

**Determinants Of Capital Structure Of Media And Automobile Companies Of Nifty****¹Mrs. Rajshree Sharma, ²Dr. Navita Nathani**¹Research Scholar, School of Studies in Management, Jiwaji University, Gwalior, M.P., India²Associate Professor, Prestige Institute of Management, Gwalior, M.P., IndiaEmail- rajshree111@gmail.com, drnavita@prestigegwl.org**Abstract**

The purpose of paper is to examine various factors affecting in adoption of financial structure decision. The study involves Indian media and automobile sector companies listed in Nifty. The study involves period in between 2014 to 2018. We used OLS technique to refer the factors of capital structure in Indian specific industries. Eight components are to be taken it include profitability, tangibility, liquidity, size, tax, growth opportunity, risk, and NDTs. We found profitability, liquidity, size, tax and growth has negative effect on capital structure where NDTs has positive effect on leverage.

Keywords: Indian companies, Automobile Companies, capital structure decision, determinants.

1- INTRODUCTION

Capital structure decision is very important for any organization. As it is crucial part of financial management and carry ample of theoretical base which gives it perplexity on adoption of financial policy. The firm can issue many different securities, but it is attempt to issue best combination of components. The choice of debt equity for the company involves tradeoff between risk and return. Many specialists suggests to have debt than equity but excessive use of debt may endanger the survival of firm while optimum use may give benefit to existing equity holders. The firm choice of debt equity depends on many factors. The empirical work mainly lagged behind theoretically specially in case of developing countries.

On the other hand apart from financial factor some nonfinancial factors are also to be considered as manages and executives behavior and role somehow to be considered. In brief, debt is not an unmixed blessing and has dilemma for the finance manager. The finance manager expected to design best and optimum

financial structure which gives value to firm.

2- INDIAN MEDIA AND ENTERTAINMENT AND INDIAN AUTOMOBILE SECTOR

The Indian media and entertainment sector touched Rs 1.5 trillion in 2017 with the growth of around 13% over the year of 2016 and expected to be 2 trillion by 2020 with compound growth of 11.6%. As growing industry media has large potential but prior history of earning was very crucial. The media and entertainment can be divided into many parts as print, electronic media and films. Each has its own characteristics and growth rate i.e. 3 percent of media growth indicates struggle still exist where electronic media growth rate recorded as 11.2 % where films has 27 percent growth recorded.

We studies both automobile and ancillary of auto companies listed in nifty. As study of sector total growth remained muted and demonetization negatively impacted the Indian economy, Indian ancillary industry also struggled bit during the financial year. There has been conscious effort. There has been conscious effort on modification and

quality of product to compete in global market. In FY 2017 MHCVs was flat and LCVs grew by 7 percent YOY during the year. Passenger and two wheelers grew in higher single digits. On the other way FY 2016 MHCV was stronger performer. Although number of vendors declined and new fund comes to improve productivity. Relaxation is noticed on growth small scale due to FDI relaxation. The total value of automotive stood at Rs 561 billion in FY17 Exports stood at Rs 731 billion up by 3.1% YoY.

3- RESEARCH METHODOLOGY

3.1 POPULATION AND SAMPLE

The secondary data is obtained from money control database, panel data consisting of selected sample of 6 Indian media and entertainment industry companies listed on Nifty over a period of 5 years from 2013-14 to 2017-18. In this study we investigate the choice of leverage.

The previous empirical and theoretical study explores various variables which has noticeable impact on financial structure choice decision.

3.2 DATA AND SOURCES OF DATA

The panel data is set for five years to investigate the linkage between leverage and specific factors. The panel data The sample of this study is includes 6 media companies of nifty during the period of 2014 to 2018 from the source of money control. The method of data analyzed research work descriptive, regression techniques. The software used is Eviews 9. Debt ratio is taken as depended variable and all determinant variables as independent variable.

3.3 THEORETICAL FRAMEWORK

PROF Profitability is important measure to determine the capital structure as two mains theories is developed and according to Tradeoff theory profitability is positively associated with leverage (Kraus, and Litzenberger) as highly profitable firm take out credit of tax benefit. However according to pecking order theory profit has negative relation with the debt follow

hierarchy and use of internal funds. The profitability is measured by earning before tax to total assets. (Myers and Majluf, 1984), most of empirical studies have negative impact on the capital structure.

