IRMM
INTERNATIONAL REVIEW OF MANAGEMENT AND MARKETING
EJ EconJournals
ISSN: 2146-4405

International Review of Management and Marketing

ISSN: 2146-4405

available at http: www.econjournals.com

International Review of Management and Marketing, 2017, 7(3), 35-41.

Could Profitability, Activity and Use of Equity Finance Increasing DuPont Model of Return on Equity? Jordanian Case

Lina Hani Warrad[1], Mahmoud Nassar[2]

[1]Department of Accounting, Applied Science Private University, Amman, Jordan, [2]Department of Accounting, Applied Science Private University, Amman, Jordan. *Email: l_warrad@asu.edu.jo

ABSTRACT

Performance evaluation is very fundamental to make a right decision. Profitability analysis is very important factor in the performance evaluation of all companies, but it is not enough just computing return on equity (ROE) to evaluate performance. It is very important to reveal the factors which are having impact on ROE. For this reason DuPont Model is considered to be the essential performance indicator in many studies. Theoretically there is a positive relationship between the DuPont Model of ROE with its three components, total asset turnover, net profit margin, and financial leverage, and a negative relationship with the average total equity. The current study applied on the Jordanian industrial sectors for the period from 2008 to 2015 to approve the previous fact. Eviews software used, stability diagnostics, recursive estimates, Cusum test, vector auto regression model, ordinary lease square, Wald coefficient test, and regression analysis applied. The results revealed that there is a significant effect of total asset turnover on DuPont Model of ROE, there is a significant effect of net profit margin on DuPont Model of ROE, and finally there is no significant effect of financing leverage on DuPont Model of ROE. On the other hand, there is a significant effect of total asset turnover and net profit margin and financing leverage jointly on DuPont Model of ROE.

Keywords: Total Asset Turnover, Net Profit Margin, Financial Leverage, DuPont Model of Return on Equity, Amman Stock Exchange
JEL Classifications: E44, M14

1. INTRODUCTION

Industrial sectors play a necessaryl role in the economic resource allocation of Jordan. They hand over funds from depositors to investors continuously. They can do so, if they generate needful income to cover their operational cost they sustain in the due channel. In other words for potential intermediation function, industrial sectors need to be profitable. Also, the financial performance of industrial sectors has high implications for economic growth of countries. Good financial appraisal payoff the shareholders for their investment. So this promotes additional investment and brings about economic growth. On the other hand, bad performance can result in failure and crisis which have passive reflection on the economic growth.

Financial analysis or evaluation is the procedure of analyzing the information in financial statements, at a given level, and explaining the meaning of those figures with the support of financial tools. Financial techniques, which are generally used to give meaning to these figures, include comparative analysis, common-size analysis, trend analysis, and ratio analysis. The ratio, however, is the most relevant and very used technique for financial evaluation (Financial Statements Analysis, 2014).

A chosen of adequate measures pursued at maximizing the essential objective of a business is a primary key in managing the value of the company. Practically, the most popular method of revaluing the value is based on the concept of the main objective of the company's activities for which is traditionally considered to maximize the income of the shareholders as a result of maximizing the market value of the company. Pondering only at the main formula for return on equity (ROE) it can be concluded that the increase in ROE requires either increase the net incomee or decrease the equity (Kijewska, 2016).

DuPont analysis is a method of performance measurement that was started by the DuPont Corporation in the 1920s, according to DuPont analysis, ROE is affected by three things: Operating

efficiency, which is measured by profit margin; asset use efficiency, which is measured by total asset turnover; and financial leverage, which is measured by the equity multiplier (investopedia.com).

This study try to improve that the previous three components having impact on the DuPont Model which is considered to be the critical performance indicator in industrial sectors in Jordan.

2. PREVIOUS STUDIES

The factors that determine the ROE of 73 financial companies listed on the Johannesburg Securities Exchange for the period from 2002 to 2012 was examined by Ndlovu and Alagidede (2015). the study used the DuPont Model and a multifactor Arbitrage pricing theory. The results showed that there was a positive relationship between profit margin and ROE, and that can be promote if managers employ cost leadership strategies. Also predictable cash flows can grant high levels of debt and therefore high ROE, while unpredictable market conditions should use debt with warning. A positive relationship between interest rates and ROE for banks, insurance and real estate companies was found, which may suggest that managers adopt short-term duration gap strategies in managing the mismatch between assets and liabilities instead of relying on long-term strategies. Inflation for banks, insurance and real estate companies is negatively related to ROE.

