

# Decoder Series

## ARTICLES

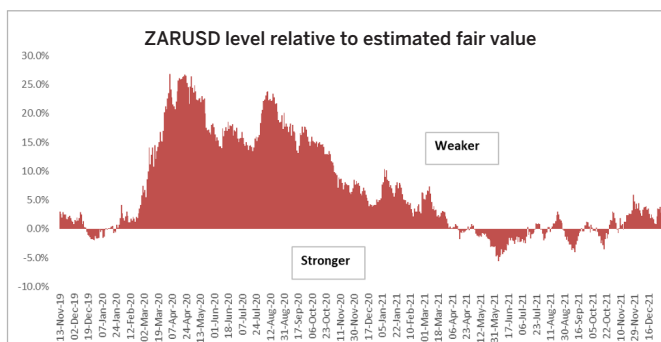
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## THE ANALYTICS CURRENCY DECODER

### USDZAR FAIR VALUE AS AN INVESTMENT STRATEGY GUIDELINE

The Analytics Currency Decoder is the product of a very challenging yet rewarding ongoing project that is aimed at developing a decision-support tool that provides additional useful information when thinking about currencies. This applies to the currency trading arena as well as to the investment strategy process in the management of multi-asset balanced portfolios in the South African context. Many multi-asset balanced portfolios in South Africa have made use of US dollar denominated offshore funds to access global exposure. As such, the behaviour of the USDZAR exchange rate can be a significant driver of domestic portfolio returns (both positive and negative), particularly when the exchange rate weakens or strengthens in outsized moves.

The first example is the first half of 2020 when the combination of Covid-19 lockdowns, the loss of the country's third and last investment grade rating and the removal of South African government bonds from global investment-grade bond indices drove the USDZAR exchange rate from a closing level of R14.00 to the US dollar on 31 December 2019 to a closing peak of R19.08 on 23 April 2020.

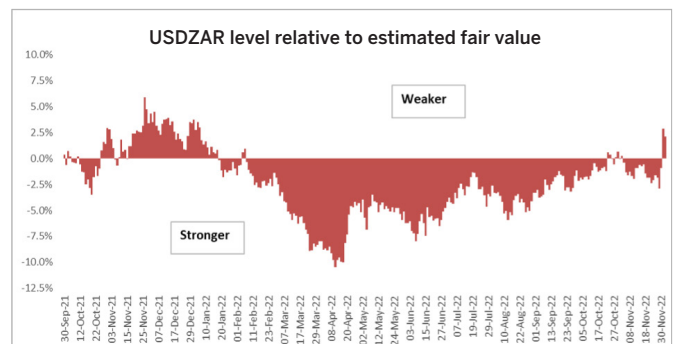


At the end of 2019, the fair value estimate for the exchange rate was R14.24 and on 23 April it was estimated to be R15.05. The USDZAR exchange rate had weakened by 36.3% while the fair value had only moved up by 5.7%. It is very common in times of heightened domestic economic and political stress to project an exchange rate that continues on this very weak trajectory and the urge to externalise further assets at the time can be a powerful emotional driver of investment strategy. However, with the exchange rate at R19.08, having weakened all the

way from R14.00, the knowledge of a fair value estimate of R15.05 **is a powerful guideline for resisting behavioural temptation.** In fact, portfolios and investors should be prepared for the risk of sustained exchange rate strength in the months to come.

Pressure on the exchange rate then started to ease and on 08 December 2020 the USDZAR exchange rate closed at R14.99, breaching the fair value estimate that had been calculated previously on 23 April. With the exchange rate just below the R15/USD level on 08 December 2020, fair value was estimated to be at R14.13, suggesting sustained further strength in the currency. An emotional decision to externalise assets in April 2020 would have had painful consequences. On 14 April 2021, the exchange rate was at R14.40 and fair value was at R14.42, suggesting that the bout of strength in the USDZAR exchange rate was exhausted.

The next example looks at another bout of sustained USDZAR strength, leading to an opportunity to externalise assets by taking advantage of a cheap US dollar.

