

MEASURE SUCCESSFUL LEADERSHIP, RISK MANAGEMENT AND MANAGEMENT ACCOUNTING VIA A SEVEN FACTOR MODEL ON NET PROFIT – A CASE OF SINOPEC IN CHINA

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Abstract:

The main goal of this paper is to evaluate impacts of macro factors on net income of big oil and gas firm, SINOPEC in China, SINOPEC has made very positive contributions to the overall achievements of the energy industry, esp. in gas and oil industry in China, deserving of its position as one of the leading Chinese oil and gas (energy) firms, contributing to helping government stabilizes the market and successfully implements monetary policy. Movement of net profit and stock price in big oil listed firms in developing countries such as China, Vietnam will reflect the business health of energy system and the whole economy. Good business management requires us to consider both better risk management and effective management accounting via measuring the impacts of multi micro and macro factors on net profit and stock price, and it contributes to promoting business plan and economic policies for economic growth and stabilizing macroeconomic factors. By data collection method through statistics, analysis, synthesis, comparison, quantitative analysis to generate qualitative comments and discussion; using econometric method to perform regression equation and evaluate quantitative results, the article analyzed and evaluated the impacts of EIGHT (8) macroeconomic factors such as: stock price, net sale, cost, lending rate, inflation, GPD growth, S&P500, etc. on net profit of a big oil firm, SINOPEC in China in the period of 2014–2019, both positive and negative sides. The results of quantitative research, in an eight factor model, show that the decrease in China GDP growth and lending rate and increase in US GDP growth has a significant effect on reducing

SINOPEC net profit with the highest impact coefficient, the second is increasing the cost.

Hence, this study emphasizes on effective management accounting via cost management accounting to maximize profits for this kind of firm. This research finding and recommended policy also can be used as reference in policy for energy system in China and oil firms and many developing countries.

Keywords: management accounting; cost management; cost accounting; Sinopec stock price; GDP growth; inflationary; risk free rate; market interest rate

JEL: M21, N1

1. Introduction

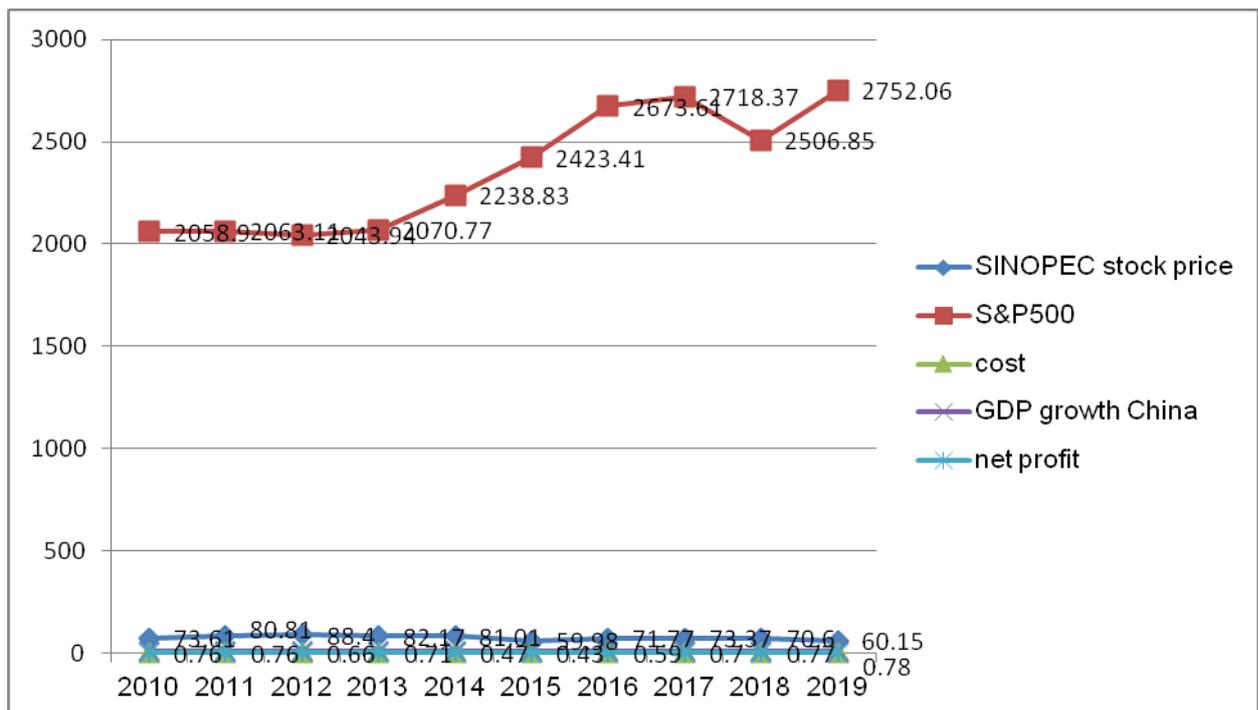
SINOPEC in China maintained a higher growth rate than the industry average on all indicators of scale, quality, efficiency, and labor productivity. It, the second biggest gas and oil producer of the nation, currently pushes effective operation and control risk. Not only above factors, but many other factors contribute to its leader position including technology driven and cost management.