Ho: there is no significant relationship between leverage and profitability.

TAN its reflects the weight of each type of assets held by company in its total assets. Financial measure how the company distributed its assets. It is consider by the creditor at the time of financial distress fixed assets are guarantee to them and tangibility gives collateral value to the firm and expected to be positively related. On the other hand, large numbers of fixed assets are not a guarantee to recovering debt because underdeveloped system and poor investment projects can create obstructed to the organization. In this case developing countries have shown negative effect to the leverage. (Nivorozhkin, 2002). The tangibility is measured by net fixed assets to total assets.

Ho: there is no significant relationship between leverage and Tangibility.

LIQ liquidity is total current assets to total current liabilities according to pecking order theory high level of liquidity to finance the prospective investments. Therefore liquidity of company exercise negative relation to debt ratio (Ozkan, 2001)

RISK empirically pointed out that there is significantly negative relationship between risks

Ho: there is no significant relationship between leverage and risk

NDTS many researchers assert significantly negative linkage between leverage and non tax shield the reason behind this is quoted that items such as depreciation, amortization, advertising is deducted from EBIT and debt and reduces the taxable amount thus has negative relation. Kim et al. (2006) and Rajagopal (2010)

Ho: there is no significant relationship between leverage and NDTS.

TAX tax deductibility of corporate tax is positively related to debt issuance. Thus we expect to find support for direct relation with the leverage.

Ho: there is no significant relationship between leverage and tax.

SIZE (Titman and Wessels ,1988) argues that size of company is positively associated with the leverage as large and Measures

diversed organization has less risk of bankruptcy fact that allow them to maintain higher level of debt. But on the other hand according to pecking order size has negative relation as firm face asymmetry information problem.

Ho: there is no significant relationship between leverage and size.

	Formula	Theoretically	Empirically
Dependent variable			
Debt to Equity	(DE) = Debt/equity		
Independent variable			
PROFITABILITY	[Earnings Before Interest and Tax (EBIT) /Total Assets]	+ (trade-off) -(pecking order)	Positive or negative
TANGIBILITY	Fixed assets/total assets	+ (trade-off) +(pecking order)	Positive or negative
LIQUIDITY	Current assets/current liability	+ (trade-off) -(pecking order)	
SIZE	Log(Total assets)	+ (trade-off) +(pecking order)	Positive
TAX	EBIT/Total Assets		Negative
GROW_OPP	Percentage change in operating profit	-(trade off) +(pecking order)	Negative
RISK	Log (% change in profit)	-(trade off) +(pecking order)	Negative
NDTS	Depreciation/Total Assets	-(trade off)	Negative

3.4 STATISTICAL TOOLS AND ECONOMETRIC MODELS

This section elaborates the proper statistical/econometric/financial models which are being used to forward the study from data towards inferences. The detail of methodology is given as follows.

$$DRit = \alpha + \beta_1 PROF it + \beta_2 TAN it + \beta_3 LIQ it + \beta_4 RISK it + \beta_5 NDTS it + \beta_6 TAX it + \beta_7 SIZE it + \epsilon it$$

Here, PROF= profitability, TAN= Tangibility LIQ= Liquidity ,NDTS= Net Depreciation Tax Shield , TAX, SIZE=log(total Assets).

4- RESULTS AND DISCUSSION

4.1 RESULTS OF DESCRIPTIVE STATICS OF STUDY VARIABLES

This section presents the descriptive analysis of study. The descriptive statistics

of variables cover minimum, maximum, mean and standard deviation. The descriptive statistics presented table below from 2014-2018.

Debt Ratio is range from -0.181718 to 1.576335 with the mean of 0.224855 and standard deviation is 0.253028, PROF is range from -2.994429 to 6.807557 with the mean of 0.358307 and standard deviation is 0.823560, TAN is range from -5.507674 to 3.078567 with the mean of 0.405581 and standard deviation is 0.721259, LIQ is range from 0.083142 to 8.717715 with the mean of 1.335382 and standard deviation is 1.626410, RISK is range from 0.740000

to 1.030000 with the mean of 0.924900 and standard deviation is 0.051217, TAX is range from 4.939354 to 8.085290 with the mean of 7.516927 and standard deviation is 0.357434, NDTs is range from 0.674044 to 4.114405 with the mean of 3.052620 and standard deviation 0.275155, SIZE is range from 0.740000 to 1.030000 with the mean of 0.924900 and standard deviation is 0.051217.

