**RESPONSE TO REFEREE C**





**Response to Referee**: We have rewritten this sentence as follows: “For South Africa there is a general dearth in the literature that considers the simultaneous interactions of the commodity and currency markets. This literature gap exists despite the value that reciprocal feedback between the two markets may add to our understanding of their operations.”



**Response to Referee**: We have updated footnote 2. We now say: “E.g. Ndlovu, X (2010) shows that commodity exports excluding precious metals constituted 42.9% of South African total exports in 2010. See also Bodart, Candelon and Carpantier (2012). Cashin Cespedes and Sahay (2004) report that gold, coal and iron contributed 46%, 20% and 5% respectively to total exports for South Africa in the period 1991-99.”



**Response to Referee:** We have now included some additional text (footnote 5) which says: “The study’s intention is to capture the effect of speculative bubbles in the two asset markets. We find that there has been some work already done on the Rand and commodity prices, employing real variables. Examples include Cashin, Cespedes and Sahay (2003) and MacDonald and Ricci (2002).”



**Response to Referee:** We have reformulated this paragraph and now say: “In comparison, the relationship between the two asset markets is significantly weaker in South Africa than in other commodity producers, such as Australia. More specific, we find that a 1 percent rise in nominal commodity prices is associated with a 0.3 percent appreciation of the nominal exchange rate compared to 0.9 percent for the Australian Dollar found by Simpson (2002).[[1]](#footnote-1)



**Response to Referee:** Done.



**Response to Referee:** The text has been rewritten and now says: “Clements and Fry (2006) employ the Kalman filter to jointly estimate the determinants of the prices of the Australian, New Zealand, Canadian Dollar exchange rates and commodity prices.”



**Response to Referee:** We have rewritten this footnote as” This is the VAR methodology used by Simpson (2002).”



**Response to Referee:** We have deleted this paragraph.



**Response to Referee:** We have incorporated these papers.





**Response to Referee:** We have addressed this point on the relevant page in a footnote. Also in the main text we now say: “Granger causality is thus quite useful, in that it allows one to test for relationships that one might otherwise assume away or otherwise take for granted.”



**Response to Referee:** The text now reads: “For commodity prices, we use the non-fuel commodity price index published by the IMF. The IMF publishes world export-earnings-weighted price index (2005=100) for over forty primary commodities traded on various exchanges. The index has 35 commodities representing approximately 42.9% of South Africa’s exports [Ndlovu, X., (2010)] This index excludes the effects of the weight of petroleum products (which have a weight of 53.6% in the all-commodity index) which may bias our estimations. The USD denominated index is suitable for South Africa, which has its commodity exports invoiced in US Dollars. This choice of data consistent with Chen & Rogoff (2002) and Simpson (2002).”

**Response to Referee:** We have now combined Figures 1 and 2. In the main text we now say: “The plots in Figure 1 indicate the possibility of structural breaks in the series. This will be investigated in more detail in the context of the Johansen test. “

**Response to Referee:** Table 1 has been deleted. We have included a short discussion about the exchange rate over the sample period.

**Referee comment:** Section 4.2: Given that unit root tests have poor power and size properties in small samples, the author(s) should consider using other unit root tests, so that their conclusions on the order of integration of the two series under consideration are more robust.

**Response to Referee:** In Section 4.2.1 we now say :” We employ the ADF and KPSS test for unit roots [Dickey & Fuller (1981) and Kwiatowski et al (1992). Results are reported in Section 4.3”.

Further, in Section 4.3 we have inserted the following text: “We apply the ADF and KPSS tests to test the null of a unit root and the null of stationarity respectively. It is well established that standard unit root tests such as ADF fail to reject the null hypothesis of unit root for many economic series [See Nelson and Plosser (1982)]. To complement the ADF test we apply the stationarity test proposed by Kwiatkowski et al (1992). The KPSS test statistic is an LM type statistic, with the number of lags truncation selected automatically by Newey and West Bandwidth using Barlett Kernal spectral estimation method. The null hypothesis of stationarity is accepted if the value of the KPSS test statistic is less than its critical value at the conventional level of significance. The results of both the unit root and stationarity test are presented in Table 1. Using the 5% level, we reject the null of stationarity in the Table 1 below. As seen from the first differences, both exchange rates and commodity prices are non-stationary at the conventional level of significance. Further, the ADF test statistic is less negative at any of the chosen levels of significance at levels. However, the first differences are stationary. Thus both the ADF and KPSS confirm that the two series are I (1), justifying our test for cointegration in the next section.”

