 5% (Angola, Malawi, Tanzania and Zambia). 71.43% of the clusters' structures in 2008 are maintained in 2013. The viability of this new cluster grouping is demonstrated by the cluster quality (0.95) in Figure 10.

Model Summary

Algorithm	TwoStep
Inputs	1
Clusters	2

Cluster Quality

Poor   Fair   Good

-1,0   -0,5   0,0   0,5   1,0
Silhouette measure of cohesion and separation

Figure 10. Inflation rate under cluster analysis

Source: Personal contribution using IBM-SPSS software

The analysis of the inflation rate allows concluding that the high disparities across SADC countries can be quantified using two clusters approach.

The last economic indicator analysed in the paper is balance of current account. The evolution of this account is presented in Table 5.

Table 5. Balance of current account (% of GDP)

Country	2006	2007	2008	2009	2010	2011	2012	2013
Angola	25.6	17.5	8.5	-10.0	8.1	12.6	11.6	5.5
Botswana	19.3	15.0	0.0	-11.2	-6.0	-0.7	-3.8	10.4
DR Congo	0.3	3.2	-0.8	-6.2	-10.6	-5.4	-6.2	-10.2
Lesotho	26.3	24.6	23.4	8.9	-4.7	-8.6	-4.2	-1.2
Madagascar	-3.8	-12.7	-20.6	-21.2	-9.7	-6.9	-6.8	-5.4
Malawi	-11.2	1.0	-0.7	-4.8	-1.3	-5.9	-4.5	-2.8
Mauritius	-9.1	-5.4	-10.1	-7.4	-10.3	-13.8	-7.3	-9.9
Mozambique	-8.6	-10.9	-12.9	-12.2	-11.7	-24.4	-45.4	-39.5
Namibia	13.6	8.5	2.9	-1.4	1.0	-1.2	-2.6	-5.1
Seychelles	-13.2	-18.8	-27.2	-22.4	-22.1	-26.5	-24.7	-16.9
South Africa	-5.3	-7.0	-7.2	-4.0	-2.0	-2.3	-5.2	-5.8
Swaziland	-6.7	-2.1	-7.6	-13.0	-10.0	-8.2	3.8	5.3
Tanzania	-9.6	-10.9	-10.3	-9.8	-9.3	-14.5	-15.9	-13.8
Zambia	-0.4	-5.4	-5.8	3.8	5.9	3.0	3.1	0.7
Zimbabwe	-6.5	-5.4	-16.7	-44.6	-18.0	-29.8	-24.4	-27.4

The current account disparities seem to increase in 2013 comparing to 2008 (see Figure 11).
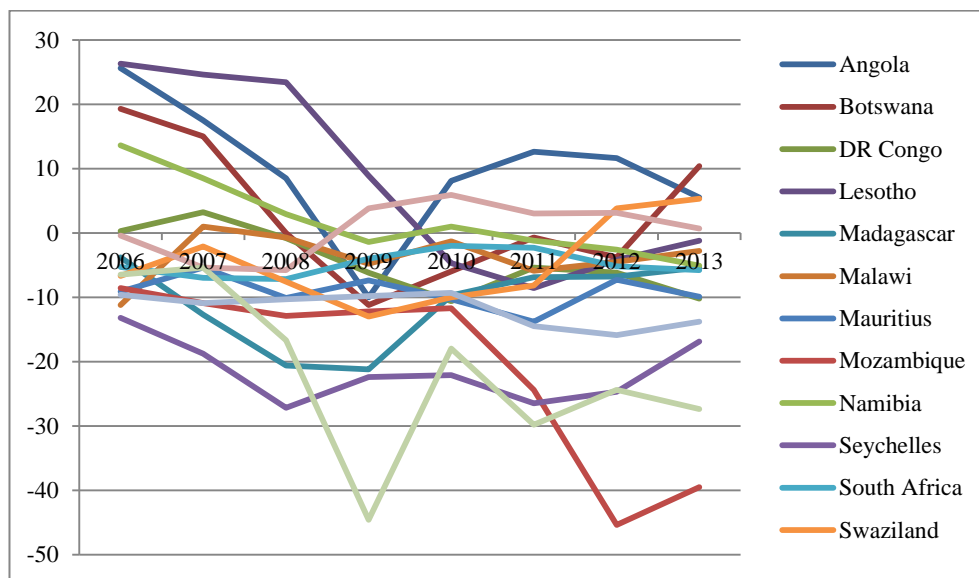
Figure 11. Current account trend (%)

