

**Translation Accounting Standards and their Value Relevance:
Evidence from Australian Oil and Gas Industry**

Author

Vlady, Svetlana, Huang, Allen

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**TRANSLATION ACCOUNTING STANDARDS AND THEIR VALUE
RELEVANCE: EVIDENCE FROM AUSTRALIAN OIL AND GAS INDUSTRY**

Svetlana Vlady,* Allen Huang*

Address for correspondence:
Svetlana Vlady, PhD candidate
Griffith University,
Department of Accounting, Finance and Economics
PMB 50 Gold Coast Mail Centre
QLD 9726
Australia
e-mail: s.vlady@griffith.edu.au

** Griffith Business School, Department of Accounting, Finance and Economics,
Griffith University, Australia*

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Svetlana Vlady^{*} and Allen Huang[†]

ABSTRACT

This paper examines the relationship between the foreign currency translation adjustments and the firm's market value of the Australia-based oil and gas multinational companies. The translation accounting under the former standard AASB 1012 "Foreign Currency Translation" and the current standard AASB 121 "The Effects of Changes in Foreign Exchange Rates" produces different translation adjustment results. This study empirically examines this relationship and finds that the translation adjustments under the former standard AASB 1012 provide information that is opposite to the economic effects of the exchange rate changes. Also, this study uses a case study approach to examine the effect of the new standard AASB 121 on the market value of the oil and gas firms. The case study analysis concludes that the new translation accounting standard, in conjunction with other new standards, such as, AASB 101 "Presentation of Financial Statements" and AASB 6 "Exploration for and Evaluation of Mineral Resources", has the potential to change the relationship between the translation differences (adjustments) and the firm's value from an inverse to a positive relationship and, thus, to improve the quality of the accounting information.

Key Words: Translation Accounting Standards, Foreign Currency Translation, Current Rate Method, Temporal Method, Value Relevance, Oil and Gas Industry.

^{*} **Svetlana Vlady** is PhD candidate at Griffith University, Australia

[†] **Dr. Allen Huang** is senior lecturer at Griffith University, Australia

TRANSLATION ACCOUNTING STANDARDS AND THEIR VALUE

RELEVANCE: EVIDENCE FROM AUSTRALIAN OIL AND GAS INDUSTRY

1. Introduction

This research examines the relationship between the foreign currency (FC) translation adjustments as a result of the change in exchange rates and the variation in the firm's market value across a sample of Australia-based multinational oil and gas companies. The relevant issues addressed include the unique economic characteristics of the oil and gas industry, the FC translation process and the accounting treatment of the translation difference (adjustment), and also the economic effect of the fluctuations of exchange rates on reported earnings and the value of the firm.

The oil and gas industry plays a key role in the world economy. Due to the low spare oil production capacity and the rapid growth in the demand for oil in the world, the oil price has risen dramatically in recent years and likely will continue to rise in the foreseeable future. This industry covers a range of activities including exploration, evaluation, development, production and sales. The high degree of risks, substantial pre-production costs, export, the price-inelastic demand, and the worldwide selling prices denominated in the US dollar are some of the unique economic characteristics of this industry. Furthermore, the risk and cost structure of this industry differs from other sectors. In general, the oil-production subsidiaries are located in areas where the extractive and processing operations of the raw materials take place, whereas the refining and marketing activities occur in the industrialised nations. For this reason, the foreign operations are likely to incur pre-production and production costs in the subsidiary countries, but the revenue is generated in the parent country. For Australian

oil and gas firms the sales are usually settled in Australian dollar or US dollar. As the production costs and sales revenues of the oil and gas firms are typically incurred in different currencies and the selling prices of the oil and gas products are determined worldwide, the performance of these firms (and, hence, the market value) is significantly affected by the exchange rate changes and the accounting method that is used to translate the foreign currency denominated financial statements.

While the change in exchange rates between the parent company's currency (in which revenue is generated) and the subsidiary company's currency (in which most costs are incurred) will inevitably give rise to both the economic effect and the translation adjustment in accounting, how the economic effect which determines the value of the firm and the accounting translation adjustment are related remains a question. In principle, a positive adjustment (i.e., translation gain) should lead to an increase in firm's value and, therefore, a positive association between the translation adjustment and the market value of the firm should exist. However, an analysis of the economic effects of the exchange rate changes indicates that a positive translation adjustment could associate with a loss of value rather than an increase in value for the oil and gas industry. For example, under accounting rules a positive translation gain (as a result of an appreciation of the subsidiary's currency) implies an increase in the firm's value.¹ However, from an economic viewpoint, the costs of the subsidiaries of oil and gas companies would be favourably affected (from the parent company's perspective) by a depreciation of the subsidiary's currency, which is likely to result in decreasing costs and increasing profits (as in the parent's currency) and, hence, increasing the value of the firm. Therefore, the accounting translation adjustment may appear to be opposite to the economic reality, leaving a doubt on the usefulness of the accounting information.