	DR	PROF	TAN	LIQ	RISK
Mean	0.224855	0.358307	0.405581	1.335382	0.924900
Median	0.198858	0.272612	0.405000	0.775000	0.920000
Maximum	1.576335	6.807557	3.078567	8.717715	1.030000
Minimum	-0.181718	-2.994429	-5.507674	0.083142	0.740000
Std. Dev.	0.253028	0.823560	0.721259	1.626410	0.051217
Skewness	2.127335	4.681380	-4.802663	3.018279	-0.326447
Kurtosis	10.60294	42.86028	48.82010	12.23871	3.835709
Jarque-Bera	316.2790	6985.430	9132.265	507.4741	4.686163
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Sum Sq. Dev.	6.338290	67.14679	51.50125	261.8758	117110.0
Observations	100	100	100	100	100
	NDTS	TAX	SIZE		
Mean	3.052620	7.516927	0.924900		
Median	3.051741	7.470029	0.920000		
Maximum	4.114405	8.085290	1.030000		

Minimum	0.674044	4.939354	0.740000		
Std. Dev.	0.275155	0.357434	0.051217		
Skewness	-5.780881	-3.618946	-0.326447		
Kurtosis	59.73007	28.42702	3.835709		
Jarque-Bera	13966.56	2912.169	4.686163		
Probability	0.000000	0.000000	0.096031		
Sum Sq. Dev.	7.495307	12.64813	0.259699		
Observations	100	100	100		

(TABLE 1)

After collection of various data its necessary to test the hypothesis formed .In way of testing we used E-views. E views provide you variety of powerful tools for testing series . Firstly, it is necessary to check the stationary. The series is said to be stationary when mean and auto covariance do not depend on time. All variable of unit root study it is found that only growth opportunity has unit root data and we drop this variable from study.

For unit root test Levin, Lin & Chu t conducted. The hypothesis of this test are Null hypothesis process has unit root and Alternative hypothesis process has no unit root. Since our test has significant p-value as less than .05 indicates the rejection of Null Hypothesis which means data in not unit root and result is desirable. As Debt ratio has stationary data and can go for regression Analysis.

After unit root test it is found that DEBT RATIO, PROFITABILITY, LIQUIDITY, TANGIBILITY, SIZE, RISK GDP, and GROWTH has stationary data and proceed for regression.

The three methods are used for panel data regression i.e. pooled-ordinary least squares (OLS) method, fixed effects method and random effects method can be employed to estimate the model of leverage. The pooled least square method assumes that no firm is time specific effect if they are, then not a good predictor for cross section. The redundant fixed assets method is used to test null hypothesis on no fixed effect on cross- section units over a period of time. The result in table found to be non significant. Thus simple pooled OLS regression model is not appropriate for panel data.

Independent variable	Pooled OLS			Fixed Effect			Random Effect		
	Coefficient	t-statistics	P value	Coefficient	t-statistics	P value	Coefficient	t-statistics	P value
C	1.404688	1.600193	0.1130	-2.583734	-2.330702	0.0226	-2.583734	-0.507774	0.6128