Source: Personal contribution

The global crisis' impact on this economic indicator was high in 2008. Only four SADC countries had positive balances of the current accounts at that moment (see Figure 12).
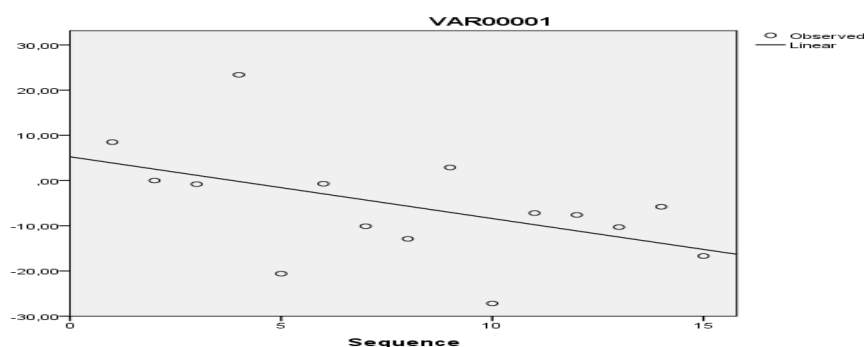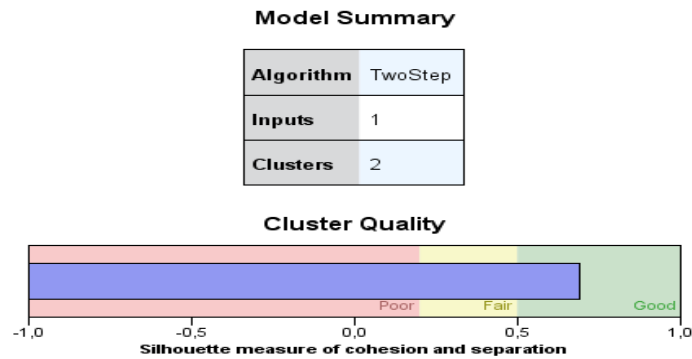

Figure 12. Current account's disparities in 2008

Source: Personal contribution using IBM-SPSS software

On the other hand, Figure 12 supports the idea of using two clusters in analysing the balance of current account for each SADC country. 78.57% of the clusters'

structure in 2008 is maintained in 2013. Moreover, the cluster approach is supported by the result of the cluster analysis in Figure 13. It highlights a cluster quality of 0.7.

Model Summary

Algorithm	TwoStep
Inputs	1
Clusters	2

Cluster Quality

Figure 13. Current account under cluster analysis

Source: Personal contribution using IBM-SPSS software

The analysis in this chapter leads to the intermediate conclusion that the high economic disparities across SADC countries allow the use of the two clusters approach in studying the viability of this regional organization.

4. SADC's Goals Forecasting as Measure of its Viability

The last step of the analysis is to forecast the above four economic indicators in order to highlight if the economic disparities will decrease or not at the end of 2020. The results of the GDP growth rate forecasting were presented in Figure 14.