Australian accounting standard AASB 1012 “Foreign Currency Translation” was the standard that prescribed the foreign currency translation process in Australia prior to 2005. AASB 1012 classified a foreign operation as either a self-sustaining or an integrated subsidiary and prescribed two principal ways to translate the accounts of foreign operations: the current rate method and the temporal method. For an integrated subsidiary, the temporal method should be used and the translation differences should be treated as gains or losses to be included in the consolidated profit and loss accounts. The current rate method should be used to translate the accounts of a self-sustaining subsidiary and the translation differences should be taken to the equity as foreign currency translation reserve.

While the temporal method was heavily criticised by company managers for its potential to report volatile earnings (Bartov, 1997), the current rate method was initially expected to reduce the volatility of reported earnings and eliminate the incentive for multinational firms to engage in various hedging activities. However, it is actually possible that translation gains or losses (adjustment) might be even larger under the current rate method because inventory, plant and equipment, as well as all monetary assets, are exposed (i.e., translated at the closing rate) (Radebaugh and Gray, 2002). This is particularly true for the oil and gas industry in Australia. Australian accounting standard AASB 1022 “Accounting for the Extractive Industries” (and the new standard AASB 6 “Exploration for and Evaluation of Mineral Resources”) permitted the deferral on balance sheet of exploration, evaluation and development expenditures. In the oil and gas industry evaluation and exploration costs may be carried forward as assets “even if the activities have not established whether or not economically recoverable resources exist in the area provided certain tests are met”

(KPMG, 2003, p.5). These costs could represent a large amount of non-current assets, leaving the possibility for a substantial translation adjustment to the equity.²

The current standard governing the FC translation, taking effect on 1 January 2005, is AASB 121 “The Effects of Changes in Foreign Exchange Rates”.³ The international accounting standard IAS 21 “The Effects of Changes in Foreign Exchange Rates” is the foundation standard for AASB 121 and is similar to the corresponding U.S. standard SFAS 52 “Foreign Currency Translation”. The major changes of AASB 121, as compared to AASB 1012, are to replace the option of reporting currency with the two concepts of functional currency (the currency of the primary economic environment in which entity operates) and presentation currency (the currency in which the entity presents its consolidated financial statements). The conversion from a currency (e.g., a local currency) to its functional currency (e.g., US dollar) of the entity is a re-measurement, while the conversion from the functional currency to presentation currency (e.g., Australian dollar) is a translation. AASB 121 requires that the entity should identify its functional currency that affects the economic wealth of the entity and re-measure its financial position in that currency. The new re-measurement method concentrates on the monetary and non-monetary classification of the assets and liabilities to better measure the financial/economic effects of gain/loss in value of the monetary position.

For the FC translation to presentation currency, AASB 121 (para. 39) prescribes a single translation method, which is similar to the current rate method and differs only with respect to the translation of equity. AASB 121 does not specify the name and rate in which equity items should be translated. However, the new standard AASB 101 “Presentation of Financial Statements” requires each entity to present a statement of changes in equity and title it as a “Statement of Recognised Income and

Expenses” (AASB 101, para.96.b) and from July 2008 “Statement of Comprehensive Income”.

Also, AASB 101 clarifies that gains and losses arising from translating the financial statements of foreign operations should be excluded from profit and loss (AASB 101.80). Under AASB 121, each entity is permitted to present its financial report in any currency (or currencies) that it chooses and a foreign operation with the same functional currency as the presentation currency no longer requires translation (AASB, 2004, p. 25). AASB 121, IAS 21 and SFAS 52 are designed to provide information that is generally compatible with the expected economic effects of the exchange rate changes on an enterprise’s cash and equity flows.

Research concerning the value relevance of the FC translation adjustment has mainly been undertaken in the U.S.A. Most previous studies examined this issue for all firms irrespective of their industrial operations (for example, Bailie and Borserslev, 1989; Bartov, 1997; Soo and Soo, 1994). In the context of economic theories, Louis (2003) and Pinto (2005) examined this relationship for the manufacturing firms. Dhaliwal *et al.* (1999) empirically examined this association for all firms and tested major industry groups separately. To date, there has been no study that examines the value relevance of the FC translation adjustment for the oil and gas industry, which distinguish itself from other sectors with unique economic characteristics and which is particularly pertinent to the exchange rate changes. Moreover, there has not been study that investigated this issue in Australian context. Furthermore, previous studies on this issue have resulted in inconclusive outcome. While some researchers found a positive (Bartov, 1997) or inverse association (Baillie and Bolerslev, 1989; Liu and Maddala, 1992; Louis, 2003), others suggested that the FC translation adjustments were not value relevant (Dhaliwal *et al.*, 1999).