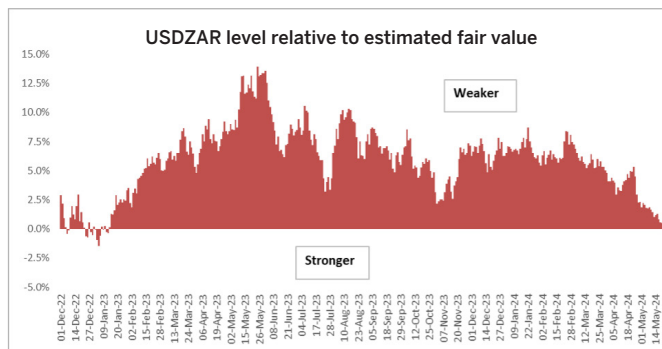


On 26 November 2021, the USDZAR exchange rate closed at a level of R16.29. The estimate for fair value on that day was R15.38, suggesting that some mild exchange rate strength could be anticipated in the months ahead. On the back of a commodity boom, the USDZAR exchange rate strengthened to a level of R14.51 by 12 April 2022. The R15.38 fair value estimate of 26 November 2021 was breached to the downside in the middle of January 2022.

With the exchange rate at R14.51 on 12 April 2022, fair value was estimated at R16.20. At that stage, the regulatory limit for offshore assets in local pension funds was lifted from 30% to 45%. This announcement coincided perfectly with the Decoder suggesting that it was an ideal time to externalise assets through a cheap US dollar. The last time that the US dollar was this cheap in ZAR was the period of "Ramaphoria" in the first half of 2018 and prior to that, during the Rugby World cup in 2010.

The fair value estimate of R16.20 for the exchange rate on 12 April 2022 was breached to the upside on 29 June 2022 when the USDZAR closed at R16.24. At that stage, the fair value estimate had been raised to R17.05. The R17.05 level was convincingly breached to the upside on 31 August 2022 and the exchange rate continued to weaken until it reached a level of R18.41 on 20 October 2022. From a starting point of R14.51 on 12 April, the 20 October level of R18.41 signalled a potential currency gain of 27% on assets externalised in mid-April.

The final example is very similar to the first example and covers the period of time starting in early 2023. In the first half of 2023, the country was experiencing devastating stages of loading-shedding as Eskom buckled under the strain of proving power to the nation. In addition, the US ambassador to South Africa accused the government of shipping arms to Russia from Simonstown harbour. This combination of extremely negative events put the USDZAR exchange rate under severe pressure.



At the end of 2022, the USDZAR exchange rate was at a level of R17.04 with fair value estimated at R17.01. On 25 May 2023, the exchange rate peaked at a closing level of R19.80. The USDZAR had weakened by 16%. Behavioural pressure to externalise assets at that stage was high. However, the estimate of fair value on 25 May was at R17.38, much lower than the spot rate. While the exchange rate had weakened by 16% over that period of time, the fair value estimate had only been revised up by 2%. Armed with the knowledge that the exchange rate was far north of fair value, the investment strategy was not to externalise further assets but rather to prepare portfolios and investors, once again, for a period of sustained USDZAR strength.

On 22 May 2024, the exchange rate opened at a level of R18.08. The strength since the peak on 25 May a year earlier amounted to just over 9%. During that period of time, a stronger US dollar had driven fair value up by only 4% from R17.38 to R18.09. For the first time since early in 2023, the USDZAR exchange rate was at the current fair value estimate.

Returning to the second example, had assets been externalised around the R14.51 level (in line with the Decoder guidelines), the potential currency translation profit at a level of R19.80 on 25 May 2023 was nearly 37%.

These examples show clearly that knowledge of the USDZAR fair value from the Analytics Currency Decoder, coupled with the long-term mean reversion characteristics of the fair value residual, provides investors and strategists with an extremely useful guideline for making investment decisions, most crucially, at times when trends and behavioural dynamics suggest a strategy that could produce unintended and painful outcomes.

In probability theory and statistics, Bayes' Theorem describes the probability of an event based on prior knowledge of conditions that might be related to the event. In other words, **Bayes' Theorem can be used if you need to determine the probability of something occurring given that another condition exists that can influence the occurrence.** Some of the most common applications of Bayes' Theorem in real life are financial forecasting, weather forecasting, DNA testing, fault diagnosis in engineering, drug testing and spam filtering of emails.

After a sustained period of USDZAR strength or weakness, an investor will be faced with a decision on whether the trend will continue or stabilise and reverse. In many cases, the natural inclination will be for the trend to remain in place, and for this notion to be reversed it may require detailed fundamental and technical analyses. The investor may have neither the skills nor the inclination to do these analyses.

In the examples mentioned above, as USDZAR weakness or strength persists, the investor may feel that the probability is high that the prevailing trend will continue. However, **there are two other conditions that will influence that directional probability view: the observed mean reversion of the fair value residual and knowledge of the fair value level itself, both from the Analytics Currency Decoder.**

Armed with these two "new" conditions, an intuitive form of Bayes' Theorem will take over and a much more accurate view of the future direction of the exchange rate can then be formulated.

Sources: Dr Lance Vogel, Analytics, Bloomberg, Wikipedia

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