PROFITABILITY	-0.152096	-3.803155	0.0003	-0.179854	-5.419714	0.0000	-0.179854	-5.543333	0.0000
TANGIBILITY	0.056220	0.546858	0.5858	-0.098539	-0.849054	0.3987	-0.098539	-0.681813	0.4971
LIQUIDITY	-0.025929	-1.825110	0.0713	-0.006647	-0.223678	0.8236	-0.006647	-0.873239	0.3848
SIZE	-1.470621	-2.894392	0.0048	1.737286	1.790340	0.0776	1.737286	-1.684758	0.0955
TAX	-0.156980	-2.460087	0.0158	-0.008595	-0.183528	0.8549	-0.008595	-0.545599	0.5867
GROW_OPP	-0.050555	-0.436473	0.6635	-0.726067	-4.876521	0.0000	-0.726067	-3.459488	0.0008
RISK	0.000547	0.882542	0.3798	5.03E-06	0.014395	0.9886	5.03E-06	0.274352	0.7844
NDTS	0.502542	1.969380	0.0520	0.958625	3.893833	0.0002	0.958625	4.015122	0.0001
R-squared	0.378018			0.856526			0.533299		
Adjusted R-squared	0.323338			0.802724			0.492271		
Prob (F-statistic)	6.913301			15.91980			12.99822		
sig	0.000000			0.000000			0.000000		
D-W statistics	0.449494			1.432188			1.060444		
F test	P value-0.0026fail to accept null hypothesis and fixed is best fit and we will use random effect model.								
Hausman test									

(TABLE 2)

TABLE describes the result of Housman (1978) test for the selection of fixed effect model or random effects model. Housman test for cross section random effect has Chi-square test statistics=210.6 Chi-square d.f. =7 with p-value= 0.000. The null hypothesis of cross section random effect is rejected. In this case fixed effect estimations preferred to random effect model. The fixed effect regression equation can be expressed as:

In order to identify the relationship between selected explanatory variables and leverage. we will apply Ordinary Least Squares method model to panel data.

Panel data model are of two types first is balanced panel where there is one observation for each company at each movement second is unbalanced which means some observations are missing.

To estimate the regression based on panel data we will use the Ordinary Least

Squares method (OLS) is effective when those considered variables are not correlated. To eliminate the inefficiency we will go ahead with fixed assets model and random effect model.

As above table it is realized that OLS pooled model R2 is 37.8% and F stat at 6.91% explains the dependent variable at significant at 1% level. OLS pooled result shows that NDTs is positive related at 10% significant level (0.0520) where profitability liquidity size and tax are negatively associated at 1%, 10%, 1% and 5% significantly (0.0003) (0.0713) (0.0048) (0.0158). For selection of effect we conducted Hausman test shows significant value indicate that fixed effect will be appropriate test for the regression model. In case of fixed effect model R2 is 85.6% shows best fit model and F stats at 15.9% explain the variable. The result indicates profitability and growth are

negatively associated at 1% significant level where size is negatively significant at 10% level in addition NDTs is positively associated. Approximately, same result from random effect.

We also performed cross sectional test as (TABLE 4) found no correlation. Thus, we can say that profitability, liquidity, size, tax and growth have negative effect on capital structure where NDTs has positive effect on leverage.

Residual Cross-Section Dependence Test

Null hypothesis: No cross-section dependence (correlation) in residuals

Equation: Untitled

Periods included: 5

Cross-sections included: 20

Total panel observations: 100

Note: non-zero cross-section means detected in data

Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	322.3031	190	0.0000
Pesaran scaled LM	5.761029		0.0000
Pesaran CD	-1.248369		0.2119

(TABLE 3)

Cross sectional analysis has advantage of avoiding various complications of data drawn from various point of time. It investigates the different effect of demographic factors. This study shows no cross section data means prediction has no overlaps over the time period. (TABLE 3)

5- CONCLUSION

The study bought the importance of determinants of capital structure among Indian corporatize sector structure after recession period. This study focus on media and auto sector has wide scope of growth but has fell on pecking order theory as follow hierarchy of internal fund to debt profitability is negatively associated in Indian firm shows that still organizations has risk averse behavior and like to use their own fund in expansion of business, moreover liquidity is negatively associated means it signal to shareholder chance of misuse of fund. The size also found negative relation as asymmetry information problem in large firm can manipulates the information according to the manager interest. Moreover, growth opportunity has negative relation as it is assumed that the firm with the lager assets growth percentage means misuse of fund

and can be converted into non performing assets Myers (1977). Tax is surprising result negatively associated as due to some tax reform during the period and also supports Booth, et al. (2001) as average tax rate measure used the tax higher will be profitability rather than debt.

Thus it can say Indian policy maker has to liberalize the policy of borrowings and need to take initiative to change the mindset of traditional as well as small firm to convert risk averse to risk taker. We can also predict that auto sector companies are very old and follow traditional practice whereas media and entertainment sector is growing firm and new to market may have less reputation to get debt. We have taken two opposite industry which may not reflect the appropriate result. Some more variables has to be included for further studies.

