Regional African stock markets indices

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This paper presents an overview of the construction of regional indices for three of the four regions within Africa. The three indices are the EASDEX (for East Africa), the NADEX (for North Africa) and the WADEX (for West Africa). The SADC region has been excluded, as it has recently been concluded as the subject of study, in which the index, the SADIX was constructed (Tyandela, 2001). The weekly market capitalisation data collected for the construction of these indices was further used to construct an All-Africa index. These indices could in future assist investors both locally and internationally to determine the movement of indices as a way of assessing market trends and opportunities for investment on the African continent.

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Introduction

Before 1989 there were five stock markets in Sub-Saharan Africa and three in North Africa. With the collapse of the Soviet Union and a move towards democracy in Africa, free markets rapidly spread across Africa, transforming many socialist economies. The enthusiastic support of governments showed a keenness to display their new capitalist orientation and throw out a welcome mat for foreign investors (Moss, 2000:118). For many sub-Saharan African countries the stock exchange is a national symbol of prestige and progress (Chamberlain in Moss, 2000:118) but unfortunately many are riddled with problems of liquidity and too few listings.

Changes in international trade and globalisation have increased the flow of revenue across borders. Economic integration is moving from general trade agreements towards free trade areas, common markets and common monetary unions. Linked to this, is the discussion around the development of common stock exchanges.

Financial market development is closely related to the overall development of a country's economy. When there are low levels of economic development, the tendency is towards the dominance of commercial banks in the financial system. As economies grow, specialised financial intermediaries and equity markets develop.

Africa's stock markets are considered by many emerging market specialists to have great potential for investors. Few African markets are listed on the IFC (International Finance Co-operation) database as investable markets[1]. Those listed include Egypt, South Africa, Morocco and Zimbabwe (*The S&P Emerging Market Indices, 2000*). Historically emerging markets are volatile and risky. However, the case for diversification into emerging markets originates from the high economic growth potential of emerging markets, together with low correlation with other developed markets. Erb *et al* (1996) developed a model to evaluate the risk and expected returns of African equity investments. They found that the average expected returns for 34 African countries would be 18,4% if indeed these markets existed. The average correlation was low (5% compared to the average correlation of 41% for developed countries equity markets). While they concede that their model is not necessary the best, it adds impetus to the discussion around the potential of Africa as a portfolio diversifier.

The current initiative of the New Partnership for Africa's Development (NEPAD) has as one of its objectives, to create a platform for private capital investment and economic growth. Encouraging economic growth throughout Africa and not just in Southern Africa will assist the continent as a whole to attract market capital.

Regionalisation is considered by many to be inevitable for African stock markets as they struggle to consolidate in order to overcome poor liquidity and to attract more foreign investment to the African continent. Many of these stock markets are characterised by relatively low liquidity, well below most emerging stock exchanges. Part of this stems from reasons such as (a) relatively low trading volumes in African securities, (b) the lack of information flow about securities to both institutional and individual investors, (c) lack of investor awareness of the opportunities in these markets, and (d) the relatively unstable economies in these countries (Tyandela & Biekpe, 2001). The recent move of many African countries towards economic and financial

[1] These are defined as those markets available to foreign investors and which pass screens for minimum size and liquidity.

reform will promote Africa as a region for investment. However, the lack of information has always proved a barrier to external investment for Africa. One of these areas is the lack of data from stock markets.

Africa needs to restore investor confidence in the continent and attract international investment to the region. Stock market indices provide information to investors and portfolio managers about the performance of various markets or groups of stocks. Investors can use the movement of indices as a way of assessing market trends and opportunities for investment. As economic integration increases in Africa, it will become increasingly important to have markers of regional market performance.

Currently there are 17 stock exchanges on the African continent although these are very small by world standards. The largest market capitalisation, South Africa, of US$ 198 005 million (Tyandela & Biekpe, 2001), is extremely small compared to the market capitalisation of the three largest global markets, namely United States of America (US$ 116 635 114 million), Japan (US$ 4 546 937 million) and the United Kingdom (US$ 2 993 280 million) (*World Development Indicators, 2001*:278).

Egypt, Morocco and Tunisia are the only countries with stock exchanges in North Africa. Francophone West Africa has a regional bourse, based in Cote d'Ivoire and includes stocks from the surrounding French speaking countries such as Mali, Niger, Benin, Burkina Faso, Ivory Coast, Senegal and Togo. Ghana and Nigeria are the other 2 countries in West Africa with stock markets. In East Africa, three stock exchanges exist, namely in Kenya, Tanzania and Uganda. Within the Southern African Development Community (SADC), the path has been cleared for dual listings on Southern Africa's stock markets following several meetings of the regional stock exchanges. Nine countries including South Africa, Namibia, Swaziland, Botswana, Mauritius, Zambia and Zimbabwe are represented.

Calculation of the index (EASDAQ, 1999)

The All-Share Index is weighted arithmetically where the weights are the market capitalisation of its constituents.

The market capitalisation (M) is the sum of the market value of all stocks included in the index. The market value of each stock is equal to:

$$M = P_i \, n_i$$

where,

P_i = the last transaction price for the stock in period *i*

n_i = the number of shares issued and outstanding at the end of the period *i*.