The determinants of DuPont ROE Model in fuel and energy sector, chemicals sector, cement sector, engineering sector, textiles sector and transport and communication sector of KSE 100 index were studied by Mubin et al. (2014). The study covered the period from 2004 to 2012, and applied on 51 companies included six industries. The results concluded that an asset turnover was significantly varies from industry to another, whereas leverage and profit margin are not much variable among different industries. Also, the results confirmed industry effect on newly established firms that they can have the benefit of profitability if they are from fuel and energy sector, cement sector and transport and communication sector whereas others sectors such as chemicals sector, engineering sectors and textiles sectors does not have that leverage.

The relationship between ROE, financial leverage, and size of firms was investigated by Yoon and Jang (2013). The study used ordinary least squares (OLS) regression and applied on restaurant industry, also covered the period from 1998 to 2003. The results revealed that, at least during the period of the study, firm size had a more controlling effect on ROE than debt use; larger firms have significantly higher ROE. Moreover the results showed that smaller firms were significantly riskier than larger firms. As well, the dominance of size effect in the ROE and financial leverage relationship within the restaurant industry is better understood.

Three hypothesis tests on the profitability indicator was performed and inspected by Kim (2013) study. A modified "DuPont" system was applied by employing models such as the "panel data" one and the "logistic" regression one. One of the results was shown that the proxies measuring leverage across the book-value and the market-value bases were statistically significant components determining profitability. The size as an explanatory variable has a positive and statistically significant relationship with the indicator, represented that the firms in the province were smaller than their counterparts in the other regional areas in Korea.

The relationship between ROE, leverage, total asset turnover, and size of firms was examined by Vintilă and Duca (2012). The study applied on Bucharest stock exchange companies, and used regression method to determine the effect of debt level on ROE. The results showed that high debt has significant positive impact on ROE. Debt is used by many companies to leverage their capital and profit, but is not the only factor that affects the leverage capital and profit.

The impact of capital structure measured by short-term debt (STD), long-term debt (LTD) and total debt (TD) on firm performance measured by return on asset (ROA) and ROE of Malaysian firms was examined by Zuraidah et al. (2012). The study employed size, asset grow, sales grow and efficiency as control variables, and applied on 58 firms resulted in 358 observations, covered the period from 2005 through 2010. The results found that only STD and TD have significant relationship with ROA, while ROE has significant on each of debt level. However, the results showed that none of STD, TD and LTD has significant relationship with performance.

A study of (Kasilingam and Jayabal, 2012) confirmed that the DuPont Model components such as profit margin, asset turnover and equity multiplier are on the declining trend. This has resulted in intensive erosion in the return on the equity shareholders. DuPont analysis display that the performance of company is very bad in profitability, operating efficiency and leverage. There is a positive relationship between ROE and asset turnover and equity multiplier. Then the company has to increase the sales volume in order to increase the asset turnover ratio.

3. HYPOTHESES

3.1. First Main Hypothesis

H_{01}: There is no significant effect of total asset turnover and net profit margin and financial leverage on DuPont Model of ROE.

3.2. Sub Hypothesis

H_{11}: There is no significant effect of total asset turnover on DuPont Model of ROE.

H_{21}: There is no significant effect of net profit margin on DuPont Model of ROE.

H_{31}: There is no significant effect of financial leverage on DuPont Model of ROE

4. RESEARCH METHODOLOGY

The current empirical study tries to investigate the influence of total asset turnover, net profit margin, and financial leverage separately and jointly on DuPont Model of ROE for Jordanian Industrial sectors. The population consisted of all industrial sectors

listed at Amman Stock Exchange (ASE) during the period from 2008 to 2015 except for Glass and Ceramic sector; because the data related to these sector is not available during the period of the study, the required financial data for the study factors/variables will be collected from the database of ASE available online for the period of the study. The database of ASE is based on the annual firm reports of the studied firms.

Also, quantitative technique has been applied for this study. The study is based on use the (Eviews) software. Stability diagnostics, recursive estimates, Cusum test, vector auto regression (VAR) Model, OLS, Wald coefficient test, and Regression analysis were adopted.

4.1. The Research Sample

The current study relied on the financial data included in financial reports for all Jordanian industrial sectors listed on the ASE during the period from 2008 to 2015, except for Glass and ceramic sector; because the data related to these sectors is not available during the period of the study.

4.2. Variables of the Study

4.2.1. Dependent variable – DuPont Model of ROE

4.2.1.1. DuPont Model of ROE

A system of analysis has been evolved that focuses the awareness on all three critical components of the financial position of a company: The operating management, management of assets and the capital structure. The DuPont Formula shows the interrelationship between key financial ratios (www.investopedia.com).