The current research contributes the existing the value relevance literature by examining the association between the FC translation adjustment and the oil and gas firm's value in conjunction with the specific accounting standards for the extractive industries in Australian context. This study attempts to investigate this relationship under the former Australian accounting standard AASB 1012 and new Australian accounting standard AASB 121, which is equivalent to IAS 21 and similar to US SFAS 52 "Foreign Currency Translation". This study attempts to answer the following empirical question: In the oil and gas industry, was a positive (negative) FC translation adjustment associated with a loss (gain) of the firm's market value under AASB1012? This study will also attempt to analyse if the adoption of AASB 121 would change the relationship between the FC translation adjustment and the firm's value so that the new standard would improve the quality of the translation accounting information.

Using a sample of 88 observations this study empirically tested the association between the foreign translation adjustments and the changes in stock returns of Australia-based multinational oil and gas companies under the former translation accounting standard AASB 1012. Our results show that overall an inverse relationship exists between the translation adjustments and variations in share prices. This study also uses a case study approach and two oil and gas companies, Santos Limited and Woodside Limited, to examine the association between the translation adjustments and share price changes under the new standard AASB 121. Our analysis shows that the new standard does change this relationship from an inverse to a positive for the two companies examined. Overall, our results are supportive of the new translation standard.

The remainder of the paper is arranged as follows. Section 2 reviews relevant previous studies in this area and develops hypotheses for empirical testing. The research design is discussed in section 3 while section 4 describes sample selection and presents empirical results and analysis. The case analysis is presented in section 5 and conclusions and discussion on limitations are offered in the final section.

2. Literature Review and Hypothesis Development

Prior research that examines the relationship between the FC translation adjustment and the value of the firm has mainly been done in the U.S.A. under the US GAAP SFAS 52 “Foreign Currency Translation” and FASB No 8 “Accounting for the Translation of Foreign Currency Transaction and Foreign Currency Financial Statements”. From 1975 to 1982 in U.S.A the FASB No 8 required use of the temporal method for the consolidated purpose. The temporal method obscures the fact of multiple units by requiring all transactions to be measured as if the transactions occurred in dollars (SFAS 52, 86, p 33). The inclusion of translation gains or losses in income implied significant profit volatility. This method was highly criticised and FASB issued Statement of Financial Standard No 52 “Foreign Currency Translation” which took effect from 1982 and the functional currency translation approach was adopted. Under SFAS 52, a decision is made on the functional currency for foreign subsidiaries and a distinction is made between the US dollar and the foreign currency as the functional currency for a foreign subsidiary. If the foreign currency is chosen to be the functional currency then the accounts of the foreign subsidiary should be translated using the current rate method and the translation differences taken to equity. However, if the US dollar is chosen to be the functional currency then the foreign

subsidiary's accounts should be translated using the temporal method and the translation differences to be included in the income.

Prior research on the value relevance of the translation accounting can be separated into various schools of thought. While some researchers found a positive association between the FC translation adjustment and the stock price (e.g., Bartov, 1997), others found this to be an inverse relationship (e.g., Baillie and Bolerslev, 1989; Liu and Maddala, 1992; Rogalski and Vinso, 1997). Still other authors suggest that the FC translation adjustments are not value relevant (Dhaliwal, *et al.*, 1999).

Bartov (1997) examined the stock market reaction to the FC translation adjustment under the current rate and temporal methods. The Bartov's (1997) results show no significant relation between the reported translation adjustments and changes in stock prices for the temporal method, but a positive and significant association when the current rate method was adopted. However, Bartov (1997) believes that neither method captures the full effect of the exchange rate changes on the firm's value because neither method revalue the foreign operation's assets and liabilities to its market value before translation.

Using manufacturing firms as samples, Louis (2003) found that the translation adjustment is value relevant, but not in the direction of the adjustment. Pinto (2005) raises concern that the accounting measure of the exchange rate exposure may not adequately reflect the true, economic exposure to exchange rate movement at the firm level. Using all firms irrespective of their industrial operations, negative association between the FC translation adjustment and stock price was also found by Baillie and Bolerslev (1989), Darby (1982), Liu and Maddala (1992), Meese and Singleton (1982), Rogalski and Vinso (1977), and Urrutia (1992).

However, when examining this issue for all firms and also for the major industry groups separately, Dhaliwal *et al.* (1999) conclude that the translation adjustments are not value relevant and the results “do not support the claim that the comprehensive income is a better measure of firm performance than net income” (p.42). Collins and Salatka (1993) even suggest that the inclusion of the translation adjustment in net income negatively affects earnings quality under the accounting standards requirements. On the other hand, other researchers have argued that the translation gains and losses are important performance indicators and believe that their inclusion in income is necessary for any method to achieve an economic interpretability or symmetry (Beaver & Wolfson, 1984).