**Table 1: Unit Root and Stationarity Test\***

|  |  |  |
| --- | --- | --- |
|  | *ADF* | *KPSS* |
|  | *Levels* | *First Differences* | *Levels* | *First Differences* |
| *Exchange rates* | *-2.1032* |

|  |
| --- |
| *-12.175* |

 | *0.2372* | *0.07375* |
| *Commodity prices* | *-2.1673* |

|  |
| --- |
| *-7.9282* |

 | *0.3219* | *0.06182* |

\* Critical values for KPSS at 1%, 5% and 10% are 0.2160, 0.1460 and 1.1190 respectively, including a constant and a trend. ADF critical values including a constant and a trend at 1%, 5% and 10% are -4.129, -3.436 and -3.142 respectively.

**Referee comment**: Section 5.1: The author(s) do not report the orders of integration of the two variables under consideration. It is not sufficient to merely conclude that the two series are not stationary, because the two series may be integrated of a different order (e.g. an I(1) and an I(2) series) in which case the author(s) must discuss the implications for methodology (i.e. whether or not Granger causality is still an appropriate method, relevant data transformations, etc.).

**Response to Referee:** We have addressed this comment in Section 4.3 above.

**Referee comment**: The author(s) should consider employing a more structural approach that also includes other variables (inflation, variables related to monetary policy and real developments, etc.) which are necessary for the proper specification of the underlying relationships (i.e. some control variables are necessary as two variables seldom influence each other in isolation and making the assumption that they do may lead to misspecification problems, which the author(s) refer to on p. 5 in Section 2.3; reciprocal feedback between commodity and currency markets is likely to be more complicated than the author(s) postulate in their model).

**Response to Referee:** We have mentioned those in suggestions for further research.

**Referee comment**: The author(s) do not discuss what guided the choice of deterministic variables in their VAR.

**Response to Referee:** We have inserted a footnote that now explains this.

**Referee comment**: The results of a VAR may be very sensitive to the choice of lag length. The use of statistical criteria such as AIC, SIC and HQC are fine, but frequency of the data should also come into consideration - i.e. is one lag sufficient to eliminate all serial correlation present in the monthly data that is employed by this study? If the author(s) impose a maximum of 12 or 24 lags in the lag selection procedure, do all of the criteria select the same amount of lags? Also, do the results change significantly when other lag lengths are used in estimation?

**Response to Referee:** We employed information criteria and lag exclusion test to determine the appropriate lag. The results are consistent and we therefore stick to the information criteria test. All three information criteria soundly select one lag as indicated below (we however do not wish to include these results in the paper as it results in an unnecessary lengthening of the paper):

**For referee only: Lag Length Selection**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lag | LogL | LR | AIC | SC | HQ |
| 0 | 611.956 | NA | -7.527 | -7.413 | -7.481 |
| 1 | 635.514 | 45.6534\* | 7.7703\* | 7.5789\* | 7.6926\* |
| 3 | 637.551 | 3.897 | -7.746 | -7.478 | -7.637 |
| 4 | 638.797 | 2.352 | -7.712 | -7.367 | -7.572 |
| 5 | 643.632 | 9.010 | -7.722 | -7.301 | -7.551 |
| 6 | 646.205 | 4.730 | -7.704 | -7.207 | -7.502 |
| 7 | 648.661 | 4.454 | -7.685 | -7.111 | -7.452 |
| 8 | 650.576 | 3.426 | -7.659 | -7.009 | -7.395 |
| 9 | 655.118 | 8.012 | -7.666 | -6.939 | -7.371 |
| 10 | 658.387 | 5.685 | -7.657 | -6.853 | -7.331 |

**Notes**:\* indicates lag order selected by the criterion.  LR: sequential modified LR test statistic

(each test at 5% level).  AIC: Akaike information criterion.  SC: Schwarz information

 criterion.  HQ: Hannan-Quinn information criterion

.

