Model for Identifying Profit Adjustment of Enterprises Listed on Ho Chi Minh City Stock Exchange

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ABSTRACT

This paper analyzes the fit of the modified Jones model in identifying profit adjustment of 54 companies listed on the Ho Chi Minh City Stock Exchange (HOSE) in the accounting year of 2010. The research results show that the Modified Jones model is not effective in identifying profit adjustment of the enterprises listed on HOSE because of the coefficient measuring the fit of the model (R^2 = 3.8%). After analyzing the macroeconomic environment of the HCMC stock market in particular and Vietnam in general, such variables as revenue, depreciation cost and provision cost are selected and added to the model, the R^2 coefficient is found to increase to 40.9%. Moreover, all the variables are significant.

Keywords: profit adjustment, modified Jones model, HOSE.

1. INTRODUCTION

Recently, enterprises have tended to delay their submission and disclosure of financial statements. Moreover, there is a huge difference in profits before and after auditing. According to Vietstock statistics, up until April 22, 2011, there were 57 listed companies, or 8.5% of the enterprises listed on HOSE and Hanoi Stock Exchange (HNX), with profit difference after examination. In terms of percentage, Meca Vneco Electricity Investment and Construction Joint-Stock Company (JSC) holds the leading position with losses rising to 334% after examination. Regarding absolute numbers, the top spot belongs to Việt Hải Real Estate Investment JSC with a loss of nearly VND250 billion, up VND17 billion compared to before examination. In contrast, quite a few listed companies have their profit rising after examination. For example, Tường An Vegetable Oil JSC has its profit up from VND11.6 billion to VND14 billion, NET Detergent JSC up from VND32.7 billion to VND35.3 billion and Chợ Lớn Water Supply SJC up from VND15.3 billion to VND17.1 billion. Additionally, Petrolimex Petrochemical JSC reveals a profit increase of up to VND88 billion using proper accounting methods (Giang Thanh, 2011).

One of the GAAPs is the accrual basis whereby the recognition of income and expense is not based on actual cash inflow or outflow but on the point of time when the financial operation takes place. Therefore, the data on financial statements and especially business performance reports represents the subjectivity of the manager and the accountant. Meanwhile, cash flow statements are based on the cash basis, or rather on cash inflow and outflow. Hence, there exists a difference between the cash flow on cash flow statements and the profit on business performance reports. The difference is called a total accrual (TA) and calculated with formula (1):

TA = Profit after tax (PAT) – Pure cash flow from business activity (1)

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A TA consists of a discretionary accrual (DA) and non-discretionary accrual (NDA).

$TA = DA + NDA$ (2)

NDA reflects specific business conditions of individual enterprises. Therefore, it cannot be adjusted by the manager. It includes, for example, the length of a business cycle, product life cycle, etc. In contrast, DA is adjustable by the manager through the selection of accounting policies (LIFO, FIFO, weighted average, Specific Identification, accelerated depreciation and straight-line depreciation; revenue recognition by progress of works underway or progress of planning, etc.)

The question arises as to how to measure DA because this variable represents the degree of profit adjustment taken by enterprises. Researchers cannot inspect this degree by making direct observations but through two ways. One is to consider the choice of accounting policies and the other is to calculate the variable NDA. Many studies in developed countries regard the Jones model (1991) as effective in identifying profit adjustment of listed companies (Dechow et al., 1995; Sloan and Sweeney, 1995; and Rangan, 1997). However, a recent study on the Korean stock market has discovered that this model is not effective in identifying profit adjustment in the context of Korea (Yoon et al., 2006). Is this model appropriate for identifying the profit adjustment of companies listed on HOSE? This paper employs the modified Jones model to test this.

2. DATA AND METHODOLOGY

The data are collected from the 2010 financial statements of 54 companies listed on HOSE and processed with SPSS 16.0. Random sampling method is employed and samples are enterprises from different industries such as insurance, construction, trade, manufacturing, and banking, etc.