Angola   Botswana   DR Congo

Lesotho

Madagascar

Malawi

Mauritius

Mozambique

Namibia

Seychelles

South Africa

Swaziland

Tanzania

Zambia

Zimbabwe
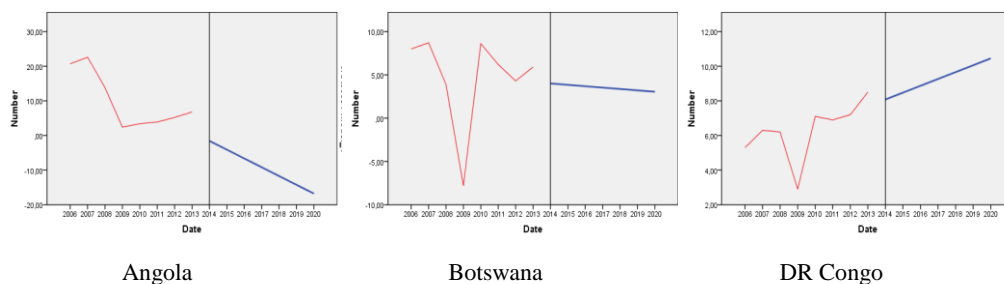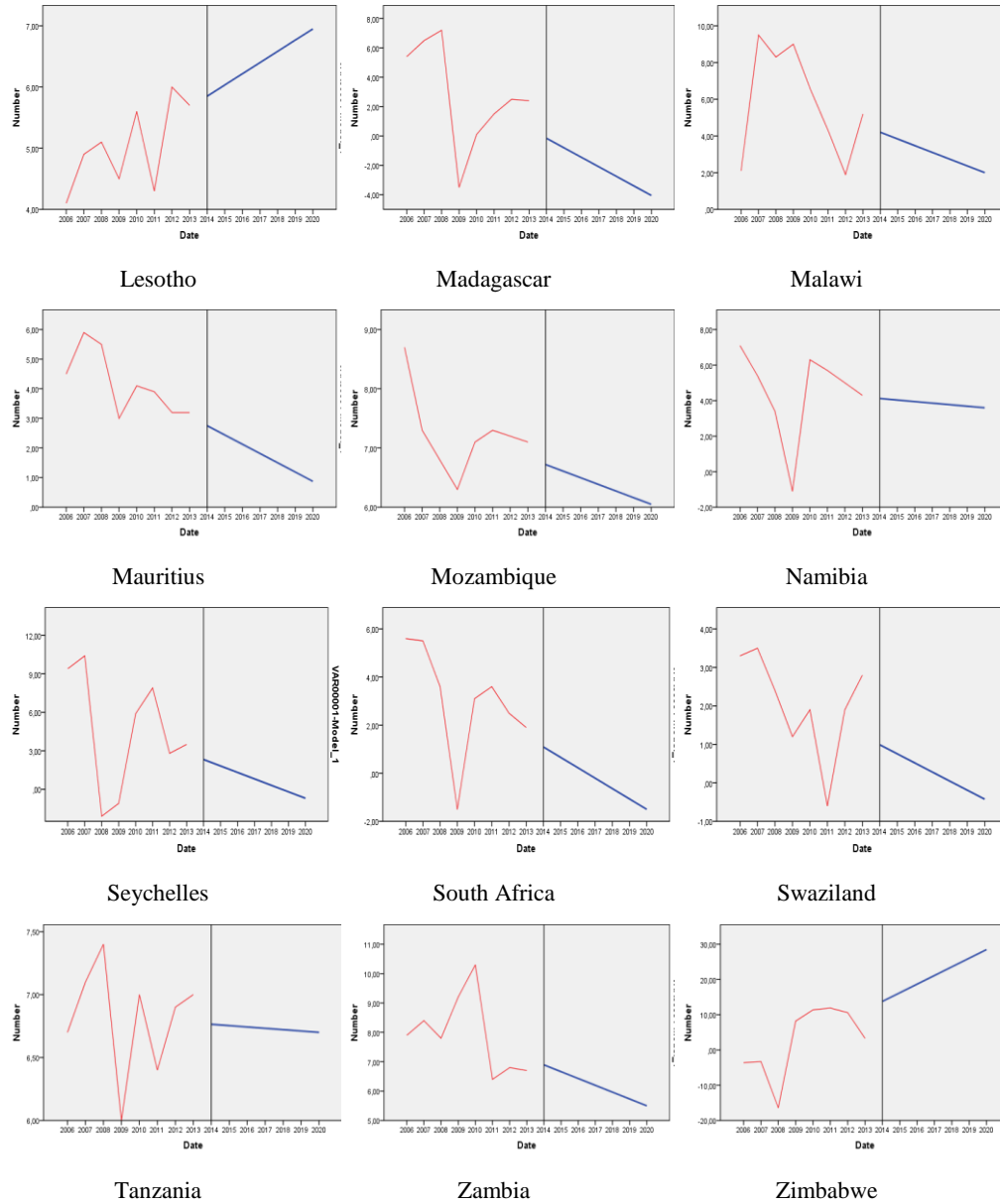
Figure 14. GDP growth rate forecasting

Source: Personal contribution using IBM-SPSS software

5 SADC countries will face to economic contraction in 2020. Using this conclusion, the grouping into two clusters will be available, as well. Moreover,

73.33% of the clusters' structure in 2013 will be maintained in 2020. On the other hand, the highest growth rate ratio will increase in 2020.

The unemployment rates varied a lot during 2006-2013 at individual and regional levels. As a result, the unemployment forecasting is difficulty. The unemployment rate forecasting is presented in Figure 15.
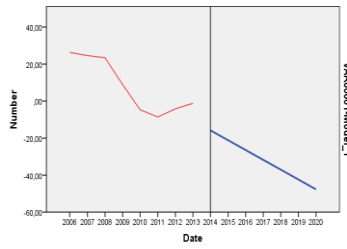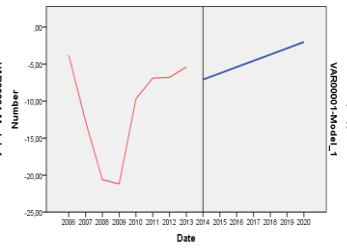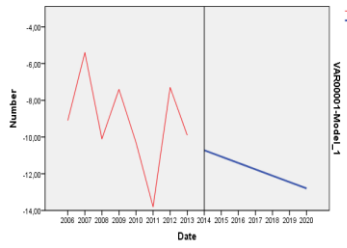