It computed as follows:

$$\frac{\text{Net income}}{\text{Average total equity}} = \frac{\text{Net income}}{\text{Net sales}} * \frac{\text{Net sales}}{\text{Average total assets}} * \frac{\text{Average total assets}}{\text{Average total equity}}$$

(Gleim and Flesher, 2015. p. 71)

4.2.2. Independent variables – total asset turnover, net profit margin, financial leverage

4.2.2.1. Total asset turnover

Total asset turnover ratio measures how efficiently the company is deploying the totality of its resources to generate revenues (Gleim and Flesher, 2015. p. 47).

It is computed as follows:

$$\frac{\text{Revenue}}{\text{Average total assets}}$$

(Schweser, 2012, Pp.149)

4.2.2.2. Net profit margin

Is what percentage remains after other gains and losses (including interest expense) and income taxes have been added or deducted (Gleim and Flesher, 2015. p. 67)

It is computed as follows:

$$\frac{\text{Net income}}{\text{Revenue}}$$

(Schweser, 2012. p. 153)

4.2.2.3. Financial leverage

Used as an indicator of a company's use of debt financing.

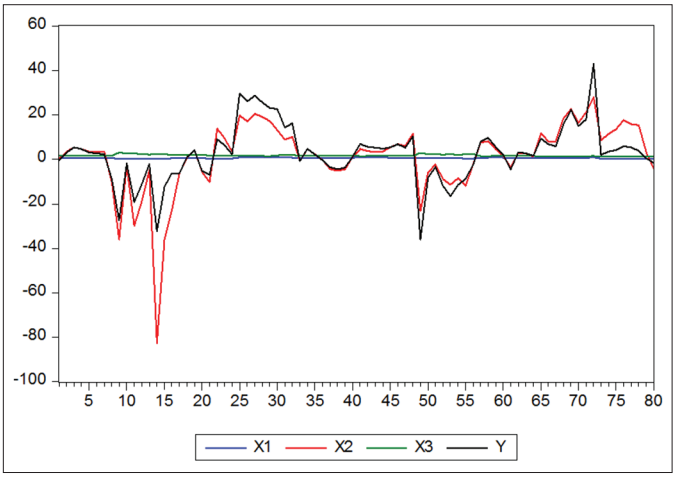
It is computed as follows:

$$\frac{\text{Average total assets}}{\text{Average total equity}}$$

(Schweser, 2012. p. 152)

5. DATA ANALYSIS AND RESULTS

5.1. Check How All Variables Look



1. How all variables look

Where:
X1: Total asset turnover
X2: Net profit margin
X3: Financial leverage
Y: DuPont Model of ROE

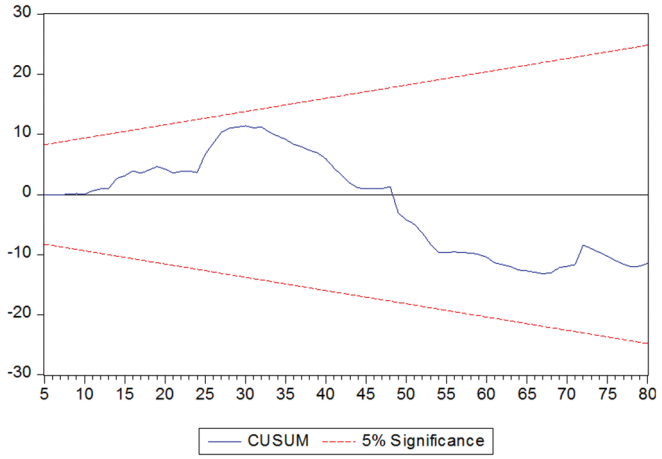
5.2. Stability of Dependent Variable Return DuPont Model of ROE

Dependent variable: DuPont Model of ROE				
Method: Least squares				
Sample: 1 80				
Included observations: 80				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	−2.138883	4.664142	−0.458580	0.6478
X1	12.33772	3.447844	3.578388	0.0006
X2	0.587463	0.065810	8.926671	0.0000
X3	−1.781842	2.411746	−0.738818	0.4623
R^2	0.775444	Mean dependent var		2.783625

(*Contd...*)

(*Continued*)

Adjusted R^2	0.766580	S.D. dependent var	12.76149
S.E. of regression	6.165529	Akaike info criterion	6.524532
Sum squared resid	2889.045	Schwarz criterion	6.643633
Log likelihood	−256.9813	Hannan-Quinn criter.	6.572283
F-statistic	87.48188	Durbin-Watson stat	0.916119
Prob (F-statistic)	0.000000		



2. Stability of dependent variable

While the middle line (blue line) within the two (red) lines, meaning that the dependent variable DuPont Model of ROE is stable.

