

Forecast for the Rand/US dollar exchange rate

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1. Introduction

Over the past two decades, few countries have experienced a higher degree of volatility than the South African rand. In addition to mostly following the so-called “risk-on/risk off” trends that most emerging markets are prone to, the rand has also been significantly influenced by domestic political developments, especially over the past decade.

When viewed against the value of the rand against the world’s most traded currency, the US dollar (which accounts for 44% of global foreign exchange market turnover), it is apparent that bouts of volatility move in both directions (depreciation and strengthening) and that the time intervals between highs and lows vary substantially (between 3 months and 35 months).

It is also clear that, over the past two decades, the rand has always recovered from a period of weakness, with an average annual depreciation against the US dollar of only 4.2%. The inflation differential between South Africa and the US was 3% over the past two decades, which translates into an average annual real level of depreciation of the rand of only 1.2%.

Unfortunately, however, this marginal outcome in average terms masks significant bouts of volatility. Forecasting the value of an emerging market currency is therefore fraught with difficulty, especially as a result of the array of factors that can influence a currency. This task is even more complex as a result of the fact that more than 92% of the global foreign exchange market turnover is represented by only 14 countries, of which only China is not classified as a high-income country.

Due to the absence of the requirements for a truly competitive market, the currencies of developing countries will remain prone to volatility.

The forecasting exercise contained in this report has been conducted with the necessary theoretical and empirical circumspection and the author. As such, the study is a *bone fide* attempt to determine the medium-term outlook for the rand/US dollar exchange rate, based on a time-series analysis of rand exchange rate trends. The standard disclaimer holds, namely that the author will not be held responsible for any damages suffered as a result of any activity prompted by the information contained in the study.

2. Factors that influence the value of a currency

At the outset of a study dealing with foreign exchange values, it is regarded as prudent to point out that a number of factors exist that collectively determine the value of a particular currency. These determinants of exchange rates often work in opposing directions and, for relatively small open economies, are also often influenced by speculative behaviour.

Whilst not part of the brief for this study, it is useful to list the key determinants of currency values, as this will serve to illuminate some of the trends and findings of the time-series analysis.

Table 1: Determinants of the value of a currency

- Transactions demand - The supply of and demand for domestic and foreign currencies emanating from imports and exports of goods and services, including transactions relating to services (such as insurance) and income transfers (such as dividends)
- Portfolio investor demand - Fund managers in most countries enjoy a mandate to invest in equities, bonds and real estate in other jurisdictions. Emerging markets are traditionally attractive destinations for such portfolio investment, due to superior yields on offer
- Foreign direct investment - Most of the world's large multi-national corporations have a presence in a multitude of countries, with huge investments having been made in production facilities for hundreds of global brands, including Mercedes-Benz, Toyota, Nike, Nestlé, to name but a few.
- Speculative demand - Relatively small, open economies have at times fallen prey to the actions of speculators who add fuel to an anticipated downward adjustment of such currencies. Over the long term, however, it is impossible for a speculator to hold a country's currency at ransom.
- An increase in the money supply - Theoretically, an increase in a country's money supply while the rest of the world's money supply remains constant will cause such a country's currency to depreciate, mainly as a result of domestic inflationary pressures.
- Socio-political stability - Disinvestment is commonly associated with expectations surrounding socio-political instability. In such a scenario, capital flight leads to an over-supply and weakening of the domestic currency.
- Interest rate differentials - As a rule, higher interest rates international money market investments, causing a country's currency to strengthen and also allowing the investor to realize a capital gain.
- Expectations regarding inflation - In an inflationary environment, the only way to prevent domestic manufacturers from making losses on export orders is for a currency to depreciate, thereby inducing an inflationary spiral
- Leads and lags in trade payments - The tendency for importers and exporters to utilise credit and hedging facilities results in differences between the real transaction of exports and imports and the flow of financing arrangements relating to these transactions. These practices can cause temporary shocks in foreign exchange supply and demand.