Angola   Botswana   DR Congo

Lesotho   Madagascar   Malawi

Mauritius   Mozambique   Namibia

Seychelles   South Africa   Swaziland

Tanzania	Zambia	Zimbabwe
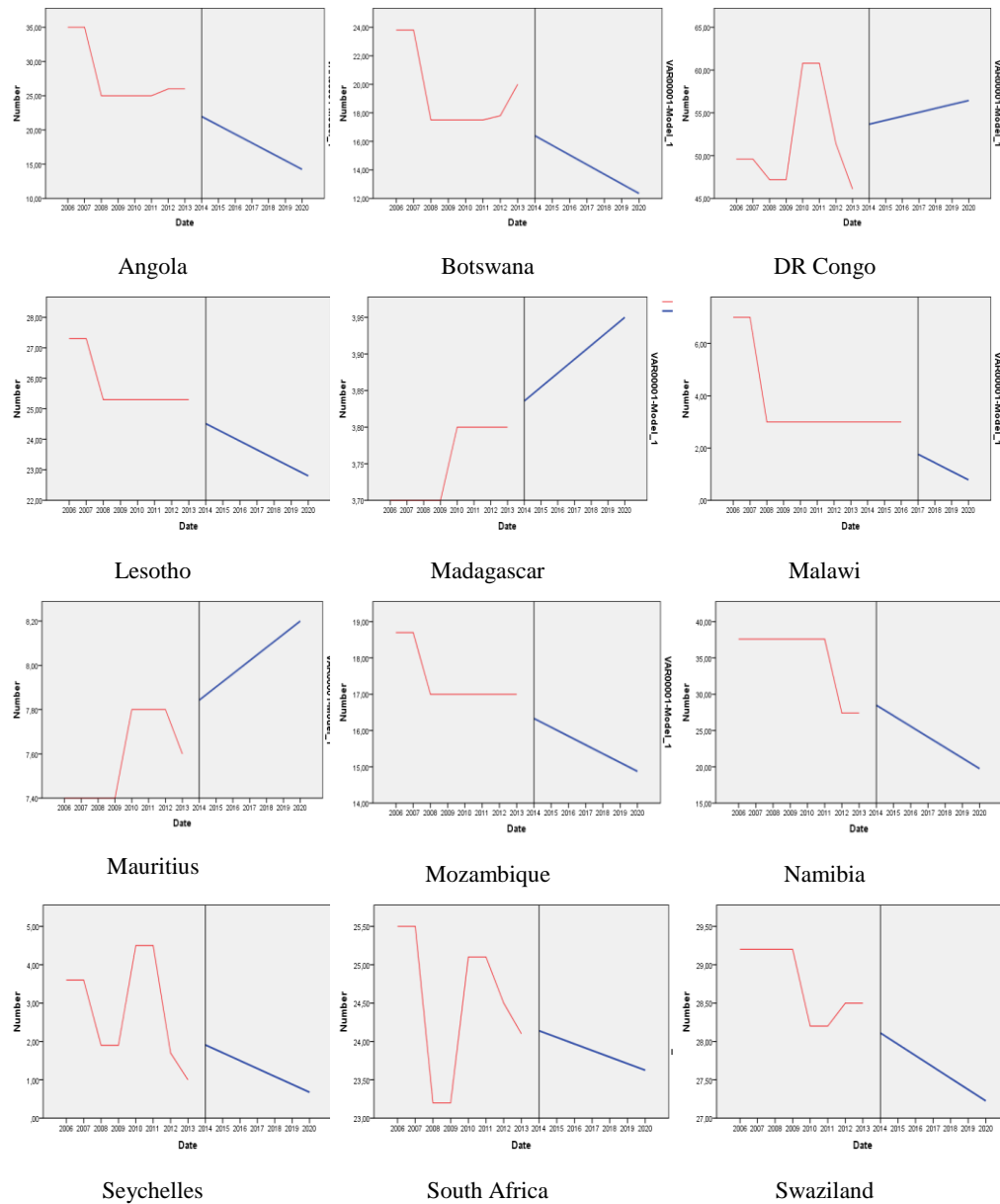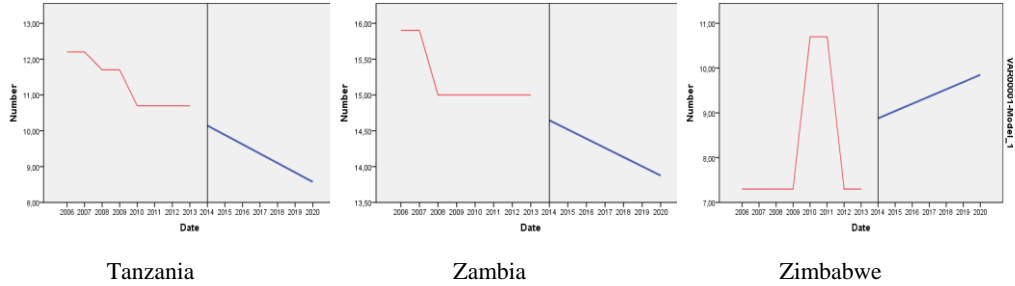
Figure 15. Unemployment rate forecasting

Source: Personal contribution using IBM-SPSS software

The forecasted unemployment rates in 2020 are strange enough. 11 SADC countries will achieve better unemployment rates compared to 2013. Using the "classic" two clusters approach, 86.66% of the clusters' structure in 2013 will be available in 2020, as well.