5.3. VAR Model

3: Vector auto regression (VAR) model

Vector auto regression estimates				
Sample (adjusted): 4 80				
Included observations: 77 after adjustments				
Standard errors in ( ) and t-statistics in [ ]				
	Y	X1	X2	X3
Y(−1)	0.306208	−0.005988	−0.139762	1.81E-05
	(0.24777)	(0.00354)	(0.30009)	(0.00691)
	[1.23587]	[−0.169234]	[−0.46573]	[0.00262]
Y(−2)	0.144781	0.006088	0.020469	−0.007025
	(0.28226)	(0.00403)	(0.34187)	(0.00788)
	[0.51293]	[1.51035]	[0.05988]	[−0.89200]
Y(−3)	0.295620	0.000506	0.310575	0.002795
	(0.24698)	(0.00353)	(0.29914)	(0.00689)
	[1.19694]	[0.14337]	[1.03824]	[0.40559]
X1(−1)	9.972665	0.881584	13.83702	−0.100326
	(10.7329)	(0.15328)	(12.9994)	(0.29945)
	[0.92917]	[5.75159]	[1.06444]	[−0.33504]
X1(−2)	4.671439	−0.001432	4.419854	0.378683
	(13.3220)	(0.19025)	(16.1353)	(0.37168)
	[0.35066]	[−0.00753]	[0.27392]	[1.01884]
X1(−3)	−17.29264	−0.104168	−15.94256	−0.268535
	(10.3119)	(0.14726)	(12.4895)	(0.28770)
	[−1.67696]	[−0.70736]	[−1.27648]	[−0.93339]
X2(−1)	0.000643	0.004306	0.385825	−0.002334
	(0.19247)	(0.00275)	(0.23311)	(0.00537)
	[0.00334]	[1.56651]	[1.65511]	[−0.43463]
X2(−2)	−0.051317	−0.006547	0.036059	0.003448
	(0.20995)	(0.00300)	(0.25428)	(0.00586)
	[−0.24443]	[−2.18365]	[0.14181]	[0.58872]
X2(−3)	0.055420	0.001941	0.012586	−0.002781
	(0.19501)	(0.00278)	(0.23619)	(0.00544)
	[0.28420]	[0.69691]	[0.05329]	[−0.51121]
X3(−1)	−0.062847	−0.048570	−0.034465	0.625086
	(5.34042)	(0.07627)	(6.46818)	(0.14900)
	[−0.01177]	[−0.63684]	[−0.00533]	[4.19530]
X3(−2)	−1.942014	0.027549	−7.125044	0.022207
	(6.26026)	(0.08940)	(7.58226)	(0.17466)
	[−0.31021]	[0.30814]	[−0.93970]	[0.12714]
X3(−3)	0.889215	0.040302	−0.613376	−0.032270
	(5.36829)	(0.07666)	(6.50193)	(0.14977)
	[0.16564]	[0.52570]	[−0.09434]	[−0.21546]
C	4.280937	0.091545	12.54015	0.675459
	(10.6512)	(0.15211)	(12.9004)	(0.29717)
	[0.40192]	[0.60183]	[0.97207]	[2.27300]
R^2	0.449644	0.644624	0.461466	0.554641
Adj. R^2	0.346452	0.577991	0.360491	0.471136
Sum sq. resids	7070.638	1.442036	10372.23	5.503783
S.E. equation	10.51089	0.150106	12.73052	0.293252
F-statistic	4.357361	9.674256	4.570097	6.642028
Log likelihood	−283.2744	43.88508	−298.0269	−7.681033
Akaike AIC	7.695440	−0.802210	8.078621	0.537170
Schwarz SC	8.091147	−0.406502	8.474328	0.932877
Mean dependent	2.790779	0.577662	1.419091	1.735714
S.D. dependent	13.00171	0.231067	15.91925	0.403245
Determinant resid covariance (dof adj.)		4.961273		
Determinant resid covariance		2.367828		
Log likelihood		−470.2190		
Akaike information criterion		13.56413		
Schwarz criterion		15.14696		

From the above estimation we have 4 models, 10 coefficients for each independent variable, meaning 30 coefficients in the total (VAR) model.