Prior studies reviewed have reached inclusive results as to how the translation accounting information is related to the determination of the value of the firm. Furthermore, there has been no study that examines the value relevance of the translation adjustment for the oil and gas industry, which distinguish itself from other sectors with unique economic characteristics and which is particularly pertinent to the exchange rate changes. There clearly exists a gap in the literature on this issue which the current study is intended to fill. This attempt is also timely given a recent change in the Australian accounting standards which are equivalent to the international accounting standards. Hence, there is a need to empirically investigate the quality and usefulness of the translation accounting information under the old standard. A possible finding of a negative association between the translation adjustment and the firm’s value from this investigation would establish a justification for adoption of the new standard.

Under the former translation accounting standard AASB 1012, the FC translation adjustment was supposedly to provide information about the impact of the

exchange rate change on the net assets of a foreign subsidiary as expressed in the parent's currency. A translation gain (loss) is reported if the foreign subsidiary has a net asset position (as usually is the case) in a strong (weak) currency. Therefore, a translation gain implies the value of the subsidiary's assets is worth more in the parent's currency (i.e., Australian dollar) and this should lead to a positive effect on the market value of the firm. A translation loss implies the opposite.

However, an economic analysis of the exchange rate changes would suggest an outcome that is opposite to the accounting results caused by the distinctive features of oil and gas industry. Thus, this study hypothesises an inverse association between the FC translation adjustment and the firm's value, as state below:

H1: An inverse relationship exists between the foreign currency translation adjustment and the change in the value of the firm under AASB 1012.

Australian accounting standard AASB 1012 classified foreign operations as self-sustaining or integrated and prescribed current and temporal method. The difference on translation should be included in income statement under the temporal method and should be transferred to the equity under the current method. As the two methods under AASB 1012 have different effects on reported earnings and equity, which may be perceived differently by investors in their assessment of the firm's value, the following hypothesis is to be tested:

H2: The relationship between the foreign currency translation adjustment and the change in the value of the firm under AASB 1012 differs between the temporal method and the current rate method.

Unlike the translation gains/losses, transaction gains/losses arise from the joint effects of an entity's import and export activities denominated in foreign currencies and exchange rate changes. When importing from a foreign supplier (exporting to a

foreign customer) with payment to be made (received) in a foreign currency, a firm faces foreign exchange risk, giving rise to transaction gains/losses. Therefore, transaction gains/losses have implications for the firm's operating costs and cash flows, which reflect the economic effect of exchange rate changes. As a consequence, transaction gains/losses would be inversely associated with translation gains/losses and positively related to the variations in stock returns. Thus, this study hypothesises:

H3: An inverse relationship exists between transaction gains/ losses and translation gains/losses and a positive relationship exists between transaction gains/losses and the value of the firm under AASB 1012.

3. Research Design

In order to compare and contrast the value relevance and economic effect of the translation accounting information prepared under the old accounting standard AASB1012 and the new standard AASB 121, this study empirically tests the translation results under AASB 1012 and use a case study approach to examine the results under AASB 121.

This study does not empirically test the value relevance of the translation adjustment under the new accounting standard for the following reasons: (1) The availability of the testable data since the implementation of the new standard is limited (in terms of the sample size and the short period of time), which does not permit a meaningful statistical test. (2) Under the new standard, a firm can choose the Australian dollar, US dollar and other currencies to present its financial statements. Moreover, if a firm's functional currency is the same as presentation currency, then no translation is required. (3) As the new standard does not specify how equity should be translated, a firm may have no translation adjustment if it uses the current rate to

translate the equity accounts. All this would make an empirical investigation on the Australian oil and gas firms under the new standard difficult, if not impossible.

Two regression models are developed to test the hypotheses of this study, which are presented below.

Regression Model 1

Consistent with Dhaliwal *et al.* (1999) we use the return/earning association approach to test whether the FC translation adjustment is explanatory of stock returns. Also, following Louis's (2003) suggestions and from earlier analysis of the Australian oil and gas industry, we predict a negative association between the FC translation adjustment and the value of the firm. Regression model 1 below is to test whether the stock returns are inversely correlated with the translation adjustment.

$$R_{it} = b_0 + b_1 NI_{it} + b_2 ADJ_{it} + e_{it} \quad (1)$$

where R_{it} is the fiscal-year return for firm i in year t , NI_{it} and ADJ_{it} are the corresponding reported net income and the FC translation adjustment respectively.