The DA variable is used to identify profit adjustment and calculated using formula (2). The NDA variable is assumed by Jones as a constant and is predicted using the regression model of modified Jones (1991) as follows:

$$NDA_t/A_{t-1} = \alpha_1(1/A_{t-1})+\alpha_2(REV_t- REC_t)/A_{t-1}+\alpha_3 PPE_t/A_{t-1} \quad (3)$$

At the same time, the modified Jones model also assumes that any changes in receivable are caused by profit management because managers can adjust profit more easily through credit sales (accounts receivable) than through sales in cash.

In model (3), NDA_t is an NDA of the year t; A_{t-1} is the assets at the end of the year t-1; REV_t - REC_t is the revenue of the t year minus receivables at the same year; PPEt is the fixed assets at the end of the year t; α_1, α_2, and α_3 are parameters obtained from the OLS estimation of a_1, a_2, and a_3 in the following model:

$$TA_t/A_{t-1}=a_0 + a_1(1/A_{t-1})+a_2(REV_t- REC_t)/A_{t-1}+a_3 PPE_t/A_{t-1} + \boldsymbol{\varepsilon} \quad (4)$$

$\boldsymbol{\varepsilon}$ represents unidentified variables, including DA_t.

OLS estimation of (4) results in a_1, a_2, and a_3. Put a_1, a_2, and a_3 into (3):

$$NDA_t/A_{t-1} = a_1(1/A_{t-1})+a_2(REV_t- REC_t)/A_{t-1}+a_3 PPE_t/A_{t-1} \quad (5)$$

Omit DA_t from (2) and divide both sides of the equation by A_{t-1}:

$$=> DA_t /A_{t-1}= TA_t/A_{t-1} – NDA_t/A_{t-1} \quad (6)$$

Put (5) into (6):

$=> DA_t/A_{t-1} = TA_t/A_{t-1} – [a_1(1/A_{t-1}) + a_2(REV_t - REC_t)/A_{t-1} + a_3PPE_t/A_{t-1}]$

$=> DA_t/A_{t-1} = TA_t/A_{t-1} – a_1(1/A_{t-1}) - a_2(REV_t - REC_t)/A_{t-1} - a_3PPE_t/A_{t-1}$

From this result the variable DA of the year t (DA_t) can be calculated.

According to Dechow et al (1995), the modified Jones model (1991) is regarded as the most prevalent and explanatory in identifying profit adjustment in developed counties, as compared with the Healy DeAngelo and Industry models. This is because it can separate the variables DA and NDA, adjustments to receivables are allowed when changes in revenue take place. Since increased revenues lead to increased profit, Jones excludes accounts receivable to dismiss the possibility of managers adjusting revenues to adjust profits.

The modified Jones model was successfully applied in developed countries (Dechow, Sloan & Sweeney, 1995; Rangan, 1998, Teoh et al, 1998a; and Teoh et al, 1998b). In developed countries like the U.S., the U.K., and Australia, accounting is highly independent. Its objective is to make accounting information on financial statements so honest and reasonable as to meet the needs of information users in general and investors in particular. Moreover, accountancy, the product of which affects not only several enterprises but also the whole economy, is highly appreciated in these countries. Last, accountants are very professional and accounting policies are issued by profession associations.

In Vietnam, accounting is poorly independent and the issuing of accounting policies is influenced by many factors such as taxation and finance. Accounting and taxation are heavily dependent on each other. Taxation provisions, specifically provisions on corporate income tax and instructional circulars on corporate income tax, are applied more frequently than accounting policies and accounting standards (Nguyễn Công Phương, 2010; Phạm Thị Bích Vân, 2011). The MoF is the sole authority that is responsible for promulgating accounting policies and instructional circulars on taxes in general and corporate income tax in particular. In addition, the professionalism of accountants also need considering.