Y=C(1)*Y(−1)+C(2)*Y(−2)+C(3)*Y(−3)+C(4)*X1(−1)+C(5)*X1(−2)+C(6)*X1(−3)+C(7)*X2(−1)+C(8)*X2(−2)+C(9)*X2(−3)+C(10)*X3(−1)+C(11)*X3(−2)+C(12)*X3(−3)+C(13)

X1=C(14)*Y(−1)+C(15)*Y(−2)+C(16)*Y(−3)+C(17)*X1(−1)+C(18)*X1(−2) +C(19)*X1(−3)+C(20)*X2(−1)+C(21)*X2(−2)+C(22)*X2(−3)+C(23)*X3(−1)+C(24)*X3(−2)+C(25)*X3(−3)+C(26)

X2=C(27)*Y(−1)+C(28)*Y(−2)+C(29)*Y(−3)+C(30)*X1(−1)+C(31)*X1(−2)+C(32)*X1(−3)+C(33)*X2(−1)+C(34)*X2(−2)+C(35)*X2(−3)+C(36)*X3(−1)+C(37)*X3(−2)+C(38)*X3(−3)+C(39)

X3=C(40)*Y(−1)+C(41)*Y(−2)+C(42)*Y(−3)+C(43)*X1(−1)+C(44)*X1(−2)+C(45)*X1(−3)+C(46)*X2(−1)+C(47)*X2(−2)+C(48)*X2(−3)+C(49)*X3(−1)+C(50)*X3(−2)+C(51)*X3(−3)+C(52)

Then we have to answer the following questions?

- Is total asset turnover significant to explain DuPont Model of ROE?
- Is net profit margin significant to explain DuPont Model of ROE?
- Is financial leverage significant to explain DuPont Model of ROE?
- Are total asset turnover, net profit margin, and financial leverage jointly significant to explain DuPont Model of ROE?

We have to find if each independent variable is significant to explain its coefficient. Initially, if the t-test for every coefficient for each independent variable is <0.05, meaning that the independent variable is significant to explain the coefficient.

From the VAR Model above can notice some of the following:

The independent variable X3 is significant to explain Y(−1), because t-test is 0.00262 <0.05, also the independent variable X1 is significant to explain X1(−2), because t-test is 0.00753 <0.05, moreover the independent variable X2 is significant to explain X3(−1), because t-test is 0.00533 <0.05. On the other hand, the all other independent variables are not significant to explain their coefficients, because their t-test is more than 0.05.

Practically we need to know the P value, in order to approve that each independent variable is significant to explain its coefficient, then answering the above questions. So we have to use least squares analysis.