This model is similar to Louis's (2003) and is used to test hypotheses 1 and 2.

Regression Model 2

The FC transaction gains and losses arising from the contracts fixed in foreign currencies and the exchange rate changes, however, should reflect the economic effect of the exchange rate fluctuations on firms' reported profits and operating cash flows. Therefore, we predict that a transaction gain (loss) would lead to an increase (decrease) in firm's value. The transaction gain/loss is included in the test as an additional explanatory variable. As transaction gains/losses are normally included in the net income, to test the effect of this variable they are deducted from the net income. Regression model 2 is derived as below:

$$R_{it} = b_0 + b_1 NI_{it}^{**} + b_2 ADJ_{it} + b_3 TADJ_{it} + e_{it} \quad (2)$$

where NI_{it}^{**} is the reported net income without the inclusion of transaction gain/loss (i.e., $NI_{it}^{**} = NI_{it} - TADJ_{it}$), $TADJ_{it}$ is transaction gain/loss. As Australian oil and gas firms which apply the temporal translation method do not show the FC translation gain/loss and the foreign transaction gain/loss as separate items, Regression Model 2 can only be applied to those firms which use the current rate method.

4. Data, Empirical Results and Analysis

This study selects a period of five years from 1999 to 2003 for the investigation for that the prices in the world energy market were relatively stable. A total of 85 Australian public companies from the manufacturing sector constitute the sample of oil and gas domestic and multinational corporations. However, only 20 multinational corporations of this sector have the entire five-year data available, resulting in a total of 100 observations. The sample consists of those firms that applied the current rate method (55 initial observations and 47 final observations over the five year period) and those firms that used the temporal method (45 initial and 41 final observations over 5 years). Although the sample size appears to be small due to the fact that the Australian oil and gas industry is relatively immature and small, the sample amounts to 24 per cent of the whole population of the industry and includes all major Australian oil and gas firms.

All the firms included in the study are listed on the Australian Stock Exchange (ASX). The numerical data of the foreign translation adjustments, foreign transaction gains/losses, net income, and the beginning market value were collected from the

annual reports available on the company's website. The ASX website provides the historical share prices as well as dividend information.

There are a number of obstacles encountered which prevent a more meaningful and insightful interpretation of the data, particularly under the temporal method. Firstly, not all companies which treated their foreign operations as integrated subsidiaries and used the temporal method presented the item "Foreign translation gains/losses" on the face of the "Statement of Financial Performance" in their annual reports. Secondly, foreign translation gains/losses under this method are not consistently reported and presented as a separate component. Furthermore, most companies present the foreign translation gains/losses and foreign transaction gains/losses as one item: "Foreign Exchange Gains/Losses". All this reduces an ability to distinguish the effect of the FC translation adjustment from that of the FC transactions under the temporal method. Previous research has also encountered similar difficulties in achieving reliable data. For example, Soo and Soo (1994) find that foreign transaction gains/losses are not consistently reported separately from foreign translation gains/losses. Louis (2003) acknowledges that the foreign translation adjustment variable is likely a noisy measure under the temporal method.

Descriptive statistics are reported in Table 1. We notice that the *Return* variable under the temporal method and the *NI* variable (the reported net income divided by beginning market value) on average are negative over the five year period. This reflects the fact that many oil and gas companies reported substantial losses at the time mainly due to a combination of still curtailed oil prices (held at fixed prices by futures contracts) and continuing high exploration and operation costs. The statistics indicate that the stock returns have a strong positive skewness while the

translation adjustments (*ADJ*) and the currency transaction adjustment (*TADJ*) under the current method have a strong negative skewness.

The removal of extreme observations reduced but did not entirely correct for skewness and kurtosis. However, a significant measure of kurtosis is not problematic due to the presence of many scores in the centre. A strong skewness in the variables nevertheless could violate the assumption of normality distributed variables. It was felt, however, that any transformation aimed at reducing the impact of such effects also distorts the interpretation of the data. The normal probability plots, scatter plots and histograms were investigated and revealed that the standardised residuals were quite reasonably normally distributed. Deviations from normality should not therefore be a major problem for the multivariate analysis. For this reason, consistent with Louis (2003) and Pinto (2005), we settled for scaling all variables by beginning market value in order to minimise heteroskedasticity and control for size differences across the firms.

(Insert Table 1 here)

The descriptive statistics appear to offer preliminary support for the hypothesis that an inverse relationship exists between the changes in the firm's value and the FC translation adjustment for the firms that use the current rate method. The association between the FC translation adjustment and the firm's value seems to be positive for the firms using the temporal method, indicating that investors perceive the foreign exchange gains/losses differently under the two methods. However, the medians are close to zero, which indicate that the firms have both negative and positive translation adjustments. Given that all variables were scaled to control firms' size differences, the large FC translation adjustments could be associated with the large amount of exploration, evaluation and development costs that have been carried as assets.