The index value represents the total market value of all companies within the index at a particular point in time compared to a comparable calculation at the starting point. The weekly index value is calculated by dividing the total market value of all constituent companies by a number called the divisor. The divisor is adjusted when changes in capitalisation occur to the constituents of the index allowing the index value to remain comparable over time.

The initial divisor was chosen at the index base date, 7 January 2000, to fix the index starting value at 1000.

The value of the index I_t at time t is given by:

$$I_t = 1000 * \text{Market value}_t / \text{divisor}_t$$

where,

Market Value$_t$: is the sum of the current market values of the constituents of the index, expressed in dollars.

Divisor$_t$: is the market value of the constituents at the base date (7 January 2000), adjusted for any new money being added to or deducted from the index. The new money is expressed in dollars using the rate exchange quoted on oanda.com website and is adjusted back to the index level at the base date.

Mathematically this can be expressed as:

$$I_t = \frac{I_0 * \sum M_t / ER_{i,t}}{D_t}$$

$$D_t = \sum P_{i,o} * N_{i,o} / ER_{i,o} + \sum NM_{j-1} * I_o /_{j-1}$$

where:

I_t = value of the index at time *t*

I_o = 1000 (i.e. the value of the index at January 2000)

$P_{i,t}$ = price of security *i* at time *t*

$N_{i,t}$ = number of shares in issue for security *i* at time *t*

$ER_{i,t}$ = exchange rate from the currency of quotation of security *i* at time *t* to dollars. It is expressed as 1 dollars = x units of the quotation currency.

D_t = divisor at time *t*

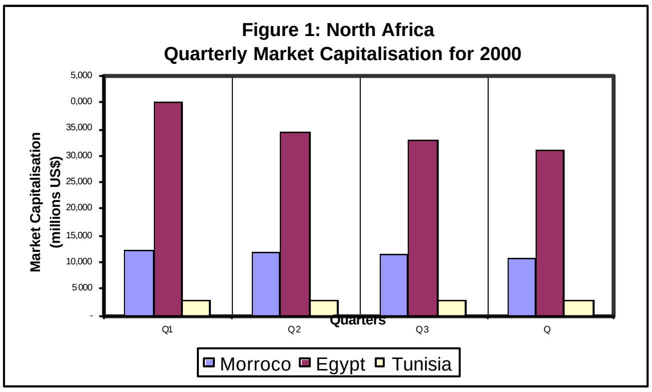
NM_j = net new money raised at time *j* through the issue of new companies, new shares, rights issues, capital reorganisations or even capital repayments.

Findings

Market capitalisation

North Africa market capitalisation (Figure 1)

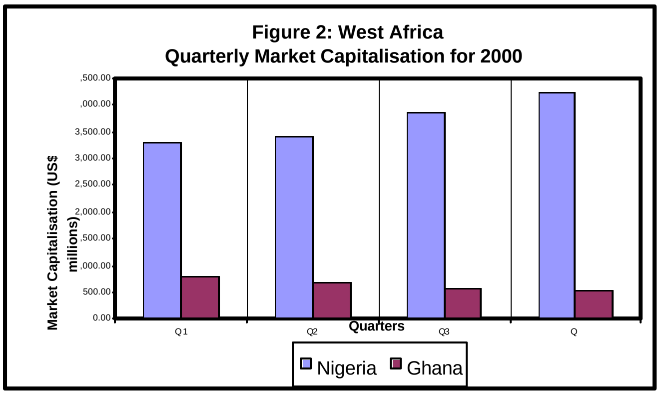
The Egyptian market dominates the North African region contributing 72,46%, 70,22%, 69,68% and 69,93% respectively to the total regional market capitalisation during the four quarters of 2000. During 2000, the Egyptian market lost US$ 9 billion in overall market capital, which accounted for a loss of 7,1% from the first week in January to the last week in December 2000. Despite this Egypt was still able to remain the dominant force within the North African regional market capitalisation.



Morocco, which is the second largest market in the region, had a market share of 22,3%, 24,2%, 24,5% and 24% respectively during the four quarters of 2000. The Tunisian market is the smallest market in the region with a market capitalisation of approximately US$ 2,7 billion throughout 2000. This accounted for 5,3%, 5,6%, 5,8% and 6,2% respectively during the four quarters of 2000 of the region's market capitalisation. It is expected that the Egyptian market would have greatest influence on the index and that Tunisia would have a negligible effect. Overall the North African regional market capitalisation dropped by US$ 5,2 billion during 2000, a drop of 10,52%.