World crude oil price is shown in the below chart. SINOPEC has to deal with cost reduction management in the context that world oil price is decreasing much (source: trading economics):



Oil and energy system in China in recent years plays a key role in helping the whole economy. In the context that GDP growth in China has been stable during 2014-2019 and China stock market has been growing much, it is necessary to evaluate impacts of eight (8) internal and external macro economic factors on energy firm performance, esp. SINOPEC net profit. From these analytical results, we could suggest energy firms, bank and government policies to encourage and stabilize the growth of bank system and stock market in developing countries such as China, India, america, Africa and Vietnam.

Looking at the below chart, we find out that SINOPEC stock price moves in the same trend with cost and GDP growth, although it fluctuates in a smaller range.



This study will calculate and figure out the impacts of seven (7) macro economic factors such as inflation, GDP growth, market interest rate, risk free rate, VNIndex, S&P500 and exchange rate on SINOPEC net profit.

The paper is organized as follows: after the introduction it is the research issues, literature review and methodology. Next, section 3 will cover methodology and data and section 4 presents main research findings/results. Section 5 gives us some discussion and conclusion and policy suggestion will be in the section 6.

2. Body of manuscript

2.1 Research issues

The scope of this study will cover:

Issue 1: What are the correlation and relationship among many economic factors: SINOPEC net profit, stock price, interest rate, cost, inflation, net sale, S&P 500 and GDP growth?

Issue 2: What are the impacts of above 8 micro and macro economic factors on SINOPEC net profit?

Issue 3: Based on above discussion, we recommend some solutions regarding to energy, oil and gas system management in incoming period.

This paper also tests two (2) below hypotheses:

Hypothesis 1: An increase in lending rate will make SINOPEC net profit declines.

Hypothesis 2: An increase in inflation can increase pressure in SINOPEC net profit.

2.2 Literature review

Lina (2012) indicated that both the change of inflation rate and the growth rate of money supply (M2) are positive but insignificant to the banking industry stock return, the exchange rate is positive and significant to banking industry stock return and interest rate is negative and significant to banking industry stock return. Next, Sadia and Noreen (2012) found out exchange rate, and Short term Interest Rate have significant impact on Banking index. Macroeconomic variables like Money Supply, Exchange Rate, Industrial Production, and Short Term Interest Rate affects the banking index negatively where as Oil prices has a positive impact on Banking index.

Manisha and Shikha (2014) stated that Exchange rate, Inflation, GDP growth rate affect banking index positively whereas Gold prices have negative impact on BSE Bankex but none of them have significant impact on Bankex. Then, Winhua and Meiling (2014) confirmed that macroeconomic do have a substantial influence to the earning power of commercial banks.

Krishna (2015) investigated the nature of the causal relationships between stock prices and the key macro economic variables in BRIC countries. The empirical evidence shows that long-run and short-run relationship exists between macro economic variables and stock prices, but this relationship was not consistent for all of the BRIC countries. And Kulathunga (2015) suggested that all macroeconomic factors influence the stock market development. More precisely, volatile inflation rate and exchange rate together with higher deposit rate have curtailed the stock market development in Sri Lanka. Moreover, positive optimism created by the economic growth and the stock market performance during the previous periods tend to enhance stock market performance. Moreover, Duy (2015) mentioned through the evolution of interest rates and the VNI could see that the relationship between these two variables in the period 2005-2014 is the opposite. This relationship is shown in specific periods of the year the stock market proved quite sensitive to interest rates. When interest rates are low or high but the bearish stock market rally, and vice versa when the high interest rates the stock market decline.

Last but not least, Quy and Loi (2016) found that 3 economic factors (inflation rate, GDP growth rate, and exchange rate) impact significantly on real estate stock prices; but the relationship between 10-year Government bond yield and trading volume, and real estate stock prices was not found. Ahmad and Ramzan (2016) stated the macroeconomic factors have important concerns with stocks traded in the stock market and these factors make investors to choose the stock because investors are interested to know about the factors affecting the working of stock to manage their portfolios. Abrupt variations and unusual movements of macroeconomic variables cause the stock returns to fluctuate due to uncertainty of future gains.

Darko and Grugirl (2017) found that crude oil prices have positive and significant impact on the accounting returns (as represented by ROA, ROE and EPS) of the firms considered. Egbunike et al. (2018) found in manufacturing firms in Nigeria, no significant effect for interest rate and exchange rate, but a significant effect for inflation rate and GDP growth rate on ROA.

Until now, many researches have been done in this field, however, they just stop at analyzing internal macroeconomic factors on stock price.

Within the scope of this paper, we measure impacts of both internal and external macro factors on SINOPEC net profit and suggest policies for energy system, Chinese government, Ministry of Finance, State Bank and relevant government bodies. We also analyze data through out time series from 2014-2019.

3. Methodology and data

This research paper establishes correlation among macro economic factors by using an econometric model to analyze impacts of eight (8) micro and macro economic factors in China and USA such as: GDP growth, inflation, interest rate, SP500,... on SINOPEC net profit.

