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A Study of Scheduled Banks Response to Cost of Alternative Sources of Funds.

By

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I. INTRODUCTION

Oar aim in this paper is limited one. We wish to stuc; , (e) whet weight the Pakistani bankers ssign to cost rectors in requiring short funds from rItem; tive sources o: supply and (o) how good substitute ere these alternative sours..s of supply of funds for scheduled banks in Pakistan. We ham chosen for ou£ study the two short money markets existing in Pa.istan; namely, the aII money market and the discount window of t e State Bank of Pakistan.

Dr. Porter has also tested the hypothesis 1/ how net free reserves (defined as excess reserves minus scheduled banks borrowings from the St;te bank of Pakistan) are influenced b; the relation oi the call rate with the discount ram. he thinks that scheduled banks in the aggregate respond in some fr.shio; to the spread between the discount rate anc.the call rate, he considers the spread between these two as the critical vnri h:. in explaining scheduled banks' borrowings i: mi the State rank .i Pakistan. This assumes that the funds available in the ini-r-b ru. call money market and from the Stcte Bank of Pakistan ar- very good substitutes. We wish to state more explicitly hov/ good substitutes are these alternative sources of short funds a v much 'critical' is the spread between the call r te and uhe discount rate in explaining scheduled bank behaviour pattern.

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1/Porter, Richard. O,: Liquidity and Lending: Volume of bank Credit in Pakistan, hsrachi, Pakistan institute of Developme i ^conomics, 1963, Lection: XII.

In our opinion it would be more illuminating if we compared the relative cost of alternative sources of funds, i.e. the call rate and the ciscount rate, in such a way that variations in cost non only explained the veiiations in the level of scheduled banks borrowings from the State Bank of Pakistan and the inter-bank call money market but also showed the strength of relationship between the changes in the relative position of these rates ana the changes in the level of funds transacted in the two short money markets, This, we intend to do with a methodology to be outlined is section IV below.

II. THE HYPOTHESIS

Since both the inter-bank call money market and the discount window of the state Bank of Pakistan are generally assumed to offer funds to scheduled banks for short run purposes and banks in need of funds may have access to both the markets, our hypothesis is that scheduled banks behaviour pattern in obtaining funds, as rational operators aiming at minimising costs, is highly sensitive to the cost of alternative sources of funds even in an under-developed short money markets like that of Pakistan. In other words we expect a positive relationship between an increase in the rate of interest in one market and the increase of funds transacted in the other, Also we expect a strong and significant relationship between the two series of funds transacted ana the interest rates charged.

To test this hypothesis and to have a better perspective of scheduled banks operational behaviour, we shall simply compute ana study the elasticity of substitution, e, bfetwean funds borrowed from the State Bank of Pakistan ana the call money market. This will also permit us to sec how much variations in the relative level of borrowings from the State Bank of Pakistan and the call money market can be explained by variations in tne relative position of the two rates -- i.e. the call rate and the discount rate.

III. POLICY IIiPLICkTIUi OF ThL STUDY

The oolicy implication of t…is study is that if the elasticity of substitution, e, is found to be high and the coefficient/of determination between the relative position Of the two rates and the level of funds transacted in the two markets is also high, then by maneouvuring one rate in one market, the amount of funds transacted in the other would be affected in a predictable fashion and the same may, therefore, be influenced in the desirable direction.

IV. i1.Tr:UDuLuGY U? Tim STUDY

Let us designate :

Sc quantity of funds transacted in the cali money market ;

tad quantity of funds borrowed from the State bank of Pakistan;

Pc the average rate of interest an the call money market during a certain period;

Pd the discount rate during tnat period ;.

The elasticity of substitution, e, between the funos borrowed from the state Lank of Pakistan and the call money market may then bu defined by the following relationship:

$$UcAid) = L \; (?d/Pc)^e \qquad or$$

$$\log (ScAid) = \log K + e \; \log(Pd/Pc)$$

hen log (Pd/Pc) is regressed on log(Sc/sd), the elasticity of substitution, e, and some residual is found. The double-log form of the regression is appropriate to find elasticity over the whole range one is likely to give satisfactory fit to the data in our case.

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Kegression between log (Pd/Pc) and log (Sc/Qd) yielded the following coefficients of the equation :

$$\log i/c/\,d) = -.104660 + \underset{(.192)}{1.568188} \log (Pd/Pc)$$

$$R^2 = .946$$

The coefficient of Tog (Pd/Pc), = 1.5b1&8, is the elasticity of substitution, e, between funds transacted in the inter-bank call money market and funds borrowed from the State bank of Pakistan. The figures in the parenthesis, .192 , indicates its standard error. The coefficient means that an increase in the ratio of discount rate to call rate by 1 per cestate point would give rise, ceteris paribus, to the ratio of call money funds to discount window funas by 1.57 percentage points, bign of the elasticity coefficient is also consistent with our hypothesis of e positive relationship between changes in the rate of interest in one market and the changes in the amount of funds transacted in the other market -- i.e. if the ratio of Pel to Pc goes up by 1 per cent, the ratio of мc to md goes up by 1.57 per cent.

The coefficient of correlation between the ratio of interest rates and the ratio of funds transacted in the call money market and the discount window of ithe State iBank of Pakistan was found to bo very high, (R = .973) and significant at 1 % level of the significance test.

The coefficient of determination, (R^2 = .94b), was therefore, also very high. It means that variations in the quantity of funds transacted 'explained' with the variations in the relative cost of funds are very high-- i.e. about 95 oer cent. In other words, factors other than the cost of funas are not important determinants for the amount of funds transacted in the two markets.