4. Least squares

Estimation method: Least squares				
Sample: 4 80				
Included observations: 77				
Total system (balanced) observations 308				
	Coefficient	Std. error	t-statistic	Prob.
C(1)	0.306208	0.247767	1.235868	0.2176
C(2)	0.144781	0.282261	0.512934	0.6084
C(3)	0.295620	0.246980	1.196939	0.2324
C(4)	9.972665	10.73289	0.929169	0.3537
C(5)	4.671439	13.32202	0.350655	0.7261
C(6)	−17.29264	10.31189	−1.676961	0.0948
C(7)	0.000643	0.192468	0.003340	0.9973
C(8)	−0.051317	0.209946	−0.244429	0.8071
C(9)	0.055420	0.195006	0.284199	0.7765
C(10)	−0.062847	5.340418	−0.011768	0.9906
C(11)	−1.942014	6.260257	−0.310213	0.7567
C(12)	0.889215	5.368287	0.165642	0.8686
C(13)	4.280937	10.65116	0.401922	0.6881
C(14)	−0.005988	0.003538	−1.692339	0.0918
C(15)	0.006088	0.004031	1.510348	0.1322
C(16)	0.000506	0.003527	0.143369	0.8861
C(17)	0.881584	0.153276	5.751591	0.0000
C(18)	−0.001432	0.190252	−0.007527	0.9940
C(19)	−0.104168	0.147264	−0.707357	0.4800
C(20)	0.004306	0.002749	1.566509	0.1185
C(21)	−0.006547	0.002998	−2.183650	0.0299
C(22)	0.001941	0.002785	0.696911	0.4865
C(23)	−0.048570	0.076267	−0.636843	0.5248
C(24)	0.027549	0.089403	0.308142	0.7582
C(25)	0.040302	0.076665	0.525699	0.5996
C(26)	0.091545	0.152109	0.601834	0.5478
C(27)	−0.139762	0.300089	−0.465734	0.6418
C(28)	0.020469	0.341868	0.059875	0.9523
C(29)	0.310575	0.299136	1.038241	0.3001
C(30)	13.83702	12.99940	1.064435	0.2881
C(31)	4.419854	16.13529	0.273925	0.7844
C(32)	−15.94256	12.48949	−1.276477	0.2029
C(33)	0.385825	0.233112	1.655106	0.0991
C(34)	0.036059	0.254281	0.141807	0.8873
C(35)	0.012586	0.236186	0.053288	0.9575
C(36)	−0.034465	6.468178	−0.005328	0.9958
C(37)	−7.125044	7.582263	−0.939699	0.3483
C(38)	−0.613376	6.501932	−0.094337	0.9249
C(39)	12.54015	12.90041	0.972074	0.3319
C(40)	1.81E−05	0.006913	0.002619	0.9979
C(41)	−0.007025	0.007875	−0.891998	0.3732
C(42)	0.002795	0.006891	0.405593	0.6854
C(43)	−0.100326	0.299446	−0.335040	0.7379
C(44)	0.378683	0.371682	1.018836	0.3092
C(45)	−0.268535	0.287700	−0.933388	0.3515
C(46)	−0.002334	0.005370	−0.434634	0.6642
C(47)	0.003448	0.005857	0.588719	0.5566
C(48)	−0.002781	0.005441	−0.511213	0.6096
C(49)	0.625086	0.148997	4.195303	0.0000
C(50)	0.022207	0.174660	0.127142	0.8989
C(51)	−0.032270	0.149774	−0.215457	0.8296
C(52)	0.675459	0.297165	2.273005	0.0239
Determinant residual covariance		2.367828		
Equation: Y=C(1)*Y(−1)+C(2)*Y(−2)+C(3)*Y(−3)+C(4) *X1(−1)+C(5)*X1(−2)+C(6)*X1(−3)+C(7)*X2(−1)+C(8) *X2(−2)+C(9)*X2(−3)+C(10)*X3(−1)+C(11)*X3(−2)+C(12) *X3(−3)+C(13)				
Observations: 77				
R^2	0.449644	Mean dependent var		2.790779
Adjusted R^2	0.346452	S.D. dependent var		13.00171
S.E. of regression	10.51089	Sum squared resid		7070.638
Durbin-Watson stat	1.914578			
Equation: X1=C(14)*Y(−1)+C(15) *Y(−2)+C(16)*Y(−3)+C(17)*X1(−1)+C(18) *X1(−2)+C(19)*X1(−3)+C(20)*X2(−1)+C(21)*X2(−2)+C(22) *X2(−3)+C(23)*X3(−1)+C(24) *X3(−2)+C(25)*X3(−3)+C(26)				
Observations: 77				
R^2	0.644624	Mean dependent var		0.577662
Adjusted R^2	0.577991	S.D. dependent var		0.231067
S.E. of regression	0.150106	Sum squared resid		1.442036
Durbin-Watson stat	1.975765			
Equation: X2=C(27)*Y(−1)+C(28)*Y(−2)+C(29) *Y(−3)+C(30)*X1(−1)+C(31)*X1(−2)+C(32) *X1(−3)+C(33)*X2(−1)+C(34)*X2(−2)+C(35) *X2(−3)+C(36)*X3(−1)+C(37)*X3(−2)+C(38)*X3(−3)+C(39)				
Observations: 77				
R^2	0.461466	Mean dependent var		1.419091
Adjusted R^2	0.360491	S.D. dependent var		15.91925
S.E. of regression	12.73052	Sum squared resid		10372.22
Durbin-Watson stat	1.901379			

(*Contd...*)

(*Continued*)

Equation: X3=C(40)*Y(−1)+C(41)*Y(−2)+C(42)*Y(−3)+C(43)*X1(−1)+C(44)*X1(−2)+C(45)*X1(−3)+C(46)*X2(−1)+C(47)*X2(−2)+C(48)*X2(−3)+C(49)*X3(−1)+C(50)*X3(−2)+C(51)*X3(−3)+C(52)			
Observations: 77			
R^2	0.554641	Mean dependent var	1.735714
Adjusted R^2	0.471136	S.D. dependent var	0.403245
S.E. of regression	0.293252	Sum squared resid	5.503783
Durbin-Watson stat	2.002815		

Again we have to find if each independent variable is significant to explain its coefficient. Initially, if the t-test for every coefficient for each independent variable is <0.05, meaning that the independent variable is significant to explain the coefficient.