In this research, analytical method is used with data from the economy such as inflation in China and market interest rate, GDP growth rate, stock price. Data are included from 2014 -2019 with semi-annual data (10 observations in total). Data is estimated based on SP500 and lending interest rates from macroeconomics. S&P 500 index data is from USA Stock exchange, data source (inflation, GDP) is from macroeconomics, Bureau of Statistics. Beside, econometric method is used with the software Eview. It will give us results to suggest policies for businesses and authorities.

We build a regression model with Eview software to measure impacts of factors. SINOPEC net profit is a function with 5 variables as follows:

$$Y (\text{SINOPEC net profit}) = f (x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8) = ax_1 + bx_2 + cx_3 + dx_4 + ex_5 + fx_6 + gx_7 + hx_8 + k$$

With: x_1 : China GDP growth rate (g), x_2 : inflation, x_3 : SP500, x_4 : lending rate, x_5 : stock price, x_6 : cost; x_7 : net sale; x_8 : US GDP growth;

Beside, this paper also uses analytical and general data analysis method to measure and generate comments on the results, then suggest policies based on these analyses.

4. Main results

4.1- General data analysis

First of all, The below chart 1 shows us that Y has a positive correlation with cost:

Chart 1 – Net Profit (Y) vs. Cost (C)

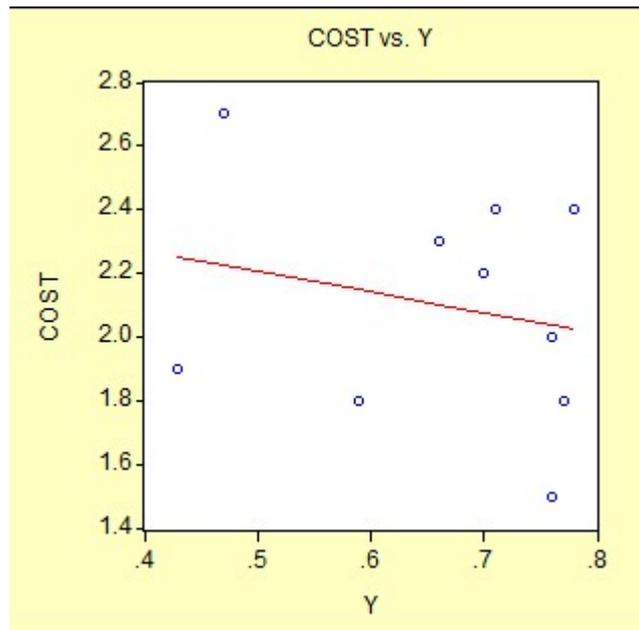
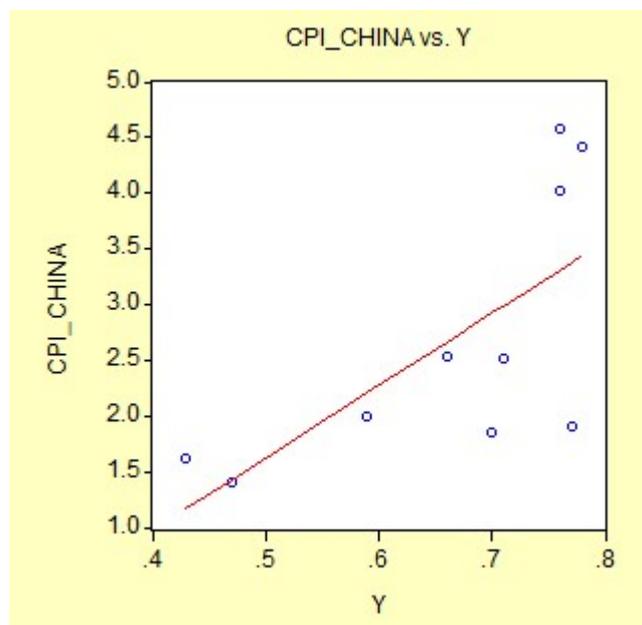


Chart 2 – SINOPEC net profit (Y) vs. Inflation (CPI)

Next we find out that, based on the below scatter chart, Y (SINOPEC net profit) has positive correlation with inflation (CPI).



Looking at the below chart 3, we also recognize that SINOPEC net profit (Y) and GDP growth have negative correlationship.