The forecasting of the inflation rate leads to interesting results (see Figure 16). Only 8 SADC countries will achieve better inflation rates in 2020. Other four countries will face to disinflation. The two clusters' structure in 2013 will be 86.66% the same in 2020.

Angola	Botswana	DR Congo

Lesotho	Madagascar	Malawi
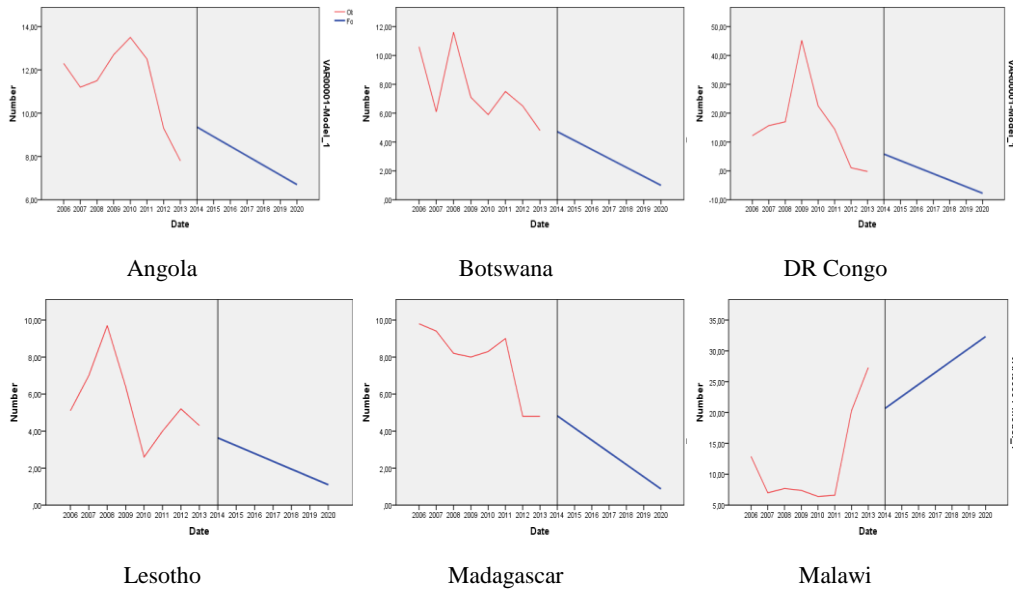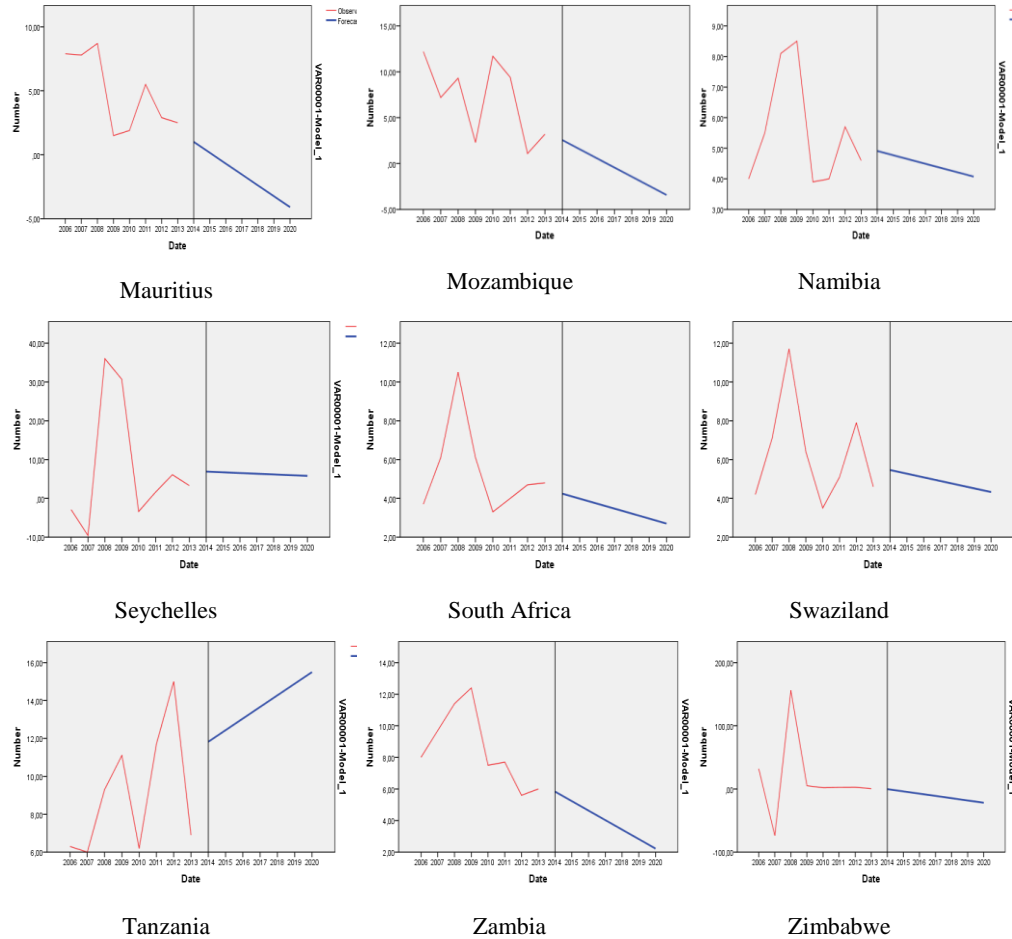
Figure 16. Inflation rate forecasting