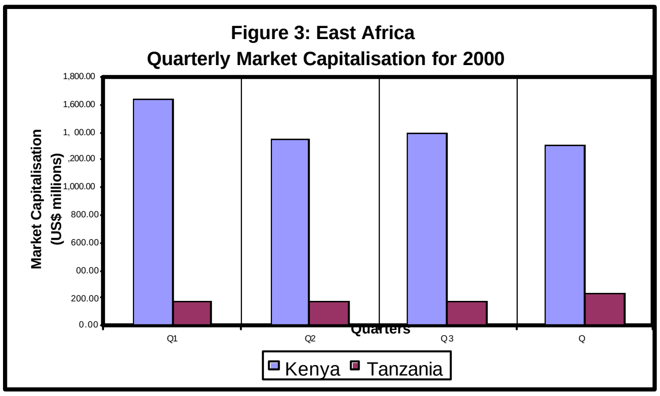
West Africa market capitalisation (Figure 2)

The Nigerian market accounted for 80 – 88% of the English-speaking countries market capitalisation during 2000. The market capitalisation increased by 44,8%, from US$ 2.9 billion in the first week of January and ending with a market capitalisation of US$ 4,2 billion in December, 2000. The smaller market capitalisation of Ghana contributes only 10% to the region. It lost 43,05% in dollar terms opening the year with a market capitalisation of US$ 0,943 billion and ending with US$ 0,537 billion. Lack of data from Cote d'Ivoire impacts on this discussion in that information on the weekly market capitalisation could not be obtained from their market.



East Africa market capitalisation (Figure 3)

The Kenyan market dominates the East African region. During 2000, it accounted for 90,5%, 88,7%, 89,04% and 84,92% of the regional market capitalisation, respectively for the four quarters of the year. Tanzania is the second largest market accounting for 9,47%, 11,3%, 10,96% and 15,08% of the regional market for the four quarters of 2000. Although Tanzania has only recently entered the market, it showed a growth in market capitalisation from US$ 0,175 billion at the beginning of 2000 to US$ 0,232 billion by year-end, a growth of 32,4%. No data was available from the Ugandan market, which has 4 listed stocks, but the authors believe that this lack of data will not impact significantly on the region.



Market capitalisation for the four African regions: Jan 2000

Table 1: Market capitalisation for the four African regions

Region	Market Cap (US$	Weight (%)
North Africa	49,798,638,013	14.90%
West Africa	3,886,051,910	1.16%
East Africa	1,650,501,112	0.49%
SADC	278,851,479,450	83.44%
Total Market Capitalisation	334,186,670,485	100.00%

The SADC region comprises the largest weighting (83,44%) in the total market capitalisation in Africa (Table 1). North Africa's market capitalisation is a distant second of 14,9%.

Regional returns

North African returns

During the first quarter of 2000, Egypt showed high returns, with a return of 19,65% (Figure 4). This was largely driven by the transport and telecom sector, which represents 27,4% of total market capitalisation in Egypt, the largest percentage share. [CMA report, 2000] The positive return of the first quarter was short-lived as the other three quarters of the year showed negative returns. This followed international trends that began to see large losses in the Telecom and IT sectors.

The second quarter's return of - 13,82% was followed by slight increases in the third and fourth quarter, of - 4,42% and - 5,66% respectively. The Moroccan market had negative returns throughout 2000, returning - 8,39%, - 3,41%, - 2,61% and - 8,11% respectively for the four quarters respectively. Tunisia, the smallest of the three markets had erratic returns beginning the first quarter with a return of 7,22%, followed by second quarter returns of - 3,50%. This was followed by a negative return of - 5,16% in the third quarter, which increased to - 1,19% during the last quarter.