Chart 3 – Y vs. GDP Growth

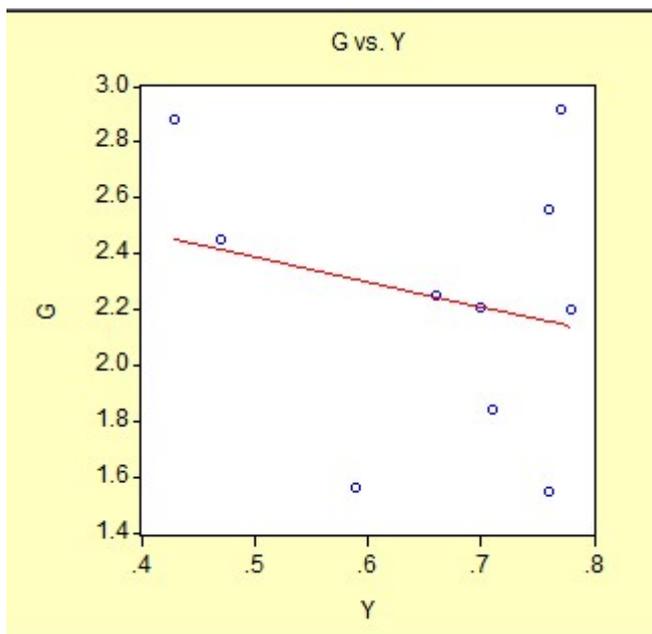
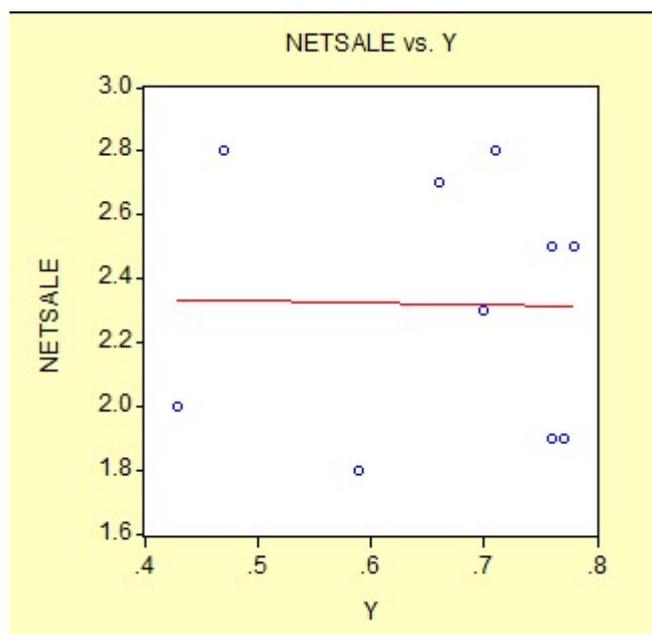


Chart 4 – Y vs. sale



We see that, SINOPEC net profit (Y) and net sale have slightly negative correlation:

On the other hand, we could see statistical results with Eview in the below table with 8 variables:

Table 1 – Statistics for macro and micro economic factors

Unit: %

7

	Net profit	Net sales	Cost	SINOPEC stock price	Inflation China	Lending rate China	GDP growth - US	Inflation US (CPI)	S&P500
Mean	2.32	0.66	2.10	74.19	2.68	0.05	2.24	1.76	2354.99
Median	2.4	0.705	2.1	73.49	2.25	0.052	2.23	1.825	2331.12
Maximum	2.8	0.78	2.7	88.4	4.57	0.064	2.92	2.96	2752.06
Minimum	1.8	0.43	1.5	59.98	1.41	0.03	1.55	0.73	2043.94
Standard dev.	0.394	0.127	0.362	9.278	1.199	0.014	0.485	0.680	294.931

Looking at the above table, we recognize that standard deviation of SINOPEC stock price and SP500 are the highest values. Whereas standard deviation of net sale and lending rate are the lowest values.

If we want to see correlation matrix of these 8 micro and macro variables, Eview generate the below result in table 2:

Table 2 – Correlation matrix for eight (8) micro and macro-economic variables (GDP growth, inflation in VN, market interest rate, Cost, net sale and SINOPEC stock price)

Correlation Matrix									
	Y	STOCKPRICE	SP500	R_CHINA	NETSALE	G	CPI_CHINA	CPI	COST
Y	1.000000	0.097613	0.054912	-0.165140	-0.014700	-0.230926	0.686732	0.748958	-0.230136
STOCKPRICE	0.097613	1.000000	-0.651446	0.663286	0.569883	-0.386814	-0.084122	0.079900	0.309734
SP500	0.054912	-0.651446	1.000000	-0.823012	-0.116234	0.173181	-0.184616	0.093920	0.269450
R_CHINA	-0.165140	0.663286	-0.823012	1.000000	0.594701	-0.102459	0.145957	-0.246816	0.252775
NETSALE	-0.014700	0.569883	-0.116234	0.594701	1.000000	-0.284511	0.011861	-0.038765	0.888221
G	-0.230926	-0.386814	0.173181	-0.102459	-0.284511	1.000000	-0.249070	-0.612037	-0.163138
CPI_CHINA	0.686732	-0.084122	-0.184616	0.145957	0.011861	-0.249070	1.000000	0.522894	-0.262635
CPI	0.748958	0.079900	0.093920	-0.246816	-0.038765	-0.612037	0.522894	1.000000	-0.173351
COST	-0.230136	0.309734	0.269450	0.252775	0.888221	-0.163138	-0.262635	-0.173351	1.000000

The above table 2 shows us that correlation among 8 micro and macro variables. An increase in stock price and decrease in lending rate might lead to an increase in SINOPEC net profit. It also indicates that correlation between SINOPEC net profit in China and CPI China and lending rate in China (0.68 and -0.16) is higher than that between Y and SP500 (0.05) or between Y and Cost (-0.23).