Source: Personal contribution using IBM-SPSS software

Finally, the balance of current account forecasting offers a lot of controversy results (see Figure 17). 5 SADC countries will achieve better results for their current accounts. 80% of SADC countries will belong to the same clusters in 2020 as in 2013.
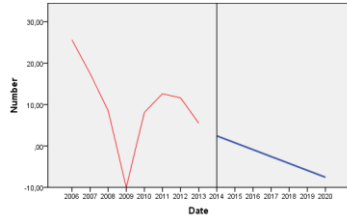
Angola
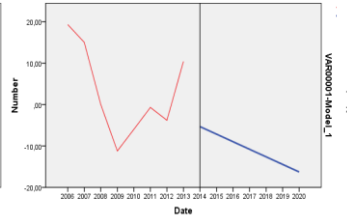
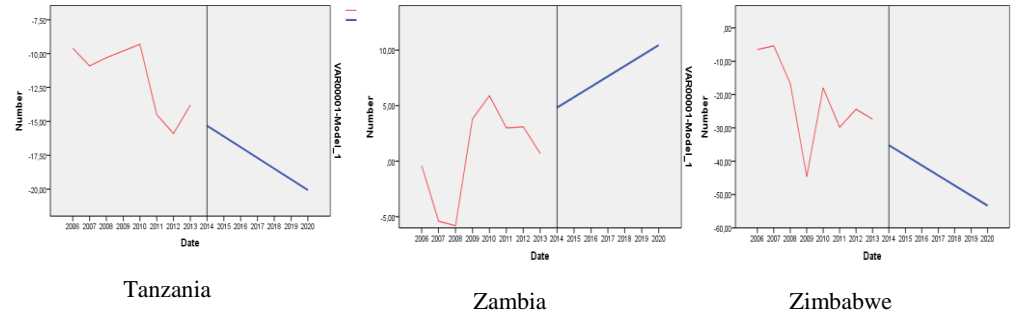Botswana
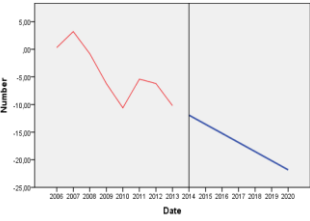
DR Congo
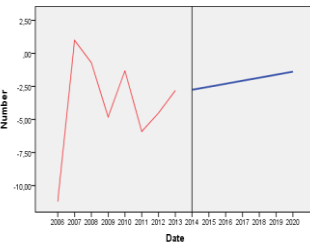
Lesotho

Madagascar

Malawi

Mauritius

Mozambique

Namibia

Seychelles

South Africa

Swaziland

Tanzania   Zambia   Zimbabwe
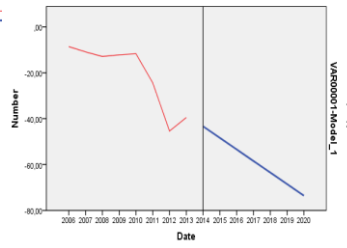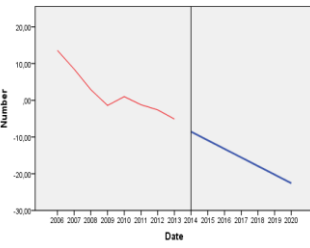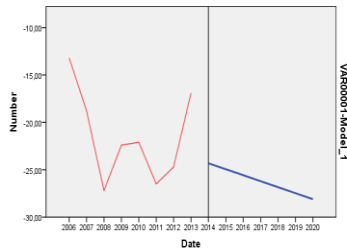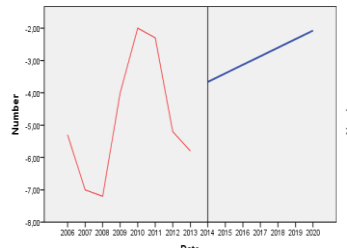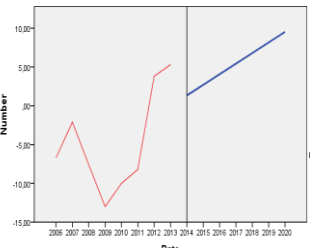
Figure 17. Current account forecasting