Further, we tested the residuals of the VAR using an LM test to ensure that they are well behaved. The evidence, presented below, suggests that there is no serial correlation in the residuals

**For referee only: Autocorrelation test on lags**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
| Lags | LM-Stat | Prob |
|  |  |  |
|  |  |  |
| 1 |  4.308893 |  0.3658 |
| 2 |  1.214929 |  0.8756 |
| 3 |  1.227744 |  0.8735 |
| 4 |  5.026387 |  0.2846 |
| 5 |  1.600205 |  0.8088 |
| 6 |  4.417113 |  0.3525 |
| 7 |  5.610825 |  0.2302 |
| 8 |  0.799329 |  0.9385 |
| 9 |  4.417787 |  0.3524 |
| 10 |  2.673403 |  0.6139 |
| 11 |  6.109080 |  0.1911 |
| 12 |  0.714891 |  0.9495 |

**Notes:**The specification tests to our VAR model

 for serial independence of the errors, using

 an LM test:

**Referee comment**: Section 5.3, p. 13, par. 2: The author(s) report the estimated VAR in first differences with a “long run elasticity of -0.3264”. This is an incorrect interpretation as the variables under consideration are not cointegrated and hence there is no long-run relationship between them.

**Response to Referee**: we have changed the text to: “From Table 4, we note that commodity price changes belong to the exchange rate equation with an elasticity of -0.3264, ceteris paribus.”

**Referee comment**: Generally, estimated coefficients of a VAR are not reported (because of the number of lags that are employed in the estimation to properly augment the VAR, the coefficients are often subject to the problems associated with multicollinearity and as such have no economic meaning). The author(s) should instead report impulse responses, forecast error variance decompositions and historical decompositions. These should then be interpreted in the context of the research question.

**Response to Referee**: We agree with the referee on this point. However, we hesitate carrying out the impulse response and variance decomposition analysis because we have already accounted for this using Granger causality test.

Impulse responses, variance decomposition and Granger causality are intrinsically linked: a non-zero impulse response (after an appropriate orthogonalization, if required) indicate the presence of Granger causality, while variance decompositions yield natural measures of Granger causal priority. To this end we would like to agree wholeheartedly with Sims(1982, pp 131-132) that in discussing VAR systems ‘A natural measure of the degree to which Granger causal priority holds is the percentage of forecast error variance accounted for by a variable’s own future disturbances in a multivariate linear autoregressive model . . . . A variable that is optimally forecast from its own lagged values will have all its forecast error variance accounted for by its own disturbances’; see also Sims (1980, pp. 251-2.52) for a similar statement. Several other authors who have also used the same relationship between variance decompositions and Granger causality; see, for example, McMillin (1988, pp. 325-326), Faroque and Veloce (1990, p. 281) among others.

**Referee comment**: No **diagnostic tests** are reported for the estimated VAR (i.e. normality, serial correlation, heteroskedasticity, etc.).

**Response to Referee:** Again we have done this. The VAR is free of serial correlation but surely for the data under consideration, to expect normality would be too high an expectation. We are not reporting all these statistics in the results due to reasons already explained above.



**Response to Referee:** We have split Section 2 into two sub-sections. Section 2.1 covers the “currency commodities” literature, whilst Section 2.2 covers the “commodity currencies” literature.



We have taken the relevant section out of the paper.



**Response to Referee:** Addressed

**References**

Faroque, A. and W. Veloce, 1990, Causality and the structure of Canada’s balance of payments: Evidence from time series. *Empirical Economics* 1.5, 267-283.

McMillin, W.D., 1988, Money growth volatility and the macroeconomy. *Journal of Money, Credit and Banking* 20, 319-335.

Sims, C.A., 1980b, Comparison of interwar and postwar business cycles: Monetarism reconsidered. *American Economic Review* 70, 250-257.

Sims, C.A., 1982, Policy analysis with econometric models. *Brookings Papers on Economic Activity* 1, 107-164.

1. In fact, this may be explained by the fact that the Rand is more driven by short-term capital flows (e.g. carry trades) than the Australian Dollar. [↑](#footnote-ref-1)