According to Radebaugh & Gray (1997), a national accounting system is a product whose formation, application, consolidation and development depend on the particular characteristics of that country. It is because of macroeconomic differences between developed countries and Vietnam that the author selects two variables, namely depreciation cost and provision cost, for this research. By doing so, the author implicitly assumes that non-cash costs are more easily adjusted than cash costs, and that costs generated by choices of accounting policy are easier to adjust than other types without accounting policy choices (straight-line depreciation, accelerated depreciation, depreciation based on volume, or changes in percentage of earnings retained for reserves).

3. RESULTS

Model summary

Model	R	R2	Adjusted R2	Standard error of estimation	Durbin-Watson
1	.196a	.038	-.019	.15899	1.939

a. Independent variables: x3, x2, x1

b. Dependent variables: y

Variance analysis

Model		Total square	Degree of freedom	Average square	F-test	Sig.
1	Total square explicable from regression model	.050	3	.017	.664	.578[a]
	Total square from error	1.264	50	.025		
	Total	1.314	53			

a. Independent variables: x3, x2, x1

b. Dependent variables: y

Regression coefficients

Model		Unstandardized coefficient		Standardized coefficient	t-test	Sig.
		β	Standard deviation	Beta		
1	Intercept	.105	.045		2.318	.025
	x1	-1.073E9	1.370E10	-.012	-.078	.938
	x2	-.013	.014	-.133	-.955	.344
	x3	-.099	.099	-.148	-1.006	.319

a. Dependent variables: y

Source: SPSS 16.0

The model has the following form: $Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + \varepsilon$

where $Y = TA_t/A_{t-1}$; $X_1 = 1/A_{t-1}$; $X_2 = (REV_t - REC_t)/A_{t-1}$; and $X_3 = PPE_t/A_{t-1}$

The result of the regression model shows that $R^2 = 3.8\%$ and F statistics = 0.664 (Sig = 0.578). This implies that the modified Jones model is not fit for identifying profit adjustment of enterprises listed on HOSE. Moreover, the regression coefficients associated with variables X1, X2 and X3 are not significant in the model (the Sig value being too big). This is probably because Jones's research is conducted in developed countries with thriving market economies and strict provisions on listing procedures and conditions, and accounting disclosure. Additionally, since financial resources of enterprises in those countries rely mostly on the stock market, accounting information is mainly provided to shareholders and prospective investors whose benefits directly relate to the enterprises. In these markets, the truthfulness and reasonableness of accounting information are placed on top.

Meanwhile, Vietnam is a developing economy with an infant stock market. Rules and supervision of authorities on financial information disclosure of enterprises are not strictly governed.

Currently, information disclosure of companies listed on the Vietnamese stock market in general and HOSE in particular complies with the Securities Law and Circular 09/2010/TT-BTC by the MoF dated October 15, 2010. However, in terms of rules and practice, the presentation and disclosure of information by listed companies still reveal a number of shortcomings that affect the transparency, openness and sustainable growth of Vietnam's stock market in general.

For example, statements of changes in equity are not presented as a separate report according to international practices. The addition of revenue and financial costs to profit/loss on business performance reports is not only inappropriate to international practices, but also ambiguous and destitute of transparency of information, and even misunderstanding for investors, as the profit/loss from stock sale, which is irregular business activity, is misunderstood as business performance.

Vietnamese enterprises show poor compliance with accounting – auditing regulations, except for some enterprises in joint-venture with foreign partners, banks, and foreign-invested enterprises. Their disclosure of financial statements and other information is merely a formality; and the statements are incomplete and lacking in necessary details and honesty. In addition, it is necessary to take into account the capacity and accountability of agencies and organizations responsible for inspection and control of enterprises' information disclosure. There are many cases where the submission and disclosure of financial statements are delayed or information is disclosed insufficiently and incorrectly.

Because Vietnamese stock market regulations are loose and inconsistent, and guidelines are unclear, it is possible that profit reports are made "flexibly" (profit being adjusted). One of practices that reduce costs and increase profit is to minimize corporate income tax. Therefore, enterprises will choose accounting policies to adjust the income tax payment as low as possible. In other words, corporate income tax plays an important part in making flexible profit reports (Phạm Thị Bích Vân, 2011).