The below table 3 shows us that covariance matrix among eight (8) micro and macro economic variables. SINOPEC net profit has a negative correlation with cost and lending rate but has a positive correlation with stock price, and SP500.

Hence, an increase in inflation may have slight positive impact on SINOPEC net profit.

Table 3 – Covariance matrix for 8 micro and macro economic variables

Covariance Matrix									
	Y	STOCKPRICE	SP500	R_CHINA	NETSALE	G	CPI_CHINA	CPI	COST
Y	0.014441	0.103249	3.967804	-0.000267	-0.000660	-0.012776	0.093851	0.058039	-0.009500
STOCKPRICE	0.103249	77.47402	-3447.765	0.078666	1.874160	-1.567484	-0.842051	0.453511	0.936500
SP500	3.967804	-3447.765	361545.2	-6.668034	-26.11304	47.94057	-126.2423	36.41678	55.65450
R_CHINA	-0.000267	0.078666	-6.668034	0.000182	0.002994	-0.000636	0.002237	-0.002145	0.001170
NETSALE	-0.000660	1.874160	-26.11304	0.002994	0.139600	-0.048940	0.005040	-0.009340	0.114000
G	-0.012776	-1.567484	47.94057	-0.000636	-0.048940	0.211956	-0.130406	-0.181704	-0.025800
CPI_CHINA	0.093851	-0.842051	-126.2423	0.002237	0.005040	-0.130406	1.293321	0.383469	-0.102600
CPI	0.058039	0.453511	36.41678	-0.002145	-0.009340	-0.181704	0.383469	0.415841	-0.038400
COST	-0.009500	0.936500	55.65450	0.001170	0.114000	-0.025800	-0.102600	-0.038400	0.118000

4.2 Regression model and main findings

In this section, we will find out the relationship between eight micro and macro economic factors and net profit.

4.2.1 Scenario 1: Regression model with single variable: analyzing impact of cost (c.o) on SINOPEC Net profit (Y)

Note: C: constant

Using Eview gives us the below results:

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:02
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.080508	0.120364	-0.668876	0.5224
C	0.832068	0.256124	3.248697	0.0117
R-squared	0.052962	Mean dependent var		0.663000
Adjusted R-squared	-0.065417	S.D. dependent var		0.126671
S.E. of regression	0.130749	Akaike info criterion		-1.054223
Sum squared resid	0.136762	Schwarz criterion		-0.993706
Log likelihood	7.271117	F-statistic		0.447395
Durbin-Watson stat	0.850914	Prob(F-statistic)		0.522404

Hence, $Y = -0.08 * \text{cost} + 0.83$, $R^2 = 0.05$ SER = 0.13

$$(0.12) \quad (0.2)$$

Within the range of 10 observations (2014-2019) as described in the above scatter chart 1, coefficient -0.08, when cost increases, SINOPEC net profit will decrease.

4.2.2 Scenario 2 - Regression model with 2 variables: analyzing impact of Inflation (CPI) on SINOPEC Net profit (Y):

Running Eview gives us below results:

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:02
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI_CHINA	0.071082	0.030012	2.368424	0.0497
COST	-0.018703	0.099360	-0.188235	0.8560
C	0.511563	0.244810	2.089637	0.0750
R-squared	0.474262	Mean dependent var		0.663000
Adjusted R-squared	0.324051	S.D. dependent var		0.126671
S.E. of regression	0.104144	Akaike info criterion		-1.442758
Sum squared resid	0.075922	Schwarz criterion		-1.351983
Log likelihood	10.21379	F-statistic		3.157304
Durbin-Watson stat	1.265112	Prob(F-statistic)		0.105364

Therefore, $Y = -0.01 * Cost + 0.07 * CPI + 0.5$, $R^2 = 0.47$, $SER = 0.1$

(0.09) (0.03) (0.2)

Hence, this equation shows us SINOPEC net profit has a positive correlation with CPI and negative relationship with cost. Esp., it is highly positively affected by inflation.

4.2.3. Scenario 3 - Regression model with 3 variables: adding GDP growth (g) into the above model

Eviews generates below statistical results :

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:10
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.040158	0.110537	-0.363300	0.7288
CPI_CHINA	0.082776	0.037261	2.221526	0.0681
G_CHINA	-0.019430	0.033016	-0.588496	0.5777
C	0.673264	0.376302	1.789158	0.1238
R-squared	0.502952	Mean dependent var		0.663000
Adjusted R-squared	0.254428	S.D. dependent var		0.126671
S.E. of regression	0.109376	Akaike info criterion		-1.298875
Sum squared resid	0.071779	Schwarz criterion		-1.177841
Log likelihood	10.49438	F-statistic		2.023755
Durbin-Watson stat	1.458607	Prob(F-statistic)		0.212144

Hence, $Y = -0.01 * G + 0.08 * CPI - 0.04 * COST + 0.67$, $R^2 = 0.5$, $SER = 0.1$

(0.03) (0.037) (0.11)

The above regression equation shows us that SINOPEC net profit has a positive correlation with inflation and negative relationship with GDP growth and cost. And the coefficient (with CPI) is the highest, the 2nd highest is with cost, then GDP growth. Cost increases together with CPI decreases will increase costs of business and lead to a decrease in SINOPEC net profit.