Table 2 presents the results of Regression Model 1. Over the whole data sample, net income and foreign translation adjustments together account for 23 per cent of the variance in the market value of the firm ($F(2, 86) = 12.8; p < 0.001$). The p - and t -values both indicate significant relationships. The estimated coefficient for the translation adjustment b_2 (-.29), standardised coefficient r_2 (-0.26), and Pearson coefficient (-0.40) are all negative and significant ($p < 0.001$). Therefore, the results indicate that overall there exists an inverse relationship between the foreign translation adjustments and the value of the firm, thus supporting Hypothesis 1.

(Insert Table 2 here)

Between the current rate and temporal methods of translation, Table 2 shows that, for the current rate method, net income and the translation adjustments account for 35.5 per cent of the variance in the firm's value, as compared with 6.7 per cent of the variance under the temporal method. The adjusted R^2 for the current method is 33.0 per cent ($F = 12.1; p < 0.001$) and only 1.4 per cent ($F = 1.25; p = 0.30$) for the temporal method. The r_2^2 shows the strength of the relationship between firm value and the translation adjustments is higher (6.0 per cent) for the current rate method than for the temporal method (3.8 per cent).

Under the current rate method, the estimate of the coefficient on the foreign translation adjustments b_2 is -0.28, which is negative as predicted and significant at 5 per cent level ($t = -2.02, p = 0.05$). The Pearson correlation coefficients show a positive and significant linear relationship between net income and firm value ($r = 0.54, p = 0.001$) and a negative and significant relationship between the translation adjustments and firm value ($r = -0.47, p < 0.001$), as predicted.

However, under the temporal method, the estimate of the coefficient on the translation adjustments b_2 is 0.20, positive (as predicted) but insignificant ($t = 1.19$, $p = 0.24$). The Pearson correlation coefficient also indicates a positive but insignificant relationship between the translation adjustments and firm value ($r = 0.14$, $p = 0.41$).

The coefficients on translation adjustments under the current rate method are negative and highly significant, supporting the hypothesis that an inverse relationship exists between the foreign translation adjustments and the change in firm value. In contrast, the coefficients under the temporal method are positive and insignificant. This result clearly indicates that the investors perceive the effects of the two translation methods on the value of the firm differently. The temporal method concentrates on the monetary and non-monetary classification of the assets and liabilities to better measure the effect of gains/losses in the value of the monetary position and reports the result directly in the income statement. This translation process and the resultant translation gains/losses might correlate positively with the change in firm's value. However, as under the temporal method translation gains/losses and transaction gains/losses are often combined, it is not possible to examine the effects of translation gains/losses on firm's value separately. Since the regression results are insignificant under the temporal method, it is suggested that the temporal method does not fully capture the effects of exchange rate changes. Nonetheless, the results tend to lend support to the hypothesis that the current rate method and the temporal method have differential effects on firm value.

Table 3 presents Regression Model 2 results which show that, under the current rate method, net income, foreign translation adjustments and foreign transaction gains/losses together may predict as much as 60.0 per cent of the change in the value of firms ($F(3, 41) = 20.6$; $p < 0.001$). Each of the three independent

variables makes a unique contribution with net income contributing 24.0 per cent ($r^2 = 0.49$, $t = 4.97$, $p < 0.001$), foreign translation adjustments 15.0 per cent ($r^2 = -0.39$, $t = -3.94$, $p < 0.001$) and foreign transaction gains/losses 29.0 per cent ($r^2 = 0.54$, $t = 5.45$, $p < 0.001$).

The estimate of the coefficients on the foreign translation adjustments b_2 is -0.46 , negative and significant ($t = -3.94$, $p < 0.001$); on the foreign transaction gains/losses b_3 is 0.73 , positive and significant ($t = 5.45$, $p < 0.001$); and on the net income b_1 is 0.69 , positive and significant ($t = 4.97$, $p < 0.001$). These results further confirm that, under the current rate method, the translation adjustments are inversely and transaction gains/losses are positively correlated with firm returns. Moreover, the depreciation of the subsidiary's currency implies a foreign translation loss (in Australian dollar), but a foreign transaction gain (in the subsidiary's currency) under accounting rules. Thus we observe that foreign transaction gains/losses are inversely related to foreign translation gains/losses.

(Insert Table 3 here)

The results presented in this section indicate investors do incorporate the translation accounting information into stock prices. Under AASB 1012, while the outcome of the temporal method is not clear, the application of the current rate method clearly leads to an inverse association between the translation adjustments and firm value, which is opposite to the economic effects of the exchange rate changes for the oil and gas industry. These results imply the translation accounting information under AASB 1012 did not reflect the economic reality.