With the application of the Jones regression model, the variables in the model can be adjusted to match the characteristics of the enterprises listed on HOSE in particular and the legal environment of securities and information disclosure of Vietnamese enterprises in general as analyzed above. The depreciation and provision variables are selected instead of the fixed asset variable in the Jones model. It is because they are two accrual variables that can be adjusted by the manager who can raise costs by changing the depreciation method from straight-line to accelerated depreciation. And the estimation of the useful life of fixed assets also affects the depreciation cost, hence profit.

Next, percentage of retained earnings turned into reserves (for bad debts, inventory depreciation, financial investment depreciation, product warranty, installation works warranty, etc.) can be adjusted by the manager pursuant to the Circular 228/2009/TT-BTC dated July 12, 2009. In addition, managers can choose the time for reversal or elimination of provision costs and reversal level. As a result, corporate profit can be adjusted.

To reduce heteroskedasticity, the author chooses to divide the Jones model by the revenue of the year t, rather than by the assets at the end of the year t-1, because revenue is vulnerable to adjustment such as changes in revenue recognition time (instead of revenue recognition at the date December 31, year end,

revenue will be recognized on January 1, year n +1) and prepaid revenue. The end of the year is the most sensitive point when enterprises adjust revenues and costs.

On the basis of such argument, the Jones model changes into

$NDA_t/REV_t = \alpha_1(1/REV_t)+\alpha_2(REV_t-REC_t)/REV_t+\alpha_3 DEP_t/REV_t+\alpha_4\ PRO_t/REV_t$ (7)

where NDA_t is the non-discretionary accrual of the year t; REV_t is the revenue of the year t; REC_t is the annual accounts receivable of the year t; DEP_t is the depreciation cost of fixed assets of the year t; PRO_t is the provision cost (inventory depreciation, bad accounts receivable; and short-term and long-term investment depreciation) of the year t; and α_1, α_2, α_3, and α_4 are parameters obtained from the OLS estimation of a_1, a_2, a_3, and a_4.

$TA_t/REV_t = a_1 + a_2(REV_t - REC_t)/REV_t + a_3 DEP_t/REV_t + a_4\ PRO_t/REV_t + \boldsymbol{\varepsilon}$ (8)

$\boldsymbol{\varepsilon}$ stands for unidentified variables and DA_t.

Calculating DA_t and dividing two sides of formula (2) by REV_t result in:

$DA_t/REV_t = TA_t/REV_t - NDA_t/REV_t$ (9)

OLS regression of (8) results in a_1, a_2, a_3, and a_4. Put a_1, a_2, a_3, and a_4 into (7):

$NDA_t/REV_t = a_1(1/REV_t)+a_2(REV_t-REC_t)/REV_t+a_3 DEP_t/REV_t+a_4\ PRO_t/REV_t$ (10)

Put (10) in (9):

$=>DA_t/REV_t=TA_t/REV_t-[a_1(1/REV_t)+a_2(REV_t-REC_t)/REV_t+a_3 DEP_t/REV_t+a_4\ PRO_t/REV_t]$

$=>DA_t/REV_t=TA_t/REV_t-a_1(1/REV_t) - a_2(REV_t-REC_t)/REV_t - a_3 DEP_t/REV_t - a_4\ PRO_t/REV_t$

This helps calculate DA_t.