4.2.4. Scenario 4 - regression model with 4 macro and micro variables: adding sale into the above model:

Eviews presents the below results:

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:11
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.571387	0.461700	-1.237572	0.2708
CPI_CHINA	0.073117	0.036993	1.976490	0.1050
G_CHINA	-0.069129	0.052798	-1.309327	0.2474
NETSALE	0.457448	0.386745	1.182817	0.2901
C	1.132103	0.532217	2.127145	0.0867
R-squared	0.611624	Mean dependent var		0.663000
Adjusted R-squared	0.300923	S.D. dependent var		0.126671
S.E. of regression	0.105911	Akaike info criterion		-1.345588
Sum squared resid	0.056085	Schwarz criterion		-1.194295
Log likelihood	11.72794	F-statistic		1.968529
Durbin-Watson stat	1.656301	Prob(F-statistic)		0.237734

Therefore, $Y = -0.06 \cdot G + 0.07 \cdot \text{CPI} - 0.5 \cdot \text{COST} + 0.45 \cdot \text{NETSALE} + 1.13$, $R^2 = 0.61$, $\text{SER} = 0.1$
(0.05) (0.03) (0.46) (0.38)

We find out impacts of 4 micro and macro variables, with the new factor: net sale, shown in the above equation, SINOPEC net profit has negative correlation with GDP growth and cost, whereas it has positive correlation with CPI and net sale. When inflation goes up, cost declines and net sale increases, this will increase public investment in stock market, as a result, SINOPEC net profit will increase.

4.2.5. Scenario 5 - regression model with 5 macro and micro variables: adding SINOPEC stock price onto the above model.

Running Eviews gives us results:

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:13
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.354237	0.448587	-0.789673	0.4739
CPI_CHINA	0.114267	0.044579	2.563239	0.0624
G_CHINA	-0.093238	0.051125	-1.823712	0.1423
NETSALE	0.151987	0.413898	0.367208	0.7321
STOCKPRICE	0.009387	0.006638	1.414092	0.2302
C	0.761618	0.551997	1.379749	0.2398
R-squared	0.741068	Mean dependent var		0.663000
Adjusted R-squared	0.417402	S.D. dependent var		0.126671
S.E. of regression	0.096686	Akaike info criterion		-1.550995
Sum squared resid	0.037392	Schwarz criterion		-1.369444
Log likelihood	13.75498	F-statistic		2.289610
Durbin-Watson stat	1.876032	Prob(F-statistic)		0.221201

Hence, $Y = -0.09 \cdot G_CHINA + 0.11 \cdot CPI + 0.009 \cdot STOCKPRICE + 0.15 \cdot NETSALE - 0.3 \cdot COST + 0.76$, $R^2 = 0.74$, $SER = 0.09$

(0.05) (0.04) (0.006) (0.41) (0.44)

Here we see impacts of 5 micro and macro factors, with the new variable: stock price, the above equation shows that SINOPEC net profit has negative correlation with GDP growth and cost, whereas it has positive correlation with inflation, stock price, net sale. We also recognize that CPI, cost and net sale have the highest impact on SINOPEC net profit. When CPI and stock price increases, it will increase investment in stock as well as financial market, then it will lead to an increase in SINOPEC net profit.

4.2.6. Scenario 6 - regression model with 6 macro variables: adding S&P500 onto the above model.

Running Eviews gives us results:

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:14
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.983287	0.142280	-6.910924	0.0062
CPI_CHINA	0.024503	0.016502	1.484881	0.2342
G_CHINA	0.012463	0.019188	0.649503	0.5623
NETSALE	0.716665	0.130076	5.509601	0.0118
STOCKPRICE	0.010919	0.001721	6.343808	0.0079
SP500	0.000351	4.63E-05	7.571765	0.0048
C	-0.626230	0.231944	-2.699923	0.0738
R-squared	0.987125	Mean dependent var	0.663000	
Adjusted R-squared	0.961374	S.D. dependent var	0.126671	
S.E. of regression	0.024895	Akaike info criterion	-4.352240	
Sum squared resid	0.001859	Schwarz criterion	-4.140430	
Log likelihood	28.76120	F-statistic	38.33359	
Durbin-Watson stat	2.636880	Prob(F-statistic)	0.006293	

$$Y = 0.01 * G + 0.02 * CPI + 0.01 * STOCKPRICE + 0.0003 * SP500 + 0.71 * NETSALE - 0.98 * COST - 0.62,$$

$$R^2 = 0.98, SER = 0.02$$

$$(0.01) \quad (0.016) \quad (0.001) \quad (0.0003) \quad (0.13) \quad (0.14)$$

Therefore, we see impacts of 6 micro and macro factors, with the new variable: SP500, the above equation shows that SINOPEC net profit has negative correlation with cost, whereas it has positive correlation with GDP growth, CPI, SP500, stock price and net sale. We also recognize that GDP growth and net sale, then cost and CPI have the highest impact on SINOPEC net profit, while Sp500 just has a slightly impact on its net profit.