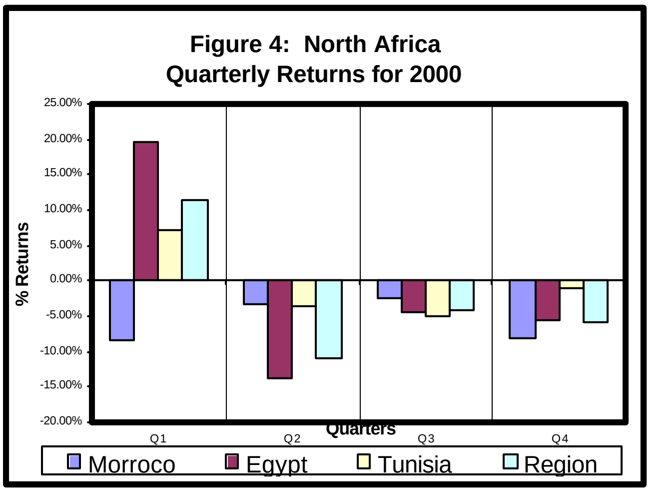


Figure 4: North Africa
Quarterly Returns for 2000

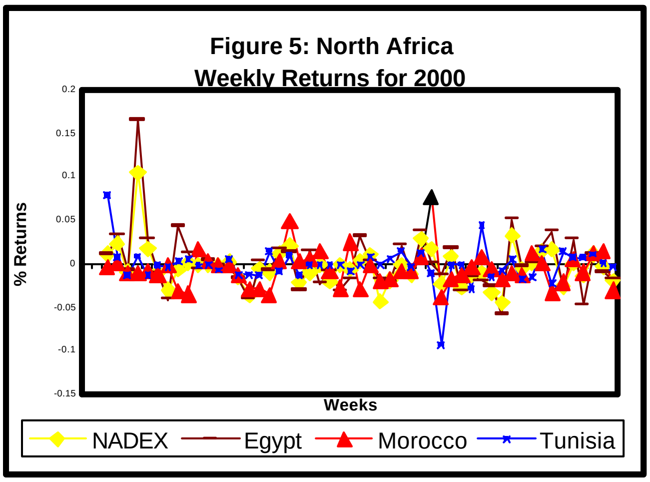


Figure 5: North Africa
Weekly Returns for 2000

The North African region showed a positive return of 11,37% during the first quarter, which was predominantly influenced by the 19,65% return of Egypt. The negative return of Morocco of 8,39% diminished this regional return. From the second quarter onwards as all the North African markets showed negative returns, the region showed negative returns. The weekly returns for the region (Figure 5) and its constituent markets indicate the erratic low positive and predominantly negative returns except for the first quarter of 2000 where positive returns were obtained.

West Africa returns

The Nigerian market commenced the year with positive returns of 12% during the first quarter which dropped to 3,41% during the second quarter but returned to highs of 13,26% and 9,72% in the third and fourth quarter respectively (Figure 6). Ghana showed negative results throughout the year with low returns of - 13,78%, -17,40%, - 16,04% and - 4,74% during the various quarters respectively. The effect of this was to negate some of the impact of the positive returns of the Nigerian market on the region. The result was that the returns for the English-speaking and the individual country returns are erratic ranging between highs of 19% and lows of - 10% for Ghana (Figure 7).

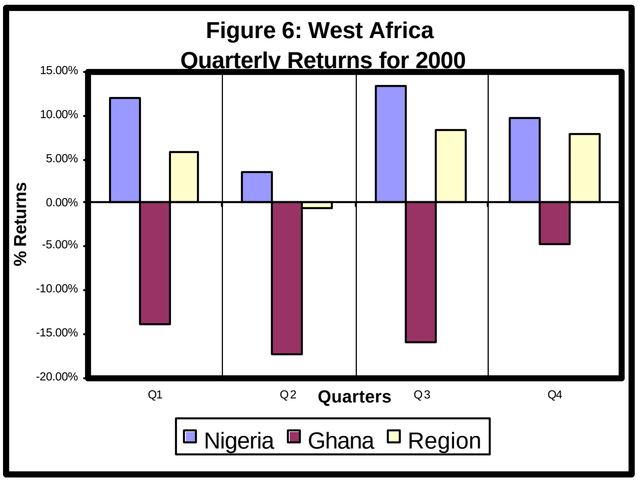


Figure 6: West Africa
Quarterly Returns for 2000

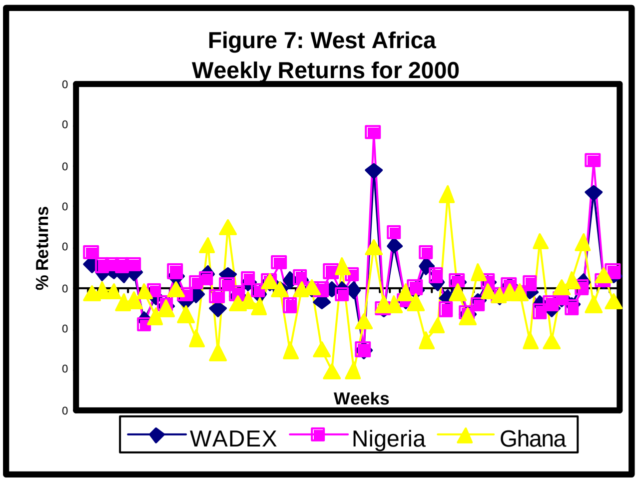
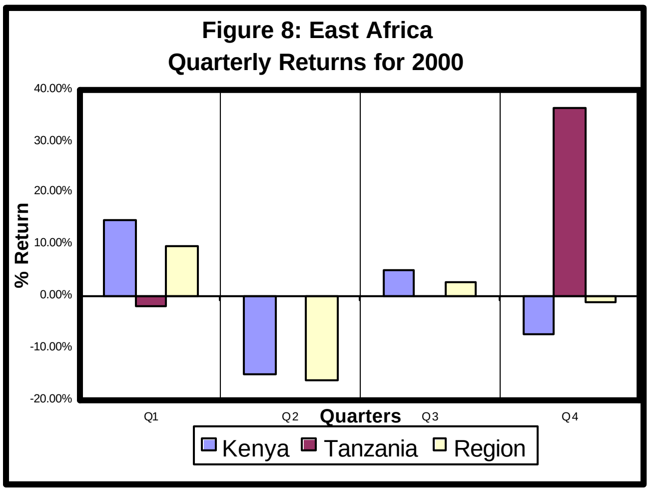