3. Rand/US dollar fluctuations over two decades

History is a great teacher, but it is necessary to carefully analyse facts and figures to arrive at pointers for the future. In doing so, twelve different meaningful cycles of rand weakness and recovery can be identified over the last 20 years, some of which do not necessarily follow the opposite trend in every instance. These cycles and the calculations pertaining to the levels of depreciation and appreciation are presented in table 2.

The purpose of identifying these trends is to reinforce one of the key findings of this study, namely that the rand never fails to recover from a period where its value depreciates, whatever the duration of such a period.

The data sets utilised for identifying these cycles also serves to inform the calculation of the average change in the value of the rand since 1999, which is then utilised as the basis for several of the medium-term forecasts.

Table 2: The rand/US dollar exchange rate - 12 cycles in two decades

	Months	Rand/US dollar		US dollar/rand		Avg. change p/m (%)	Total change (%)
		Start	End	Start	End		
1. Jan'99 - Jan'02	36	5.98	11.61	1.671	0.862	-1.82	-48.5
2. Jan'02 - Dec'04	35	11.61	5.73	0.862	1.745	2.04	102.5
3. Dec'04 - Nov'07	35	5.73	6.70	1.745	1.492	-0.45	-14.5
4. Nov'07 - Nov'08	12	6.7	10.12	1.492	0.988	-3.38	-33.8
5. Nov'08 - Apr'11	29	10.12	6.73	0.988	1.485	1.41	50.3
6. Apr'11 -Feb'14	34	6.73	10.99	1.485	0.910	-1.43	-39.7
7. Feb'14 - Jan'16	23	10.99	16.38	0.910	0.611	-1.72	-32.9
8. Jan'16 - Nov'17	22	16.38	14.08	0.611	0.710	0.69	16.3
9. Nov'17 - Mar'18	4	14.08	11.84	0.710	0.845	4.43	18.9
10. Mar'18 - Jan'20	22	11.84	14.40	0.845	0.695	-0.88	-17.8
11. Jan'20 - Apr'20	3	14.4	18.58	0.695	0.538	-8.14	-22.5
12. Apr'20 - Nov'20	7	18.58	15.61	0.538	0.641	2.52	19

Note: Calculations based on average monthly exchange rates

Sources: SARB; Oanda (interbank rates)

In addition to the presence of several of the theoretical explanations for the consistent ebb and flow of rand weakness and recovery, it is illuminating to also consider some specific reasons for the two-decade long volatility that is evident in table 2. A concise discussion of the background

to a selection of periods of rand volatility is presented below, with the first one serving as a classic example of the large scope for currency volatility.

i. January 2009 to January 2002 (depreciation of 48.5%)

Research by the International Monetary Fund has confirmed that South Africa's monetary authorities were partly to blame for the instability of the rand in 1998. At the time, the forward book of the South African Reserve Bank (SARB) was a source of vulnerability. Empirical research has confirmed that significant short-term liabilities and low reserve adequacy increase the probability of exchange rate pressure.

In 1998, the SARB intervened heavily in the foreign exchange market, with a net loss of around \$10 billion, representing around 8% of GDP, whilst also borrowing in the forward market. As a consequence, there was a large build-up in the SARB's net open forward position (NOFP). Part of the price for this inappropriate policy intervention was paid during the next bout of currency weakness in 2001.

A second reason for the turmoil of the domestic foreign exchange market in 2001 and 2002 can also be placed at the door of the SARB, which announced at the end of 2001 that it would tighten the enforcement of exchange controls. A number of observers that had testified before the Myburgh Commission of Enquiry into the rapid depreciation of the exchange rate of the rand (including the author), argued that this announcement reduced market liquidity and thereby contributed to the sharp weakening of the rand.