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Appendix

	TAX	TANGIBILIT Y	S1	RISK	PT1	NDTS	QUIDITYDR3	DIV	IC2	
Mean	7.51692	0.405581	0.92490	0.53246	0.35830	3.05262	1.33538	0.22485	5.42597	46955.5
	7	0	5	7	0	2	5	4	0	

Median	7.47002	0.92000	0.16525	0.27261	3.05174	0.77500	0.19885	5.15213	3152.34
	9	0.405000	0	0	2	1	0	8	4
Maximum	8.08529	1.03000	164.925	6.80755	4.11440	8.71771	1.57633	8.00425	983571.
	0	3.078567	0	1	7	5	5	5	9
Minimum	4.93935	0.74000	-	-	0.67404	0.08314	-	4.60517	353.865
	4	-5.507674	0	230.12382	9944294	2	0.1817180	9	
Std. Dev.	0.35743	0.05121	34.3937	0.82356	0.27515	1.62641	0.25302	0.90516	132228.
	4	0.721259	7	3	0	5	0	8	2
Skewness	-	-	-	4.68138	-	3.01827	2.12733	1.04674	4.81745
	3.618946	-4.802663	0.326447	1.6042490	5.7808819	5	4	7	
Kurtosis	28.4270	3.83570	28.1977	42.8602	59.7300	12.2387	10.6029	3.05838	29.7720
	2	48.82010	9	1	8	7	1	4	0
Jarque-Bera	2912.16	4.68616	2688.41	6985.43	13966.5	507.474	316.279	18.2754	3373.23
	9	9132.265	3	2	0	6	1	0	3
Probability	0.00000	0.09603	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00000
	0	0.000000	1	0	0	0	0	8	0
Sum	751.692	92.4900	53.2465	35.8307	305.262	133.538	22.4854	542.597	4695550
	7	40.55809	0	1	1	0	2	7	4
Sum Sq. Dev.	12.6481	0.25969	117110.	67.1467	7.49530	261.875	6.33829	81.1124	1.73E+1
	3	51.50125	9	0	9	7	8	0	6
Observations	100	100	100	100	100	100	100	100	100

Dependent Variable: DR3

Method: Panel Least Squares

Date: 10/15/18 Time: 23:46

Sample: 2014 2018

Periods included: 5

Cross-sections included: 20

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.404688	0.877824	1.600193	0.1130

PT1	-0.152096	0.039992	-3.803155	0.0003
TANGIBILITY	0.056220	0.102806	0.546858	0.5858
LIQUIDITY	-0.025929	0.014207	-1.825110	0.0713
S1	-1.470621	0.508093	-2.894392	0.0048
TAX	-0.156980	0.063811	-2.460087	0.0158
GROW_OPP	-0.050555	0.115826	-0.436473	0.6635
RISK	0.000547	0.000620	0.882542	0.3798
NDTS	0.502542	0.255178	1.969380	0.0520

R-squared	0.378018	Mean dependent var	0.224855
Adjusted R-squared	0.323338	S.D. dependent var	0.253028
S.E. of regression	0.208139	Akaike info criterion	-0.215528
Sum squared resid	3.942304	Schwarz criterion	0.018938
Log likelihood	19.77639	Hannan-Quinn criter.	-0.120635
F-statistic	6.913301	Durbin-Watson stat	0.449494
Prob(F-statistic)	0.000000		

Dependent Variable: DR3

Method: Panel Least Squares

Date: 10/15/18 Time: 23:46

Sample: 2014 2018

Periods included: 5

Cross-sections included: 20

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.583734	1.108565	-2.330702	0.0226
PT1	-0.179854	0.033185	-5.419714	0.0000
TANGIBILITY	-0.098539	0.116057	-0.849054	0.3987
LIQUIDITY	-0.006647	0.029715	-0.223678	0.8236
S1	1.737286	0.970366	1.790340	0.0776

TAX	-0.008595	0.046832	-0.183528	0.8549
GROW_OPP	-0.726067	0.148890	-4.876521	0.0000
RISK	5.03E-06	0.000350	0.014395	0.9886
NDTS	0.958625	0.246191	3.893833	0.0002