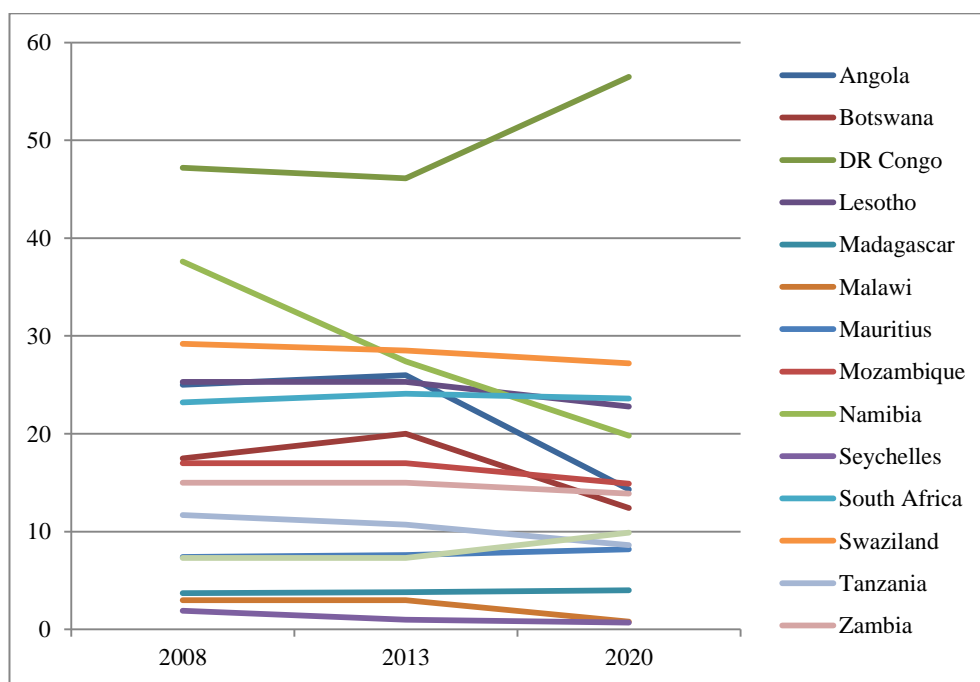*Source: Personal contribution using IBM-SPSS software*

5. Conclusions

The above analysis highlighted great disparities across SADC countries. According to GDP growth rate, the disparities decreased in 2013 compared to 2008, but increased again in 2020 (see Figure 18).
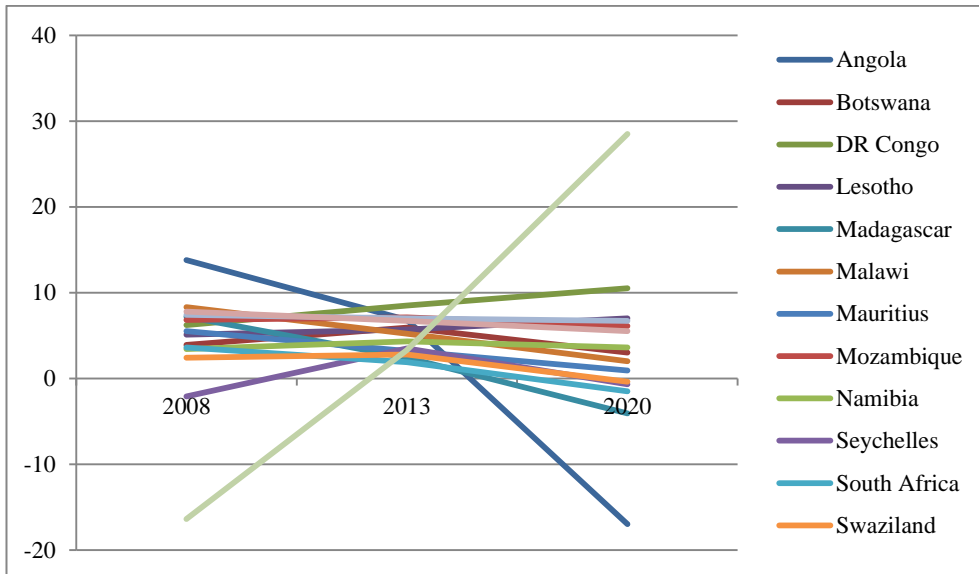
**Figure 18. GDP growth rate (%)**

Source: Personal contribution

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The classic high unemployment rates in 2008 increased disparities in 2013 and 2020 in almost all SADC countries. The highest unemployment rate ratio will be 1:70.6 and represents an alarming situation (see Figure 19).