From the VAR Model above can notice some of the following:

X1(−1) is significant to explain the dependent variable DuPont Model of ROE, because X1(−1) is associated with C(17), and when we back to the corresponding P value for C(17), it is 0.0000 < 0.05, meaning that X1(−1) is significant to explain the dependent variable DuPont Model of ROE. Also X3(−1) is significant to explain the dependent variable DuPont Model of ROE, because X3(−1) is associated with C(49), and when we back to the corresponding P-value for C(49), it is 0.0000 < 0.05, meaning that X3(−1) is significant to explain the dependent variable DuPont Model of ROE. On the other hand the all other variables are not significant to explain the dependent variable DuPont Model of ROE, because their corresponding P value is more than 0.05.

Also when we check if some couples from two variables are jointly can influence the dependent variable DuPont Model of ROE, Wald test was applied, and null hypothesis was tested:

5. Wald test

Test statistic	Value	df	Probability
Chi-square	34.23341	2	0.0000
Null Hypothesis: C(16)=C(17)=0			
Null hypothesis summary:			
Normalized restriction (=0)		**Value**	**Std. error**
C(16)		0.000506	0.003527
C(17)		0.881584	0.153276

Restrictions are linear in coefficients.

Y(−3) and X1(−1) are associated with C(16) and C(17) respectively, and when we back to the corresponding P value for them is 0.0000 < 0.05, means accept null hypothesis, because C(16) and C(17) is zero, so Y(−3) and X1(−1) can jointly influence dependent variable DuPont Model of ROE.

6. Wald test

Test statistic	Value	df	Probability
Chi-square	1.021760	2	0.6000
Null hypothesis: C(40)=C(41)=0			

(*Contd...*)

(*Continued*)

Null hypothesis Summary:		
Normalized restriction (=0)	**Value**	**Std. error**
C(40)	1.81E-05	0.006913
C(41)	−0.007025	0.007875

Restrictions are linear in coefficients

Y(−1) and Y(−2) are associated with C(40) and C(41) respectively, and when we back to the corresponding P-value for them is 0.6000 more than 0.05, means reject null hypothesis, because C(40) and (41) is not zero, so Y(−1) and Y(−2) cannot jointly influence dependent variable DuPont Model of ROE.

7. Wald test

Test statistic	Value	df	Probability
Chi-square	3.432362	2	0.1798
Null hypothesSis: C(33)=C(34)=0			
Null hypothesis summary:			
Normalized restriction (=0)		**Value**	**Std. error**
C(33)		0.385825	0.233112
C(34)		0.036059	0.254281

Restrictions are linear in coefficients.

X2(−1) and X2(−2) are associated with C(33) and C(34) respectively, and when we back to the corresponding P value for them is 0.1798 more than 0.05, means reject null hypothesis, because C(33) and C(34) is not zero, so X2(−1) and X2(−2) cannot jointly influence dependent variable DuPont Model of ROE.

8. Wald test

Test statistic	Value	df	Probability
Chi-square	0.911838	2	0.6339
Null hypothesis: C(45)=C(51)=0			
Null hypothesis summary:			
Normalized restriction (=0)		**Value**	**Std. error**
C(45)		−0.268535	0.287700
C(51)		−0.032270	0.149774

Restrictions are linear in coefficients

X1(−3) and X3(−3) are associated with C(45) and C(51) respectively, and when we back to the corresponding P value for them is 0.6339 more than 0.05, means reject null hypothesis, because C(33) and C(34) is not zero, so X1(−3) and X3(−3) cannot jointly influence dependent variable DuPont Model of ROE.

5.4. Hypotheses Testing

9. Least squares

Dependent variable: Y				
Method: Least squares				
Sample 1: 80				
Included observations: 80				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	−2.138883	4.664142	−0.458580	0.6478
X1	12.33772	3.447844	3.578388	0.0006
X2	0.587463	0.065810	8.926671	0.0000
X3	−1.781842	2.411746	−0.738818	0.4623
R^2	0.775444	Mean dependent var		2.783625

(*Contd...*)

(*Continued*)

Adjusted R^2	0.766580	S.D. dependent var	12.76149
S.E. of regression	6.165529	Akaike info criterion	6.524532
Sum squared resid	2889.045	Schwarz criterion	6.643633
Log likelihood	−256.9813	Hannan-Quinn criter.	6.572283
F-statistic	87.48188	Durbin-Watson stat	0.916119
Prob (F-statistic)	0.000000		

While R^2 is 0.077 meaning the model fitted strongly, it means that 0.77 percent variation in the DuPont Model of ROE can be explained jointly by total asset turnover, profit margin, and financial leverage, the rest percent variation in DuPont Model of (ROE) can be explained by residuals or other variables other than total asset turnover, profit margin, and financial leverage.