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.856526	Mean dependent var	0.224855
Adjusted R-squared	0.802724	S.D. dependent var	0.253028
S.E. of regression	0.112384	Akaike info criterion	-1.302288
Sum squared resid	0.909377	Schwarz criterion	-0.572841
Log likelihood	93.11442	Hannan-Quinn criter.	-1.007068
F-statistic	15.91980	Durbin-Watson stat	1.432188
Prob(F-statistic)	0.000000		

Dependent Variable: DR3

Method: Panel EGLS (Cross-section random effects)

Date: 10/15/18 Time: 23:46

Sample: 2014 2018

Periods included: 5

Cross-sections included: 20

Total panel (balanced) observations: 100

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.457785	0.901553	-0.507774	0.6128
PT1	-0.166896	0.030108	-5.543333	0.0000
TANGIBILITY	-0.068717	0.100786	-0.681813	0.4971
LIQUIDITY	-0.017404	0.019930	-0.873239	0.3848
S1	-0.997490	0.592067	-1.684758	0.0955

TAX	-0.024640	0.045162	-0.545599	0.5867
GROW_OPP	-0.363770	0.105151	-3.459488	0.0008
RISK	9.53E-05	0.000347	0.274352	0.7844
NDTS	0.876688	0.218347	4.015122	0.0001

Effects Specification

	S.D.	Rho
Cross-section random	0.171334	0.6992
Idiosyncratic random	0.112384	0.3008

Weighted Statistics

R-squared	0.533299	Mean dependent var	0.063293
Adjusted R-squared	0.492271	S.D. dependent var	0.170746
S.E. of regression	0.121666	Sum squared resid	1.347029
F-statistic	12.99822	Durbin-Watson stat	1.060444
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.209161	Mean dependent var	0.224855
Sum squared resid	5.012564	Durbin-Watson stat	0.284974

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	23.651125	8	0.0026

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
PT1	-0.179854	-0.166896	0.000195	0.3532
TANGIBILITY	-0.098539	-0.068717	0.003311	0.6043
LIQUIDITY	-0.006647	-0.017404	0.000486	0.6255
S1	1.737286	-0.997490	0.591067	0.0004
TAX	-0.008595	-0.024640	0.000154	0.1955
GROW_OPP	-0.726067	-0.363770	0.011111	0.0006
RISK	0.000005	0.000095	0.000000	0.0158
NDTS	0.958625	0.876688	0.012935	0.4712

Cross-section random effects test equation:

Dependent Variable: DR3

Method: Panel Least Squares

Date: 10/15/18 Time: 23:47

Sample: 2014 2018

Periods included: 5

Cross-sections included: 20

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.583734	1.108565	-2.330702	0.0226
PT1	-0.179854	0.033185	-5.419714	0.0000
TANGIBILITY	-0.098539	0.116057	-0.849054	0.3987
LIQUIDITY	-0.006647	0.029715	-0.223678	0.8236
S1	1.737286	0.970366	1.790340	0.0776
TAX	-0.008595	0.046832	-0.183528	0.8549
GROW_OPP	-0.726067	0.148890	-4.876521	0.0000
RISK	5.03E-06	0.000350	0.014395	0.9886
NDTS	0.958625	0.246191	3.893833	0.0002

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.856526	Mean dependent var	0.224855
Adjusted R-squared	0.802724	S.D. dependent var	0.253028
S.E. of regression	0.112384	Akaike info criterion	-1.302288
Sum squared resid	0.909377	Schwarz criterion	-0.572841
Log likelihood	93.11442	Hannan-Quinn criter.	-1.007068
F-statistic	15.91980	Durbin-Watson stat	1.432188
Prob(F-statistic)	0.000000		

Residual Cross-Section Dependence Test

Null hypothesis: No cross-section dependence (correlation) in residuals

Equation: Untitled

Periods included: 5

Cross-sections included: 20

Total panel observations: 100

Note: non-zero cross-section means detected in data

Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	322.3031	190	0.0000
Pesaran scaled LM	5.761029		0.0000
Pesaran CD	-1.248369		0.2119

(TABLE3)