The modified model has the following form: $Z= \alpha_0 + \alpha_1 Z_1 + \alpha_2 Z_2 + \alpha_3 Z_3 + \boldsymbol{\varepsilon}$

where $Z_1=(REV_t-REC_t)/REV_t$; $Z_2=DEP_t/REV_t$; $Z_3=PRO_t/REV_t$; and $Z=TA_t/REV_t$

Result of adjusted model

Model summary [b]

Model	R	R^2	Adjusted R^2	Standard error of estimation
1	.640[a]	.409	.374	.25114

a. Independent variables: Z3, Z1, Z2

b. Dependent variables: Z

Variance analysis

	Model	Total square	Degree of freedom	Average square	F-test	Sig.
1	Total square explicable from regression model	2.183	3	.728	11.537	.000[a]
	Total square from error	3.154	50	.063		

Total	5.337	53	

a. Independent variables: Z3, Z2, Z1

b. Dependent variables: Z

Regression coefficients [a]

		Unstandardized coefficient		Standardized coefficient		
	Model	**β**	**Standard deviation**	**Beta**	**t-test**	**Sig.**
1	Intercept	.667	.206		3.237	.002
	Z1	-.792	.239	-.438	-3.312	.002
	Z2	1.209	.547	.305	2.210	.032
	Z3	-1.923	1.828	-.121	-1.052	.298

a. Dependent variables: Z

Source: SPSS 16.0

From the calculation result and the testing of the existence of the regression coefficients, the practical model has the form $Z = 0.667 - 0.792Z_1 + 1.209Z_2$. The regression result show that the model matches the situation of the enterprises listed on HOSE (Sig = 0.000). The independent variables can explain 40.9% of the dependent variables ($R^2 = 0.409$). Besides, all the coefficients are significant (except for the Z_3 variable with a Sig value of 0.298). This indicates that the companies listed on HOSE take actions to manage profits and that the modified Jones model is ineffective in identifying the profit adjustment of companies listed on HOSE.

4. CONCLUSION AND POLICY RECOMMENDATIONS

The modified Jones model is considered an effective tool for detecting profit adjustment in some countries such as the U.K., the U.S., Malaysia and Taiwan. However, the model would be appropriate for identifying profit adjustment of enterprises listed on HOSE if some variables were changed. For example, the revenue of the year t replaces the assets at the beginning of the year t, and the fixed asset at the end of the year t is replaced by the depreciation and provision costs of the year t. This would make the regression coefficient measuring the relevance of the model (R^2) rise to 40.9%. In summary, the variables of revenue and depreciation cost are significant in the regression model to identify profit adjustment of companies listed on HOSE.

Profit management of enterprises listed on HOSE in the short term can help them achieve some goals like increasing stock price, attracting investors, and attaining the prerequisite for an IPO. In the long term, however, as investors become aware of this, they may "boycott" the shares of these enterprises. The MoF should encourage listed companies to voluntarily disclose their business performance so that investors can make correct and timely decisions. According to P. Adina & P. Ion (2008), voluntary

disclosure is to provide additional information to satisfy the needs of information users outside the enterprise such as financial analysts, consulting companies, and investors as organizations. In the current trend, voluntary disclosure is attracting great interest of information users because of its effects, and companies are increasingly recommended for voluntary disclosure to obtain more benefits.

To achieve this goal, the MoF in conjunction with the State Securities Commission should organize more workshops and conferences for enterprises listed on HOSE to have correct awareness of the effects and benefits of voluntary disclosure. Additionally, it is necessary to encourage enterprises to voluntarily disclose their information. For example, annual awards will be given to enterprises which have disclosed the most honest, reasonable, timely and useful information, based on the votes by an association of enterprises or investors.

This can provide sufficient information about listed companies for information users in general and investors in particular, helping them with investment-related decision-making and maintain the faith of investors on enterprises. Furthermore, in a macroeconomic perspective, this approach helps protect investors and increase the "transparency" of the stock market. This is totally consistent with the objectives in future development of the stock market set by the government and the MoF [Nhật Minh, 2012].

However, the sample size in this research is small and taken from one accounting period of 2010. Further researches should expand the sample and extend the accounting period, for enterprises operate over years. Later researches should also find out the relationship between profit adjustment levels and company sizes or between profit adjustment levels and enterprises' capital structure, or identify influential factors on profit adjustment of enterprises listed on HOSE■

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