**Figure 19. Selected unemployment rate (%)**

Source: Personal contribution

The disparities related to the inflation rate decreased in 2013, but will increase more in 2020. Many SADC countries will face to disinflation in 2020 (see Figure 20).
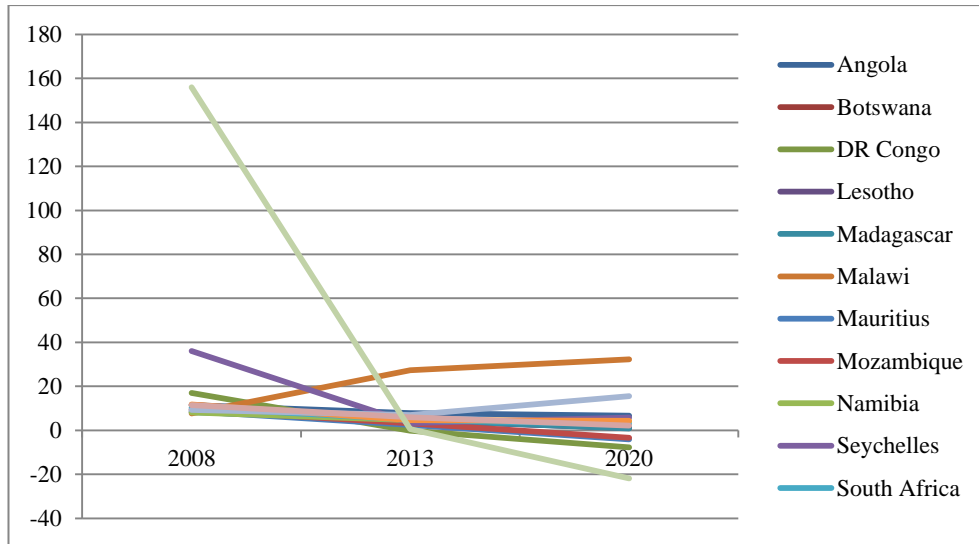
Figure 20. Selected inflation rate (%)
Source: Personal contribution

The balance of current account has a negative trend during 2008-2020. This balance will be more damaged in 2020 in almost all SADC countries (see Figure 21).
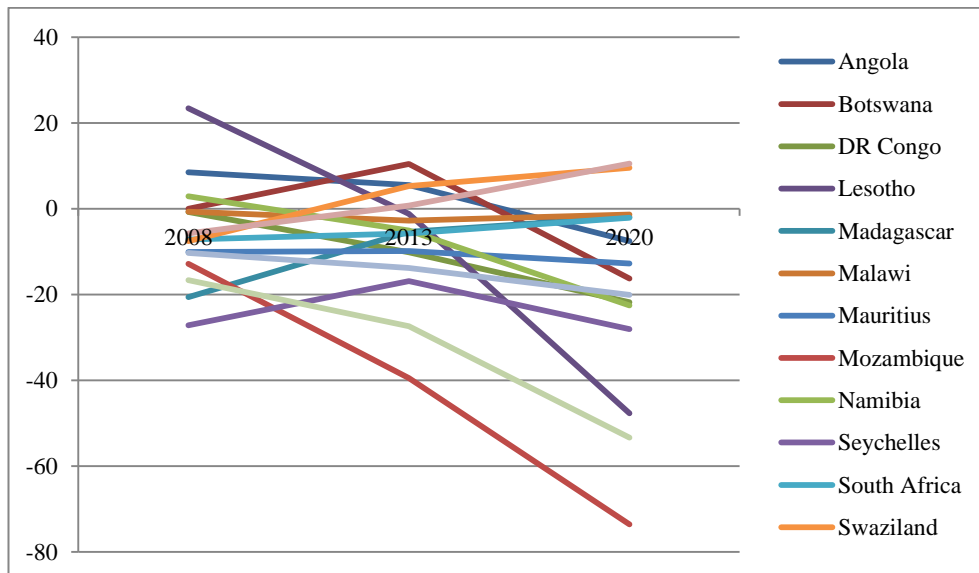
Figure 21. Selected balances of current accounts (% of GDP)
Source: Personal contribution

Basically, no SADC country will be able to achieve better economic results for all above four indicators in 2020. Moreover, at SADC level, the economic disparities will increase in 2020 compared to 2013.

As a result, SADC will not be able to achieve its goals in 2020 and will face to economic difficulties on short and medium terms.

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