4.2.7. Scenario 7 - regression model with 7 micro and macro variables: adding lending rate (r) onto the above model.

Running Eviews gives us results:

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:14
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-0.995535	0.127600	-7.801987	0.0160
CPI_CHINA	0.029717	0.015277	1.945167	0.1912
G_CHINA	0.011642	0.017174	0.677883	0.5678
NETSALE	0.590463	0.150463	3.924296	0.0592
STOCKPRICE	0.014355	0.003020	4.753953	0.0415
SP500	0.000473	0.000102	4.655961	0.0432
R_CHINA	5.261330	3.977498	1.322774	0.3169
C	-1.074402	0.397284	-2.704365	0.1139
R-squared	0.993133	Mean dependent var		0.663000
Adjusted R-squared	0.969097	S.D. dependent var		0.126671
S.E. of regression	0.022268	Akaike info criterion		-4.780777
Sum squared resid	0.000992	Schwarz criterion		-4.538708
Log likelihood	31.90388	F-statistic		41.31872
Durbin-Watson stat	3.259324	Prob(F-statistic)		0.023830

$Y = 0.01 \cdot G_CHINA + 0.02 \cdot CPI + 5.2 \cdot R_CHINA + 0.0004 \cdot SP500 - 0.9 \cdot COST + 0.5 \cdot NETSALE + 0.01 \cdot STOCKPRICE - 1.07,$

$R^2 = 0.99, SER = 0.02$

(0.01) (0.015) (3.9) (0.0001) (0.12) (0.15)
(0.003)

Therefore, we see impacts of 7 micro and macro factors, with the new variable: lending rate, the above equation shows that SINOPEC net profit has negative correlation with cost, whereas it has positive correlation with net sale, GDP growth, CPI, net sale and SP500, stock price. We also recognize that GDP growth, cost, net sale and lending rate, then CPI have the highest impact on SINOPEC net profit, while SP500 just has a slightly impact on net profit.

4.2.8. Scenario 8 - regression model with 8 macro variables: adding GDP growth US onto the above model.

Running Eviews gives us results:

Dependent Variable: Y
Method: Least Squares
Date: 02/26/20 Time: 12:15
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COST	-1.072926	0.121508	-8.830097	0.0718
CPI_CHINA	0.020712	0.014458	1.432571	0.3880
G_CHINA	0.022954	0.016676	1.376512	0.4000
NETSALE	0.447216	0.164868	2.712562	0.2249
STOCKPRICE	0.018056	0.003730	4.841052	0.1297
SP500	0.000691	0.000182	3.793160	0.1641
R_CHINA	13.75037	7.105841	1.935080	0.3037
G	-0.045883	0.033894	-1.353744	0.4050
C	-1.667104	0.550573	-3.027943	0.2031
R-squared	0.997576	Mean dependent var	0.663000	
Adjusted R-squared	0.978180	S.D. dependent var	0.126671	
S.E. of regression	0.018711	Akaike info criterion	-5.621980	
Sum squared resid	0.000350	Schwarz criterion	-5.349653	
Log likelihood	37.10990	F-statistic	51.43425	
Durbin-Watson stat	2.440905	Prob(F-statistic)	0.107448	

$$Y = -0.04 * G - 1.07 * COST + 0.02 * CPI_CHINA + 0.02 * G_CHINA + 0.44 * NETSALE + 0.01 * STOCKPRICE + 0.0006 * SP500 + 13.7 * R_CHINA - 1.66,$$

$$R^2 = 0.99, SER = 0.01$$

$$\begin{matrix} (0.03) & (0.12) & & (0.01) & (0.01) & (0.16) \\ & (0.003) & & (0.0001) & (7.1) & \end{matrix}$$

Therefore, we see impacts of 8 micro and macro factors, with the new variable: US GDP growth, the above equation shows that SINOPEC net profit has negative correlation with US GDP growth, inflation whereas it has positive correlation with inflation China, SP500 and net sale, GDP growth China and lending rate. We also recognize that US GDP growth and lending rate, then net sale have the highest impact on SINOPEC net profit, while SP500 just has a slightly impact on net profit.

5. Discussion and further researches

Through the regression equation with above 8 micro and macroeconomic variables, this research paper used updated data from 2014-2019 to analyze the regression equation via Eview in order to show that a decrease in lending rate and increase in US GDP growth has a significant impact on SINOPEC net profit with the highest coefficient of impact, followed by an increase in cost and increase in inflation, then a decrease in net sale, as well as a decrease in S&P500.

Data are from observations in the past 10 years, it is partly based on the market economic rules, and the research results are also affected by socio-economic characteristics China such as: efficiency of public investment, waste of public investment, enterprise bankruptcy, and investment in areas that increase GDP such as production, electricity, etc. or investing in healthcare, environment and education sectors. We have not yet considered the impact of these factors.