5. Impact of AASB 121

In this section a case study approach is adopted to compare the accounting and financial results obtained under the old translation standard AASB 1012 and the new standard AASB 121 over two largest Australia-based multinational oil and gas companies, Santos Limited and Woodside Limited. The purpose of this case study is to investigate if the adoption of the new standard would change the relationship between the reported foreign translation differences and the value of the firm from a negative under the AASB 1012 to a positive under AASB 121.

The new translation standard AASB 121, which took effect on 1 January 2005, replaced the reporting currency under AASB 1012 (i.e., the Australian dollar) with two concepts of functional currency and presentation currency. Under AASB 121, firms are required to re-measure a foreign subsidiary's activities in its functional currency. For Australian owned foreign subsidiaries in the oil and gas industry, the functional currencies can be the subsidiary's local currency, the Australian dollar or a third currency, often the US dollar. A foreign translation is required only when the functional currency differs from the presentation currency. AASB 121 prescribes a single translation method for translation from the functional currency to presentation currency, which is similar to the current rate method and differs only with respect to the translation of equity. Under AASB 121, each entity is permitted to present its financial report in any currency (or currencies) that it chooses and a foreign operation with its presentation currency same as its functional currency no longer requires translation. Furthermore, AASB 121 does not specify the name and rate in which equity items should be translated. However, the new standard AASB 101 requires each entity to present a statement of changes in equity and title it as a "Statement of Recognised Income and Expenses" and from July 2008 "Statement of Comprehensive Income".

These changes brought by AASB 121 increase significantly the flexibility in the foreign currency translation process, which is intended to provide accounting information that is generally compatible with the expected economic effects of the volatile exchange rates. Whether this purpose has been served by the new standard is an empirical question. However, the statistical analysis on the accounting and financial results under the new standard is not permitted at this point of time (for the reasons stated in section 3). Instead, this study adopts a case study approach to examine the changes in the accounting and financial results of two major companies: Santos Limited and Woodside Limited.

Santos is an Australia-based multinational company and operates worldwide in Australia, United States, India, Kyrgyzstan, Egypt, Indonesia, Vietnam, Timor Gap, Papua New Guinea and other countries. Prior to 2005, the financial statements of Santos's foreign operations were translated and consolidated using the current rate method to Australian dollar which was the reporting (both functional and presentation) currency. In accordance with AASB 121, Santos has selected the US dollar as the functional currency for the Timor, Indonesia and Papua New Guinea operations and Australian dollar as the functional currency for some other operations. The US dollar is the currency in which Santos's worldwide sales of oil and gas are denominated.

Table 4 below presents the relevant accounting and financial results of Santos as under the old standard AASB 1012 and the new standard AASB 121. The analysis of the results shows that under AASB 1012 the foreign translation losses (or negative adjustments) in 2003 and 2004 have been associated with increases in the net profits and in stock returns as expressed in dollar amounts and the percentage changes, indicating an inverse association between the translation adjustments and firm value.

However, under the new standard AASB 121, a translation gain (or positive adjustment) in 2005 is associated with increases in the net profits and stock returns, and a translation loss (or negative adjustment) in 2006 is associated with decreases in the net profits and stock returns, indicating a positive relationship between the translation adjustments and firm value. These results indicate that the association between the translation adjustments and firm value for Santos has been changed from a negative one under AASB 1012 to a positive one under AASB 121.

(Insert Table 4 here)

Moreover, the specific for oil and gas industry accounting standards – AASB 1022 “Accounting for the Extractive Industries” and the new standard AASB 6 “Exploration for and Evaluation of Mineral Resources”- are allowed a choice of accounting treatments for exploration and evaluation costs. These substantial pre-production costs could be recognised as expenses immediately, although these costs may be carried as assets. Thus, some pre-production costs that are not associated with probable economic benefits could be recognised as assets or written off.

The adoption of the successful efforts method of accounting for exploration and evaluation expenditure has resulted in the expensing of unsuccessful exploration costs with effect of consolidated equity is to decrease in the exploration and evaluation assets. The effect of adoption of the successful effort method and other standards that affected exploration and evaluation costs presented in Table 5 below.

(Insert Table 5 here)

Woodside Limited is another large and profitable Australia-based multinational oil and gas firm with subsidiaries in Asia, Africa and USA. Prior to 2005, the company chose to use the temporal translation method, under which translation

gains/losses were included in the consolidated profit and loss account. In applying the new standard, Woodside has determined that the functional currency of its major Australian operating subsidiaries is Australian dollar and the majority of the foreign subsidiaries is the US dollar, reflecting the economic environment in which they operate. Table 5 below shows the relevant accounting and financial information of the company. As the FC translation prior to 2005 did not have any translation adjustments shown in equity (because of the use of the temporal method), the results under the new standard show that a positive translation adjustment in 2005 is related to an increase in stock return for the same year and a negative adjustment in 2006 is associated with a decrease in stock return. Again, the results indicate a positive relationship between the translation adjustments and firm value for Woodside.