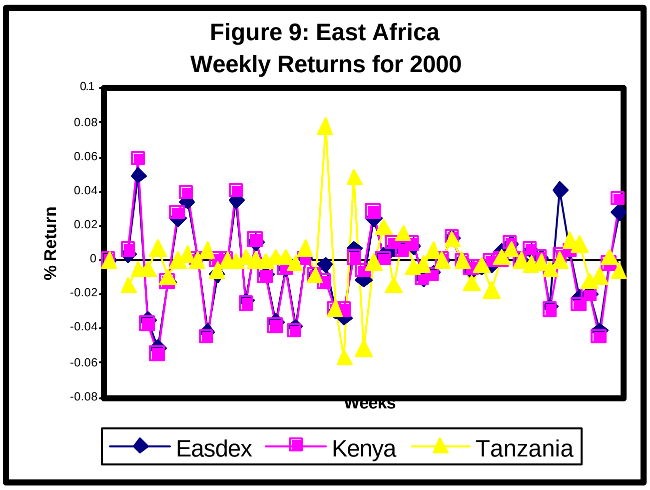
Figure 7: West Africa
Weekly Returns for 2000

East Africa returns

The Kenyan market showed large variations in 2000, ranging from negative returns of 17,84% to positive returns of 11,29%. The returns for the four quarters were 11,29%, - 17,84%, and 3,24% and - 5,76% (Figure 7). Despite being a small contributor to market capitalisation in the region, Tanzania has an overall positive return of 32,4% for 2000 and has the potential to expand and contribute to possible diversification in the region. The greatest contribution to this high return occurred during the last quarter of 2000, where a return of 35.97% was achieved. The negative aspect pertaining to Tanzania is the restriction on participation by foreign investors in both the primary and secondary market.

The returns for East Africa ranged between 6 and - 6% (Figure 9). In the second quarter the Tanzanian market showed greater fluctuation but for the rest of the year it remained fairly stable between 2% and - 2%. Kenya on the other hand showed large fluctuations in returns, reflecting again in the EASDEX.





Regional indices

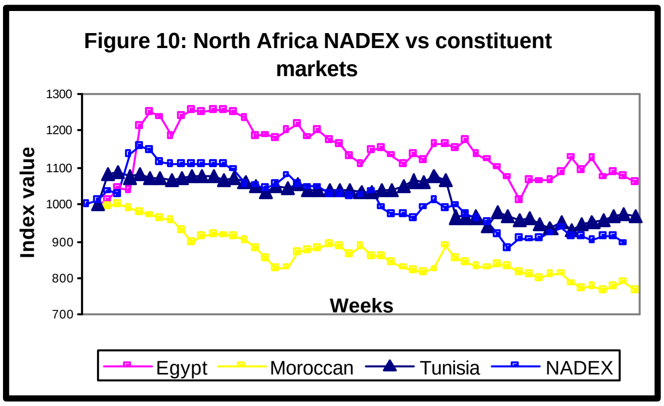
Using the methods described in section two, the various regional and the All-Africa indices were constructed. Weekly data obtained during the year 2000 was used to construct the indices.

North Africa

Plot of NADEX (North Africa All-share index) versus the Constituent Markets (Figure 10).

Despite an initial upswing within the Egyptian market during the first quarter, which ended the quarter on a high of 1256, the downswing continued for the rest of the year, ending with an index of 1058. A concern regarding the Egyptian market is the actual calculation of the indices. The CMA index (the official index for Egypt, calculated by the Capital Market Authority) with the EFGI index (Hermes-based) shows a significant difference. This could impact strongly on the regional index. Both indices are not based on the total market shares but rather on the more active companies. Egypt has more than 1100 listed companies but only approximately 90 are actively trading on the two exchanges. It may well be that it is not feasible to obtain an all-share index for this market especially considering the large non-active component of the market. The Egyptian index was calculated from market capitalisation data extrapolated from CMA data and as such is as representative of the overall market as the CMA index[2].

Morocco showed a general downward trend throughout the year closing with a low of 768. The Tunisian market, which commands a small percentage of the regional market, tended to follow the fall in the Egyptian market. Many emerging fund managers sold their holdings in the entire region when the Egyptian market did not perform as expected (*Tunisie Valeurs' Quarterly Review*, 2000). The NADEX follows the Egyptian Market closely, which is expected given the large weighting of Egypt in the region.



The indices historical returns for 2000 are as illustrated in Table 2.

Table 2: North Africa – historical returns of indices for 2000

Egyptian index	5.82%
Moroccan index	-23.20%
Tunisia index	-3.50%
NADEX	-10.51%

The Egyptian index faired better than many international[3] markets with the NADEX's return of - 10.51% being comparable with the S&P 500 index's return of - 10.41%.

[2] The Egyptian index was calculated from market capitalisation data extrapolated from CMA data and as such is as representative of the overall market as the CMA index.

[3] Historical returns for the period of ending December 2000: Dow Jones Composite: 3,21%, Nasdaq composite: - 39,29%, NYSE: 1.01%, Russell 2000: - 4,20%, S&P 500: - 10,14% and Wiltshire 5000: - 11,85%. [Dow Jones Averages Annual Report, 2000].

Correlation analysis: North African indices and NADEX (Table 3).