Beside, we can analyze impact of another macro factor, for example, deposit rate when we add this variable into our regression model of net profit. Furthermore, we can add unemployment rate or public debt increase into our econometric model to measure the impact of these extra factors on SINOPEC net profit.

Scientific analysis on cost management:

Cost management is part of business growth strategies to not only cut costs but also create clear competitive advantages in the market.

Finding the optimal financial solution for the sustainable development strategy in the post-integration period is always the most difficult issue for small and medium-sized enterprises today. Therefore, according to experts, one of the "moves" that every business must take into account is the management and cost savings more and more effective for their products and services increasingly quality, The price is more suitable for customers.

6. Conclusion and policy suggestion

Based on the above data analysis from our regression model, although low inflation during 2015-2016 is a good signal for SINOPEC net profit, we would suggest the government, Ministry of Finance and State Bank consider to control inflation more rationally, i.e not increasing much and suitable with each economic development stage. Governmental bodies and bank system also need to apply macro policies to stimulate economic growth, however not increasing lending rate too much, together with credit, operational and market risk management, corporate governance and controlling bad debt.

Next, it is necessary to coordinate synchronously between the management and administration of commercial bank policies with fiscal policies, monetary policies (used as effective tools to stimulate bank stock price) and other economic development policies to limit the negative effects of lending rate, GDP growth rate, i.e not increasing too much. Lending policy of bank system need to be selective and increase interest rates for acceptable high risk high return projects.

Generally speaking, managing SINOPEC net profit depends on many factors, so the government need to use fiscal policy combined with monetary policies and socio-economic policies to reduce unemployment and stimulate economic growth, toward a good stock price management.

In specific, managing SINOPEC net profit need rational cost management (reduction), and increase in stock price.

Egbunike (2018) found in manufacturing firms in Nigieria, no significant effect for interest rate (this is not the same as our results) and exchange rate, but a significant effect for inflation rate and GDP growth rate (this is the same as our result) on ROA. Second, the firm

characteristics showed that firm size, leverage and liquidity were significant. Darko and Grugirl (2017) found that crude oil prices have positive and significant impact on the accounting returns (as represented by ROA, ROE and EPS) of the firms considered.

Finally, this research paper also helps to direct further future researches, for instance, we could add deposit rate and unemployment rate into our above econometric model to measure impacts of them on SINOPEC net profit.

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Exhibit

Exhibit 1 – Inflation, CPI over past 10 years (2007-2017) in Vietnam

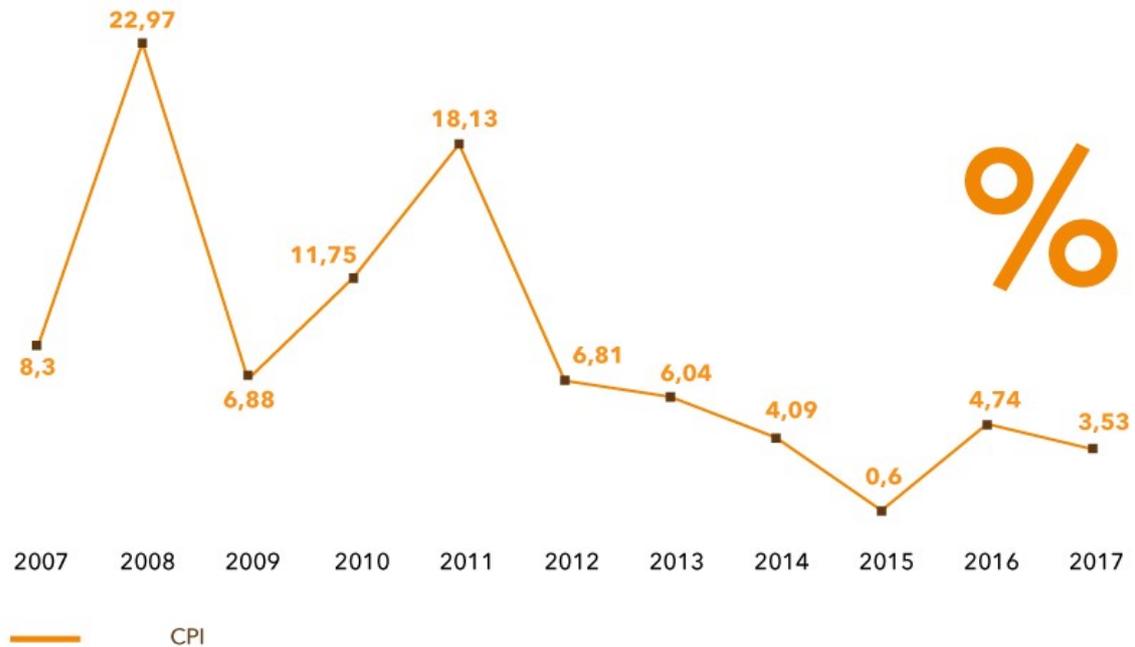


Exhibit 2 – GDP growth rate past 10 years (2007-2018) in Vietnam

