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FINDING THEORETICAL AND EMPIRICAL SOLUTIONS TO THE THREE MAJOR PUZZLES OF EXCHANGE RATE ECONOMICS: APPLICATIONS IN RESPECT OF SOUTHERN AFRICAN MACROECONOMIC DATA

by

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SUMMARY

Finding theoretical and empirical solutions to the three major puzzles of exchange rate economics: applications in respect of Southern African macroeconomic data

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The thesis focuses on finding solutions to major exchange rate puzzles, which were discussed in detail by Obstfeld and Rogoff (2000). The first puzzle is the purchasing power parity puzzle. The first version of the latter puzzle is concerned with whether a real exchange rate reverts in the mean. To resolve the puzzle in the context of Southern African Development Community countries, the thesis uses Bayesian unit root testing and nonlinear nonstationarity tests associated with the smooth transition autoregressive family of models. According to Bayesian unit root test results, the nonstationarity hypothesis received small posterior probability relative to other hypotheses. In this setting, the Bayesian results strongly supported the hypothesis that all the real exchange rates were trend-stationary autoregressive processes. However, it should be pointed out that Ahking (2004) has found these tests to be biased toward trend stationarity.

Nonlinear nonstationarity tests presented evidence that four out of ten of SADC's real exchange rates could be regarded as nonlinear globally ergodic processes, while others could be considered random walks.

The thesis relies on local-to-unity asymptotic theory and Rossi (2005a) to deal with the half-life version of the PPP puzzle. The half-life version is that a high degree of exchange rate volatility is generally associated with an implausibly slow speed of mean reversion. Depending on the robustness of the methods used, empirical evidence points to several half-lives of less than 36 months, but the confidence intervals of half-life deviations from PPP are found in all cases, as in Rossi's work, to be too wide to be informative enough to resolve the puzzle.

In addition, the thesis undertakes Hinich and Chong (2007) class tests of fractional integration to ensure that a long memory process is not mistaken for a nonstationary process in finding solutions to the PPP puzzle. The results show that at 1 per cent and 5 per cent significance levels, the real exchange rates associated with South Africa, Mauritius and Swaziland are not fractionally integrated. Tanzania's real exchange rate was found to be stationary-fractionally integrated but with the antipersistence property. Other currencies were found to be nonstationary-fractionally integrated.

The third puzzle is the exchange rate determination puzzle, which is as follows: In the short run there seems to be no reliable determinants of exchange rates. The thesis relies on the market microstructure approach to find the determinants of South Africa's exchange rate. In this context, the thesis utilises autoregressive distributed lag model of cointegration to identify the fundamental and non-fundamental determinants of the rand/dollar exchange rate.

The main contribution of the thesis to the economic literature is the usage of newly developed methods in an attempt to resolve the above-mentioned puzzles.

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Table 1 List of acronyms

ADF test:	Augmented Dickey-Fuller test
ADF-GLS:	ADF test proposed by Elliot, Rothemberg and Stock (1996)
AIC:	Akaike information criterion
ARDL:	Autoregressive distributed lag
$AR(p)$:	Autoregressive order p process
CCBG:	The Committee of Central Bank Governors in SADC
CES:	Constant elasticity of substitution
CI:	Confidence interval
CIP:	Covered interest parity
CMA:	Common monetary area
CPI:	Consumer price index
DGP:	Data generating process
DSGE:	Dynamic stochastic general equilibrium
ESTAR:	Exponential smooth transition autoregressive
FISTAR:	Fractionally integrated smooth transition autoregressive
GDP:	Gross domestic product
GE:	General equilibrium
GIRF:	Generalised impulse response function
HDR:	Highest density region approach
$I(d)$:	Integrated of order d, where d is a fraction
IRF:	Impulse response function
IMF:	International Monetary Fund
KSS:	Kapitanios, Shin and Smith
LM-type test:	Lagrange-Multiplier-type test
LSTAR:	Logistic smooth transition autoregressive
MAIC:	Modified Akaike information criterion
NLADF:	Nonlinear ADF
OLS:	Ordinary least squares
PP test:	Phillip-Perron test
PPP:	Purchasing power parity
SADC:	Southern African Development Community
SBC:	Schwarz's Bayesian Information Criterion
SETAR	Self-exciting transition autoregressive
STAR:	Smooth transition autoregressive
$\sup-t$:	Supremum t-test