Thirdly, the strict monetary policy stance that accompanied the futile (and costly) attempts by the SARB to shore up the value of the rand in 1998, which had a belated negative effect on investor perceptions of dividend yields on South African equities. As a result, the combined net outflow of portfolio investments during 2000 and 2001 amounted to R81.5-billion, equivalent to 8% of GDP in 2001.

The delay in 2001 with the privatisation of Telkom may also have exerted a negative impact on sentiment toward the rand, due to uncertainty in financial markets over the South African government's commitment to economic reforms aimed at strengthening free enterprise principles.

There was also an extremely unfavourable development on the political front, due to the policy of land expropriation without compensation (EWC) that was implemented by the late Robert Mugabe in neighbouring Zimbabwe. This policy of nationalisation ultimately condemned Zimbabwe to failed state status and, at the time, heightened risk aversion among investors when considering Southern African investment opportunities.

Lastly, the terrorist attacks in New York on September 11, 2001, led to a heightened "risk-off" sentiment towards emerging markets in general, which had been on the cards due to the financial crisis in Argentina.

ii. January 2002 to December 2004 (appreciation of 103%)

A phenomenon that is well-known in the economics profession that may have been present during periods of exceptional currency instability is the occurrence in foreign exchange markets of a so-called "backward-bending" supply curve, which is S-shaped. This occurs due to

differences in the demand elasticity for imports when currencies are perceived to be over- or undervalued.

The result manifests itself in multiple points of equilibrium, a situation that has been proven empirically for South Korea during currency instability between October 1997 and March 1998 and again between May and June 1998.

The presence of multiple equilibria for the South African rand in 2001 and 2002 and the strong likelihood of a reversal (or switch between the points of equilibrium over the medium-term was discussed by the author during a presentation to the Myburgh Commission in 2002.

The fact that the rand regained all of the ground it lost in 2001 and 2002 over the next three years provides substantial evidence of the presence of multiple equilibria, which causes currency values to overshoot (in both directions)

iii. November 2007 – November 2008 (depreciation of 33.8%)

During this period, Eskom's power crisis as a result of many years of mismanagement, especially the neglect of infrastructure maintenance, started to impede the productivity in electricity-intensive sectors and also led to lower levels of domestic and foreign investor confidence.

The result was a deterioration of the financial account of the balance of payments, with net portfolio investment outflows of R135-billion in 2008 – more than 6% of GDP.

An external event that contributed to rand weakness was the European sovereign debt crisis and early signs of a global recession, which impacted negatively on commodity prices and the current account of the balance of payments.

iv. November 2008 – April 2011 (appreciation of 50.3%)

In addition to the familiar pattern of recovery from a lengthy period of pronounced weakness, the rand benefited from a fairly swift return to positive economic growth, following the 2008/09 global recession.

Higher prices for several of South Africa's key exports led to an improvement of the trade balance, whilst the country secured its second and third highest ever net inflow of portfolio investment in 2009 and 2010.

v. April 2011 – February 2014 (depreciation of 38.7%)

The commodity price recovery after the 2008/09 global financial crisis started to peter out in 2011, with significant price declines setting in for most of South Africa's key export commodities.

Declining commodity prices were a symptom of sluggish world growth, with several countries not yet having restored fundamental fiscal and monetary stability in the aftermath of a global recession.

World GDP growth declined to an average annual rate of 2.8% between 2011 and 2014, following an average annual rate of growth of 4.3% during the previous four-year period.

Table 3: Declines in the prices of key South African export commodities between 2011 and 2014

Commodity	% decline
Beverages	-12.3
Food	-12.4
Agriculture	-15.5
Base metals	-21.3
Metals & minerals	-25.3
Precious metals	-25.8

Source: World Bank

As a result, South Africa's balance of payments came under pressure, with the current account deficit swelling more than three-fold from an average of R59-billion between 2009 and 2011 to R188-billion, on average, between 2012 and 2014.

vi. February 2014 – January 2016 (depreciation of 32.9%)

One of the reasons for splitting the analysis of the consistently weak performance of South Africa's currency over a lengthy period of almost five years between 2011 and the beginning of 2016 into two different periods is the pivotal role of political developments, which turned nasty at the end of 2015, when a finance minister was fired by the previous president, Jacob Zuma.