H_{11}: There is no significant effect of total asset turnover on DuPont Model of ROE.

While the probability value of total asset turnover is 0.0006 which is <0.05, it means we can reject the null hypotheses, and accept the alternative hypotheses that total asset turnover is a significant independent variable to influence the DuPont Model of ROE.

H_{21}: There is no significant effect of net profit margin on DuPont Model of ROE.

While the probability value of net profit margin is 0.0000 which is <0.05, it means we can reject the null hypotheses, and accept the alternative hypotheses that net profit margin is a significant independent variable to influence the DuPont Model of ROE.

H_{31}: There is no significant effect of financing leverage on DuPont Model of ROE.

While the probability value of financing leverage is 0.4623 which is more than 0.05, it means we accept the null hypothesis, that financing leverage is not a significant independent variable to influence the DuPont Model of ROE.

H_{01}: There is no significant effect of total asset turnover and net profit margin and financing leverage on DuPont Model of ROE.

While prob (F-statistic) is 0.000 which is <0.05, it means we can reject the null hypotheses, and accept the alternative hypotheses that all total asset turnover and net profit margin and financing leverage are significant independent variables to influence the DuPont Model of ROE.

6. CONCLUSION

This paper inclusively discussed the DuPont Model of ROE components in order to prove which of three areas influences the model behaviour the most. The results shows a rational reveals goes with theories fact; there is a significant effect of total asset turnover on DuPont Model of ROE, there is a significant effect of net profit margin on DuPont Model of ROE, and finally there is no significant effect of financing leverage on DuPont Model of ROE because of the negative relationship with the average total equity. On the other hand, there is a significant effect of total asset turnover and net profit margin and financing leverage jointly on DuPont Model of ROE.

7. ACKNOWLEDGMENT

The authors are grateful to the Applied Science Private University for the partial financial support granted to this research project.

REFERENCES

Available from: http://www.investopedia.com/terms/d/dupontanalysis.asp. [Last accessed on 2017 Jan 28].

Available from: http://www.investopedia.com/exam-guide/cfa-level-1/financial-ratios/return-equity-dupont-system.asp. [Last accessed on 2017 Feb 11].

Kijewska, A. (2016), Determinants of the return on equity ratio (roe) on the example of companies from metallurgy and mining sector in Poland. Metabk, 55(2), 285-288.

Gleim, I., Flesher, D. (2015), Financial Decision Making, CMA Review, Part 2. Gainesville, Florida: Gleim Pubns.

Kasilingam, R., Jayabal, G. (2012), Profitability and solvency analysis of a manufacturing company using dupont and altman Model. BVIMR Management Edge, 5(2), 53-64.

Kim, H. (2013), A review on the financial profile of profitability for the kosdaq listed firms headquartered in 'chungcheong' province in the republic of Korea. Journal of the Korea Academia-Industrial Cooperation Society, 14(11), 5476-5487.

Mubin, M., Iqbal, A., Hussain, A. (2014), Determinant of return on assets and return on equity and its industry wise effects: Evidence from KSE (Karachi stock exchange). Research Journal of Finance and Accounting, 5(15), 148-157.

Ndlovu, C., Alagidede, P. (2015), On the determinants of return on equity on south Africa's financial services industry. Journal of Economic and Financial Sciences, 8(2), 550.

Schweser, K. (2012), Financial Reporting and Analysis, Schweser Notes for the CFA Exam, Level 1, Book3. United States of America: Kaplan Schweser.

Sandeep, G. (2014), Financial Statements Analysis: Cases from Corporate India. London, New York, NY: Routledge is an Imprint of the Taylor & Francis Group, an Informa Business.

Vintilă, G., Duca, F. (2012), The Impact of Financial Leverage to Profitability Study of Companies Listed in Bucharest Stock Exchange. 'Ovidius' University Annals, Economic Sciences Series, Vol. XII. Available from: https://www.researchgate.net/profile/Simona_Frone/publication/267630985.

Yoon, E., Jang, S. (2013), The effect of financial leverage on profitability and risk of restaurant firms. The Journal of Hospitality Financial Management, 13(1), 1-20.

Zuraidah, A., Norhasniza, M.H.A., Shashazrina, R. (2012), Capital structure effect on firms performance: Focusing on consumers and industrials sectors on Malaysian firms. International Review of Business Research Papers, 8(5), 137-155.