The North African Stock Exchanges are positively correlated with the NADEX, the strongest being Egypt with a correlation of 80.84%. This is expected as the Egyptian market commands the highest percentage (approximately 70%) of the market capitalisation within the region. There is a poor correlation between the Tunisian and Moroccan markets and Egypt, 36.80% and 20.93% respectively. The low correlation between Egypt and the other two North African markets allows for diversification within the North African Region. Tunisia and Morocco are highly correlated despite there being no cross listings on these two markets. This may well be explained by other factors such as political and financial shocks, which influence the region as a whole.

Table 3: Correlation analysis of North African indices and NADEX

	Morocco	Egypt	Tunisia	NADEX
Morocco	100,00%			
Egypt	20.93%	100,00%		
Tunisia	85.42%	36.80%	100,00%	
NADEX	70.94%	80.84%	77.54%	100%

West Africa

Plot of WADEX (West Africa Index) versus the Constituent Markets (Figure 11)

The Nigerian index showed an initial increase during the first 2 months of 2000 and then a slowing down which remained steady until midyear. The third quarter again saw upward movement in the index during July and August reaching a high of 1404 in early September. This was followed by a decline in the last quarter until the last few weeks of December where the market saw new highs, ending on a year high of 1439.

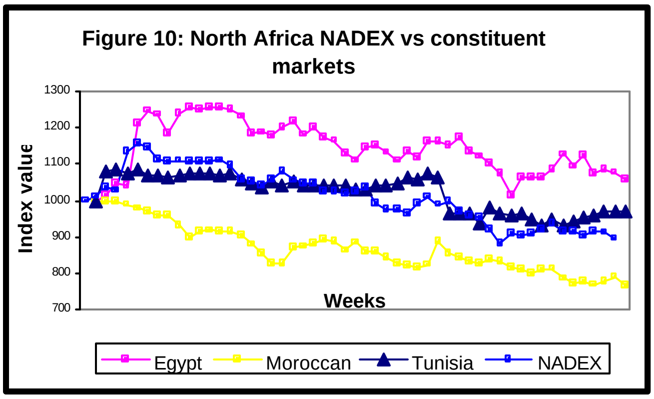


Figure 10: North Africa NADEX vs constituent markets

Ghana showed dramatic decreases in the index throughout the year ending at a low of 516. In Ghana, the fall in the index over the year is largely contributed to the depreciation of the Ghanaian cedi. In January 2000, 1 US$ was equivalent to 3399 cedi. By the end of the 2000, a US$ cost 6800 cedi. The actual market capitalisation (in cedi) in Ghana increased by 12,2% during 2000 but the index (based on US$) dropped by 43,9%. The overall regional index for West Africa (English-speaking countries) moves with the Nigerian market and is primarily due to the dominance of Nigeria in the region.

The indices historical returns for 2000 are illustrated in Table 4.

Table 4: West Africa: Historical returns for 2000

WADEX	22,81%
Ghana	-48,32%
Nigeria	43,93%

Both the WADEX and the Nigerian index outperformed the various international markets[4].

Correlation analysis: WADEX and West African indices (Table 4)

There is a high correlation of 93,81% between the index for Nigeria and WADEX. The Ghanaian index has a negative correlation of 59,80% with the regional index. There is also a highly significant negative correlation between the Nigerian and Ghanaian indices. This allows the fundamental basis for a sound diversification strategy within the region. An analysis of the whole West Africa region (which would include Cote d'Ivoire) would further assist in deciding on further opportunities for diversification within the region.

Table 5: Correlation analysis of WADEX and West Africa indices

	WADEX	Nigeria	Ghana
WADEX	100,00%		
Nigeria	93,81%	100,00%	
Ghana	-59,80%	-83,32%	100,00%

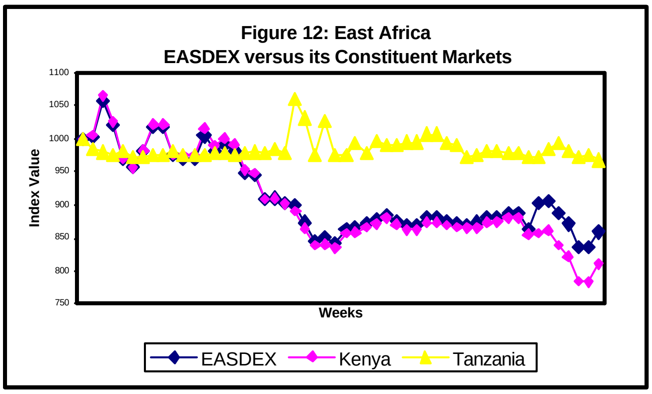
East Africa

Plot of EASDEX (East Africa Index) versus the Constituent Markets (Figure 12)

The Tanzanian index remained flat throughout the year except for a marginal increase in June 2000, which dropped back to the 1000 baseline for the rest of the year. The Tanzania index moved independently of the other market in the region. The Kenyan index fluctuated during the first quarter of 2000 but from the second quarter, the market

[4] Historical returns for the period of ending December 2000: Dow Jones Composite: 3,21%, Nasdaq composite: - 39,29%, NYSE: 1.01%, Russell 2000: - 4,20%, S&P 500: - 10,14% and Wiltshire 5000: - 11,85%. [Dow Jones Averages Annual Report, 2000].

index dropped and remained low throughout the rest of the year closing the year at a low of 815. The EASDEX moved in complete synchrony with the Kenyan market.