To be able to test the presence of autocorrelated disturbances, the burbin - Vatson statistic, d, was calculated and found to be, d = 1.47. For 3b observations and one explanatory variable, the Durbinatson upper bound du is equal to 1.32 at 1 > level of significance, bince the figure for our d is greater than du the hypothesis of a random disturbances in favour ox a positive autocorrelation cannot be rejected -- i.e. there is no evidence of autocorrelation among the residual terms.

V. Cui.CLitSIuKS

Thu findings are quite significant in view of tut fact tijat the call money market is not very well developed and is alleged to suffer from rigidities and imperfections. Our finding of a high elasticity of substitution between the call money auc the discount money, depending mainly on the cost of two sources of funds, does not support the assertion, often made, that the existing interest rate structure and scheduled banks behaviour pattern art insensitive, he high elasticity of substitution, e , further repudiates the assertion that ' in the absence of a well developed Short money market anc extensive chain of commercial banks, the efficiency of the bank rate is rather limited' [2/].

Let it be remembered here that the extent of activity in the call money market has increased from an average quarterly transaction of about 15.0 million rupees in 1954 to about 47.5 million rupees in 19&4. ith such n enormous increase in the activity, the price of transactions in the call money market has become a sensitive indicator of scheduled banks behaviour and the money market position in general. In any analysis of the money market and scheduled banks operational behaviour, this fact must be given due recognition, decisions based on the assumption of insensitivity of scheduled banks behaviour to cost factors would, therefore, be misleading because such an assumption does not stand the empirical test devisee above.

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SiA.:.C S OF D./1i.

quarterly data on the reallocation of funds through tut call money market were obtained from the liabilities sic of the weekly etatements of scheduled banks in Pakistan is biven in the State dank of Pakistan, Bulletin, teble captioned : "Scheduled Banks in Pakistan : keekly Consolidated Position", he took the sum of interbank deposits and interbank borrowings.

Data on scheduled banks borrowings from the State Bank of Pakistan are also given in the above table of the Bulletin.

Call money rate are quoted in the State Bank of Pakistan, Report on Currency and finance, in the table titled: "inter-bank Call Roney Rates (Larechi)" and the bulletin, table related to "Selectee economic indicators".

Ihe discount rate (i.e. the rate applicable to borrowings from the State bank of Pakistan) remained constant at 3 % till January, 1959 when it was raised to 4 % and remained there during the period covered by our study. Later, in June, 1965, it was raised to 5 % but our study aoes not extend to that point of time,

Apendfx: f, *lit*.u on tut reallocation of ftnas in ti.c Cf.il woney m.rk=i. c
c.liU Sorrowings from the So?, n Ct.il r.te, ?c, mu ti.u discount
r.te Pd.

quarters		..c 1	sid 2	Pc 3	73 4	piq£Tc-To;r4	lor Pd-lor Pc
1956	I	163.1	171.9	.029	.03	-0.022622	+ .014723
	II	136.4	39.6	.011		.537119	+ .365726
	III	139.2	43.5	.015		.505150	+ .401030
	r	196.7	124.5	.026		.196635	+ .029963
1957	1	191.5	167.6	.026		.006936	+ .029963
	II	169.5	95.4	.020		.297632	+ .176091
	10.1	196.J7	55,5	.010		.549511	+ .477121
	I	222.5	107.4	.022		.316326	+ .134696
1958	I	223.7	160.3	.036		.126774	- 0.102603
	lit	191.4	53.9	.009		.550353	+ 0.522660
	III	190.1	27.3	.007		.642619	+ .632023
	IV	193.6	152.0	.025		.103799	+ .079181
1959	I	224.2	122.9	.024	.04	.261084	+ .221849
	II	187.S	13.0	.00Λ		1.159993	+ .647817
	III	190.1	49.9	.013		.560681	+ .488117
	IV	193.8	43.6	.016		.647668	+ .346787
1960	I	222.2	127.1	.038		.242598	+ .022276
	II	237.4	73.8	.032		.507425	+ .090910
	III	266.8	39.4	.028		.630690	+ .154902
	TV	357.6	249.1	.044		.157606	- .041393
1961	L	20C.2	405.1	.032		- .192255	+ .010910
	11	205.4	327.0	.035		- .090647	+ .057992
	III	292.9	374.9	.037		- .107196	+ .033858
	uV	33C.7	445.9	.038		- .129803	+ .022276

Quarter		[illegible]	[illegible]	3	[illegible]	5	6
1962	I	>56.4	693.3	.039		- .268963	+ .010995
	II	406.1	503.7	.033		- .99312b	+ .083546
	III	400.9	337.2	.025		.075146	+ .204120
	IV	603.6	399.b	.033		.004326	+ .083540
1963	I	401.1	512.9	.034		- 0.101400	+ 0.070581
	II	634.4	373.4	.020		0.0b571b	+ 0.167087
	III	*19.9	340.9	.023		0.090519	+ 0.240332
	IV	431.9	396.8	.033		0.034626	+ 0.083546
1964	I	*29.7	877.4	.041		- 0.310033	- 0.u10724
	II	452.7	834.0	.037		- 0.207434	+ 0.033856
	III	489.5	787.5	.027		- 0.206498	+ 0.170696
	IV	*93.5	1190.3	.036		- 0.382369	+ 0.022276

* All values in col. 1 and 2 are in Lakhs of rupee (Lakh = 1,00,000)

** Sources of data are given in Appendix [illegible].