After brazenly lying during a televised statement, Mr Zuma declared that Mr Nhlanhla Nene was being redeployed to the Brics Development Bank, it turned out that the real reason for Mr Nene's dismissal was his refusal, on the advice of the executive leadership at National Treasury, not to approve a nuclear power deal with Russia valued at around R1-trillion.

Against the background of a deteriorating fiscal situation and lethargic GDP growth, which had declined from an average growth rate of 2.8% between 2010 and 2013 to only 1.1% between 2014 and 2016, a project of this magnitude was not remotely affordable.

The ludicrous nature of the continued attempts by Mr Zuma to force through the nuclear power deal is especially evident in the fact that South Africa had already embarked on a successful programme to expand the country's electricity supply via renewable energy, mostly wind and solar, at a fraction of the price that the addition to nuclear power would cost.

Evidence of state capture orchestrated by the Zuma administration had become visible during 2015 and investor confidence, both domestic and internationally, predictably started to diminish, with the GDP growth rate plummeting to barely above zero in 2016.

Currency woes were exacerbated by the continuation of a hefty current account deficit (almost 5% of GDP in 2015) and further commodity price weakness, especially for coal, iron ore and platinum group metals.

During the 57 months between April 2011 and January 2016, the rand depreciated by almost 60%, moving from R6.73 to the US dollar to R16.38 (monthly averages). This unenviable record depreciation eventually proved to be the making of a vicious combination of fiscal pressure, low

growth, balance of payments constraints and widespread corruption in the public sector, especially at the state-owned enterprises (SoEs).

vii. January 2016 – November 2017 (appreciation of 16.3%)

A concerted effort followed to rectify the damage caused to the country's image, the economy and the currency as a result of the attempts by Mr Zuma to subvert the authority of National Treasury. A meeting was brokered by a number of concerned leaders within the ruling ANC, involving around 100 of South Africa's most prominent business leaders to discuss the appointment of Mr Des van Rooyen as new finance minister, ostensibly to allow Mr Zuma to push through an unaffordable nuclear power project and continue to provide large amounts of fiscal support to incompetent SoEs.

The result was the swift removal of Mr van Rooyen and the appointment of Mr Pravin Gordhan as finance minister, a position he had held before. Capital market reaction was positive with the rand recovering to just above R14 to the US dollar by November 2017.

Economic fundamentals also assisted the strengthening of the currency, with a reversal of the downturn of several commodity prices. Iron ore and coal recorded price gains of 23% and 28%, respectively, in 2017, and the World Bank's commodity price index for metals and minerals gained 24% in 2017.

viii. November 2017 – March 2018 (appreciation of 18.9%)

A second discernible round of currency strength ensued after the election of Mr Cyril Ramaphosa as the new head of the ruling ANC, after a fairly narrow victory over an ex-wife of Mr Zuma. Capital market euphoria ensued over the victory of a person who had campaigned on an anti-corruption platform and the need for market-friendly economic reforms, with the rand gaining 4.4% per month until March 2018, when the realities of the country's daunting challenges set in.

A note on the concept of an automatic stabiliser at play in forex markets

An underlying cause of all of the rand's recoveries from grossly undervalued positions is the phenomenon known as an "automatic macro-economic stabiliser", which are also evident in the area of public finance. In the domain of international economics, this stabiliser operates to ensure that any lengthy period of currency weakness ultimately leads to enhanced export earnings (in domestic currency terms) whilst simultaneously acting as a disincentive for imports. The latter has a two-pronged effect, namely to also stimulate import replacement of manufactured goods, some of which may be exported.

The net effect is to eventually strengthen the current account of the balance of payments to such an extent that currency appreciation become inevitable – hence the reference to the term "automatic".