The indices historical return for 2000 are reflected in Table 6.

Table 6: East Africa – Historical returns of indices for 2000

EASDEX	-14.06%
Kenya index	-18.43%
Tanzanian index	-3.18%

The returns for all 3 indices performed poorly but not significantly worse than the major indices[5].

Correlation Analysis: EASDEX and the East African Indices (Table 7)

The index for Kenya has a high positive correlation index of 98.25% with EASDEX. This is explained by the high weighting of Kenya in the EASDEX. Tanzania is negatively correlated both with EASDEX and Kenya, which adds to its ability to attract investors who wish to diversify their portfolios in the region. The challenge is for Tanzania to provide more favourable investment conditions for foreign investors.

Table 7: Correlation analysis: EASDEX and the East African indices

EASDEX	100.00%		
Kenya	98.25%	100.00%	
Tanzania	-22.43%	-20.00%	100.00%

[5] Historical returns for the period of ending December 2000: Dow Jones Composite: 3,21%, Nasdaq composite: - 39,29%, NYSE: 1.01%, Russell 2000: - 4,20%, S&P 500: - 10,14% and Wiltshire 5000: - 11,85%. [Dow Jones Averages Annual Report, 2000].

Construction of the All-African Index

Using data previously captured by Tyandela (2001) to construct the SADIX index, an all-share index for the SADC region, and the market capitalisation data collected for the other 3 regions in Africa, the All-African index has been constructed. [6]

Correlation analysis: four regional indices and individual market indices

The following correlation matrix (Table 8) analyses the various markets in the 3 regions and with each other and the four African regional indices.

The highest correlation of 98,25% exists between Kenya and the EASDEX, which is directly related to the high weighting of Kenya (84% – 90%) in the East Africa. A similar situation exists between Nigeria (93,8%) and the WADEX and the Egyptian and NADEX (80,84%).

There is an 87,92% correlation coefficient between Kenya and Ghana. This does limit diversification opportunities in the area. Ghana has a high correlation co-efficient with Kenya (87,92%), Morocco (82,29%), Tunisia (85,21%), NADEX (83,22%) and EASDEX (87,21%).

Despite no cross listing between Morocco and Tunis, they are highly correlated (85,42%). This may well indicate that both markets are influenced by the political and financial changes in the region.

Tunisia has high correlation coefficients with NADEX (77,54%), EASDEX (80,68%) and Kenya (80,96%). Morocco has high correlations with EASDEX (74,92%) and Kenya (78,24%).

Nigeria is negatively correlated with most of the other market analysed above, with the exception of Tanzania and the SADIX, which both have low positive correlation coefficients of 0,21% and 21,21% respectively. This pattern is repeated with WADEX which is negative correlated with all other indices save SADIX where the correlation co-efficient is low (21,21%) and 93,8% with Nigeria (which is the largest contributor to market capitalisation). This provides favourable conditions for including Nigeria or WADEX in a diversified portfolio.

[6] Tyandela's data for SADC overlapped with the data in the present paper for the period January 2000 until 17 November 2000. Therefore the index was constructed for this time period.

Table 8: Four Regional indices and individual market indices

	Morocco	*Egypt*	*Tunisia*	*North Africa*	*East Africa*	*Kenya*	*Tanzania*	*West Africa*	*Nigeria*	*Ghana*	*SADIX*
Morocco	100%										
Egypt	20,93%	100%									
Tunisia	85,42%	36,80%	100%								
North Africa	70,94%	80,84%	77,54%	100%							
East Africa	74,92%	30,48%	80,68%	69,47%	100%						
Kenya	78,24%	34,59%	80,96%	73,62%	98,25%	100%					
Tanzania	4,36%	4,42%	-15,68%	-0,90%	-22,43%	-20,00%	100%				
West Africa	-38,96%	-29,44%	-33,17%	-50,00%	-52,63%	-53,11%	-0,10%	100%			
Nigeria	-62,58%	-36,00%	-59,22%	-69,23%	-72,09%	-72,84%	0,21%	93,80%	100%		
Ghana	82,29%	39,73%	85,21%	83,22%	87,21%	87,92%	-6,98%	-59,64%	-83,22%	100%	
SADIX	48,16%	-40,82%	30,42%	-12,55%	20,95%	17,82%	-7,62%	36,22%	21,21%	4,91%	100%

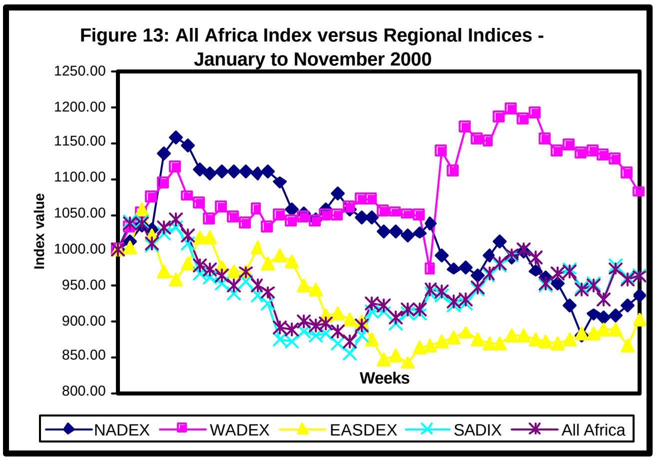
Correlation analysis between four African regional indices and the All-Africa Index (Table 9)

