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The Fisher Relationship in Nigeria

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1.   Introduction

The Fisher Hypothesis is one of the tenets of neoclassical monetary theory. Under the assumptions of perfect capital markets and the same nominal interest rate for borrowers, Fisher (1930) derived the following relationship between the nominal interest ratg"*õkö+."

ѵjg"tgcℼkpѵgtguѵ"tcѵg"*õtö+"cpf"ѵjg"kphℼcѵkqp"tcѵg"*õ ö+‹""

Therefore, according to the Fisher Hypothesis the real interest rate

al. (ERS, 1996). Table 1 reports the results for the nominal interest rate (1-month, 3-month, 6-month and 12-month), for both levels and first-differenced data, which suggest that the former is I(1) and the latter I(0) in all cases.

gswcvkqp+="cp"kpvgtegrv"* "wpmpqyp"cpf" "?"2"c"rtkqtk+, and both an intercept and a linear

vkog"vtgpf"*dqvj" "cpf" "wpmpqyp+. The results are fairly similar in all three cases.

Under the assumption of white noise disturbances, mean reversion takes place for the 1-month and 12-month but not for the 3- and 6-month real rates. In the case of the 1-month real rate mean reversion could reflect the fact that the inflation rate is stationary I(0). However, in the remaining cases (3, 6 and 12-month rates) the inflation rate (as well as the nominal rates) appears to be I(1).

[INSERT TABLES 5   7ABOUT HERE]

When allowing for autocorrelated disturbances as in Bloomfield (1973), mean reversion is found for the 1- and 3- month real rates, and I(0) stationarity in most cases for the inflation rates. For the 6-month rate, the confidence intervals are so wide that both the I(0) and the I(1) hypotheses cannot be rejected. Finally, when assuming a monthly seasonal AR(1) process for the error term, the only evidence of mean reversion is found for the 12-month real rate, with the nominal rate also appearing to be mean-reverting.

4.   Conclusions

This paper has examined the Fisher relationship in the case of Nigeria by carrying out standard unit root tests and applying fractional integration techniques to 1-month, 3-month, 6-month and 12-month deposit rates and inflation. The evidence indicates that this relationship only holds in the short run, and therefore only over short intervals is the nominal interest rates a useful predictor of the inflation rate. The lack of a long-run Fisher effect also suggests that in Nigeria the nominal interest rate can be used as a oqpgvct{"rqnke{"vqqn<"vjgtg"ku"õmonetary illusionö." ykvj"ehanges in inflation not being completely reflected in the nominal interest rate in the long run, and therefore monetary

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policy can affect the real economy. The main advantage of using monetary instead of fiscal policy is that the former is easier to implement and changes can be made more quickly.

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Table 1: Nominal interest rates

1A) Original data		1 month	3 month	6 month	12 month
DF	Intercept	-1.400456	-1.548782	-1.515252	-1.290033
	Lin. Trend	-1.552312	-1.840003	-1.692221	-1.634747
ADF	Intercept	-1.417872	-1.570439	-1.500912	-1.295944
	Lin. Trend	-1.884865	-1.945230	-1.889976	-1.755464
PP	Intercept	-1.528226	-1.468586	-1.500912	-1.798174
	Lin. Trend	-2.012176	-1.780756	-1.889976	-2.254018
KPSS	Intercept	0.476743**	0.492598**	0.456885*	0.450037*
	Lin. Trend	0.124609*	0.121445*	0.129140*	0.137540*
ERS	Intercept	6.423732	4.591461	5.362220	6.726230
	Lin. Trend	22.20964	12.36946	17.89419	18.15257

Table 2: Monthly inflation rates

2A) Original data					
		1 month	3 month	6 month	12 month
DF	Intercept	-6.242201***	-0.191914	-0.274282	-1.886847*
	Lin. Trend	-6.932340***	-0.899962	-0.961149	-1.914787

Table3: Real interestrates

3A) Original data		1 month	3 month	6 month	12 month
DF	Intercept	-6.235239***	-0.069907	-0.230805	-1.804201*
	Lin. Trend	-6.907975***	-0.973420	-1.214018	-2.169969
ADF	Intercept				

Table4: Multiple break points

		0 vs 1	1 vs 2	2 vs 3	3 vs 4
1 monthdepositrate	Value	101.9762	30.27416	46.35129	6.869821
	Data	2010M03	2011M10		

Table 5:

Table 6: Fractional integration results for the case of Bloomfield disturbances

	1 ó month		
	No regressors	An intercept	A linear time trend
Nominal interest	1.04 , 0.84, 1.34)		

Table 7: Fractional integration results for the case of monthly AR(1) disturbances

1 ó month			
	No regressors	An intercept	A linear time trend
Nominal interest rate	1.02 , 0.91, 1.17)	0.97 , 0.87, 1.09)	0.97 , 0.87, 1.09)
Inflation rate	0.06 , -0.09, 0.32)	0.06 , -0.11, 0.29)	0.06 , -0.11, 0.29)
Real interest rate	**0.12 , -0.02, 0.33)**	**0.12 , -0.02, 0.33)**	**0.11 , -0.04, 0.33)**
3 ó month			
	No regressors	An intercept	A linear time trend
Nominal interest rate	1.00 , 0.89, 1.16)	1.04 , 0.94, 1.17)	1.04 , 0.94, 1.17)
Inflation rate	0.67 , 0.41, 1.09)	0.81 , 0.31, 1.29)	0.83 , 0.34, 1.29)
Real interest rate	**0.53 , 0.31, 0.96)**	0.76 , 0.31, 1.25)	0.80 , 0.37, 1.25)
6 ó month			
	No regressors	An intercept	A linear time trend
Nominal interest rate	0.99 , 0.87, 1.15)	0.96 , 0.85, 1.13)	0.96 , 0.85, 1.13)
Inflation rate	1.10 , 0.88, 1.40)	1.14 , 0.97, 1.36)	1.14 , 0.97, 1.35)
Real interest rate	0.99 , 0.74, 1.38)	1.20 , 1.03, 1.43)	1.19 , 1.03, 1.42)
12 ó month			
	No regressors	An intercept	A linear time trend
Nominal interest rate	0.76 , 0.67, 0.88)	0.69 , 0.61, 0.80)	0.69 , 0.61, 0.80)
Inflation rate	0.93 , 0.76, 1.17)	1.01 , 0.86, 1.22)	1.01 , 0.86, 1.22)
Real interest rate	**0.73 , 0.62, 0.89)**	**0.74 , 0.64, 0.89)**	**0.74 , 0.62, 0.89)**

In bold, evidence of mean reversion in the real interest rates.