A standard caveat for the functioning of such a stabiliser is that the relevant economy should at least possess emerging market status, with a critical mass of economic diversity into manufacturing and services industries and the presence of well-developed financial markets. South Africa comfortably meets these criteria.

4. Data utilised in forecasting exercises

The key ratios derived from the time-series analysis of monthly and annual average rand/US dollar exchange rates for different periods between January 1999 and November 2020, as well as other data used for the exchange rate forecasts, are summarised in table 4.

Table 4: Data utilised as basis for the different exchange rate forecasts

Average monthly rand/US dollar exchange rate	Rand/\$	\$/Rand
January 1999	5.98	0.167
March 2020	18.58	0.054
November 2020	15.61	0.064

Average annual rand/US dollar exchange rate		
1999	6.11	0.164
2009	8.44	0.118
2019	14.45	0.069
2020	16.61	0.060

Average monthly depreciation of the rand	Observations	%
1999 to 2019	240	-0.36
1999 to 2020	263	-0.38
June 2013 to January 2020	79	-0.41

Average annual depreciation of the rand		%
1999 to 2019	20	-4.21
1999 to 2020	21	-4.65
2009 to 2019	10	-5.24

Average annual inflation differential between SA & the US		% points
1999 to 2019	20	3.0
June 2013 to January 2020	6.1	3.8

Average monthly appreciation of the rand		%
November 2008 to April 2011	29	1.41
January 2016 to November 2017	22	0.69
November 2017 to March 2018	4	4.43

5. Results of the different forecasting methodologies

A total of eight different methodologies were employed to forecast the rand/US dollar exchange rate as at the end of 2020 and the end of 2021.

Most of these forecasts involved extrapolations of the rates of depreciation or appreciation that were calculated for different currency value cycles, as presented in table 4. The results and basis of forecasting are presented in tables 5 to 12.

Table 5: Rand exchange rate forecast against the US dollar based on an extrapolation of the rate as at January 2020 at the average rate of depreciation between 1999 and 2019

	R/\$
Value as at December 2020	14.98
Value as at December 2021	15.64

Table 6: Rand exchange rate forecast against the US dollar based on an extrapolation of the rate as at January 2020 at the average rate of depreciation between 1999 and 2020

	R/\$
Value as at December 2020	15.08
Value as at December 2021	15.86

Table 7: Rand exchange rate forecast against the US dollar based on an extrapolation of the rate as at January 2020 at the average rate of depreciation between 1999 and 2020

	R/\$
Value as at December 2020	15.08
Value as at December 2021	15.86

Table 8: Rand exchange rate forecast against the US dollar based on an extrapolation of the average rate for 2009 at the average rate of depreciation between 2009 & 2019

	R/\$
Average value for 2020	15.18
Average value for 2021	16.01

Table 9: Rand exchange rate forecast against the US dollar based on an extrapolation of the average rate for 2009 at the average inflation differential between the US and SA (2009 to 2019)

	R/\$
Average value for 2020	12.92
Average value for 2021	13.43

Table 10: Rand exchange rate forecast against the US dollar based on an extrapolation of the average rate of change during recovery phases between November 2008 and March 2018, with the rate as at March 2020 as the starting point, ending after the average duration of these recovery cycles and then remaining constant

	R/\$
Value as at December 2020	16.48
Value as at December 2021	14.61

Table 11: Rand exchange rate forecast against the US dollar based on an extrapolation of the average rate of change during recovery phases between November 2008 and March 2018, with the average rate for 2020 as the starting point, ending after the average duration of these recovery cycles and then remaining constant

	R/\$
Value as at December 2020	14.73
Value as at December 2021	13.06

Table 12: Rand exchange rate forecast against the US dollar based on an extrapolation of the average rate of change during recovery phases between November 2008 and November 2017, with the average rate for 2020 as the starting point

	R/\$
Value as at December 2020	15.05
Value as at December 2021	13.20