Table 9: Correlation analysis: Four African regional indices and the All-Africa Index

	NADEX	WADEX	EASDEX	SADIX	All Africa
NADEX	100,00%				
WADEX	-49,27%	100,00%			
EASDEX	65,73%	-49,14%	100,00%		
SADIX	-13,47%	36,22%	20,95%	100,00%	
All Africa	9,93%	25,36%	36,55%	97,24%	100,00%

The All-Africa index is highly correlated (97,24%) with SADIX. Investing in both these indices will not diminish risk. The All-Africa index has low correlations with all the other regional indices: 9,93% with NADEX, 25,36% with WADEX and 36,55% with EASDEX. Again this provides favourable conditions for diversified portfolios in Africa.

Plot of All-Africa Index with four regional African indices (Figure 13)



The SADIX moves with the All-Africa index indicating the high weighting of the SADIX and suggesting that any political and financial forces operating in the SADC region would have a strong influence on the All-Africa index. The other three regional indices EASDEX, NADEX AND WADEX tended to move independently of the SADIX and All-Africa index as well as of each other. This provides opportunities for the inclusion of the indices in index funds. Based on the regional indices constructed for Africa, it is becoming clear that opportunities exist in Africa for both individual and institutional investors.

With the active move towards regional stock markets, regional indices will provide an important tool for performance of the region.

A major concern in investing in emerging markets as well as developing countries is the liquidity of the market.[7] This indicator complements the market capitalisation ratio by showing whether market size is matched by trading. The turnover ratio, the value of shares traded as a percentage of market capitalisation, is also a measure of liquidity, as well as of transaction costs. High turnover indicates low transaction costs. The turnover ratio complements the value of gross domestic product traded, as the turnover is related to the size of the market and the value traded ratio to the size of the economy. A small liquid market will have a high turnover ratio but a low value traded ratio. South Africa (the largest market) and Egypt are the only two markets where a degree of liquidity exists. Tunisia and Zimbabwe match the definition of a small liquid market, that is, a high turnover but a low value traded ratio.

Conclusion

Based on the regional indices constructed for Africa, it is becoming clear that opportunities exist in Africa for both individual and institutional investors.

The Johannesburg Stock Exchange (JSE) dominates the

[7] Market liquidity, which is defined as the ability to easily buy and sell securities, can be measured by dividing the total value traded by gross domestic product

SADC total regional market capitalisation as well as 59% (January 2000) of the continent's market capitalisation. Similarly the SADC region dominates the market capitalisation for Africa.

The low correlation between Egypt and the other two North African markets allows for diversification within the North African Region.

The negative correlation of the WADEX and Nigeria with many of the other markets in Africa also supports this opportunity. Nigeria has been the market that had the highest returns during 2000, one that outperformed many international markets.

SADC, which commands the largest percentage of market capitalisation in Africa, has low or negative correlation coefficients with the rest of the African individual as well as the regional market indices. This bodes well for the diversification of portfolios across the African continent especially since the JSE (which presents approximately 71% (January 2000) of the SADIX) is recognised as one of the important emerging markets globally. The negative correlation of SADIX with many of the other markets in Africa will enable investors wishing to invest in what is considered risky markets, to diversify away this risk.

The All-Africa index is highly correlated (97,24%) with SADIX. However, the All-Africa index has low correlations with all the other regional indices: 9,93% with NADEX, 25,36% with WADEX and 36,55% with EASDEX. This supports the environment for diversification strategies.

The SADIX moves with the All-Africa index indicating the high weighting of the SADIX and suggesting that any political and financial forces operating in the SADC region would have a strong influence on the All-Africa index. The other three regional indices EASDEX, NADEX and WADEX tended to move independently of the SADIX and the All-Africa index as well as independently of each other. This provides opportunities for the inclusion of these indices in index funds.

The development of All-Share indices, which track market performance on the African continent, will assist both potential institutional as well as individual investors. The diversification potential in the various regions as well as the continent exists. The problem of liquidity on the continent, however, needs further addressing. The challenge lies in whether Africa has the political will to ensure that favourable conditions exist to attract investors to the continent. These would include both favourable financial conditions and political stability.

The current initiative of the New Partnership for Africa's Development (NEPAD) has as one of its objectives, to create a platform for private capital investment and economic growth. Encouraging economic growth throughout Africa and not just in Southern Africa will assist the continent as a whole to attract market capital. This is especially relevant considering the present positive returns shown by markets such as Egypt and Nigeria (two of the larger markets outside of SADC). In the long term this should increase market growth in the other regions of Africa and enable investors to diversify into Africa.

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