(Insert Table 6 here)

6. Conclusion

Results of this study have demonstrated an inverse relationship between the foreign translation adjustments and the changes in stock returns of the Australian oil and gas companies under the former Australian accounting standard AASB 1012. In particular, under AASB 1012 foreign currency translation produce results that is opposite to the economic effect of exchange rate changes for the oil and gas multinational companies. MNC reported a foreign translation gain (loss) if the foreign subsidiary has a net exposure asset position in appreciated currency. However, in economic sense, the depreciation (appreciation) of the foreign subsidiary's currency would reduce (increase) the pre-production and production costs of the oil and gas firms while the sales revenue in strong Australian or US dollar would lead to an increase (decrease) in

firm value. The economic effects arise from the unique economic features and the cost and risk structure of the oil and gas industry as the production and sales of oil products usually take place in different countries and different currencies. These findings cast doubt on the usefulness of the translation accounting information provided under AASB 1012

The new translation accounting standard AASB 121, in conjunction with other new standards, such as AASB 101 and AASB 6, has the potential (as shown in the case study) to change the inverse relationship between the translation adjustments and firm value so to improve the quality of the translation accounting information. By adopting the functional and presentation currency concepts and introducing the changes, the new standard provides firms with flexibility in their decisions on how they can measure and present foreign operations more effectively. Recent economic changes in oil and gas industry, caused by an increase in oil and prices and significant increase in revenue for this sector as compare to costs, may require selecting US dollar as a functional currency in which prices are denominated and revenue generated. Taking the results of the statistical analysis and case study together, this study lends support to the new translation accounting standard.

This study has the following limitations. Firstly, the sample size used for the statistical test is relatively small, due to the small population of Australian oil and gas firms and the data unavailability of a number of firms. However, the sample used represents a high percentage of the population and includes all large and major firms of the Australian oil and gas industry. Secondly, the case analysis focuses on two major oil and gas firms which may not be representative of other firms in the industry.

TABLE 1
DESCRIPTIVE STATISTICS*

	Whole sample N = 88			Current Rate Method N = 47			Temporal Method N = 41			Current Rate Method
	<i>Return</i>	<i>NI</i>	<i>ADJ</i>	<i>Return</i>	<i>NI</i>	<i>ADJ</i>	<i>Return</i>	<i>NI</i>	<i>ADJ</i>	<i>TADJ</i>
Mean	- 3.30	- 9.50	- 0.70	0.14	- 5.10	- 1.40	- 5.20	-14.35	- 0.15	- 0.70
Median	- 4.70	- 7.60	0.00	- 4.02	- 6.20	0.00	- 7.60	-10.40	0.00	0.01
Std.Dev.	46.50	33.70	6.45	55.40	34.80	8.60	31.60	33.20	2.10	6.60
Skewness	3.10	1.14	- 3.00	3.50	1.70	- 2.20	- 0.20	0.40	- 0.30	- 4.80
Kurtosis	19.85	5.30	15.40	18.40	7.65	7.90	- 1.05	1.60	3.50	27.00

* All variables, except Return, are deflated by beginning market value.

Return = (share price at the end of the year – share price at the beginning of the year) + dividend)/
share price at the beginning of the year.

NI = net income for the year.

ADJ = change in foreign currency translation adjustment.

TADJ = transaction gains or losses.

TABLE 2
MODEL 1 REGRESSION RESULTS

$$R_{it} = b_0 + b_1 NI_{it} + b_2 ADJ_{it} + e_{it} \quad ^1$$

Parameter	Expected Sign	Actual Sign	Whole Sample	Current Rate Method	Temporal Method ² ADJ = ADJ + TADJ
b_1	+	+++	0.29 (.000)	0.41 (.005)	0.23 (.19)
b_2	-	--+	-0.29 (.000)	-0.28 (.05)	0.20 (.24)
t_1	+	+++	2.76 (.007)	3.00 (.005)	1.35 (.19)
t_2	-	--+	-2.78 (.007)	-2.02 (.05)	1.19 (.24)
R^2			0.23	0.355	0.067
Adj. R^2			0.21	0.33	0.014
F			12.8 (.000)	12.1 (.000)	1.25 (.298)
r_1	+	+++	0.26	0.36	0.22
r_2	-	--+	-0.26	-0.25	0.20
r_1^2			0.07	0.13	0.05
r_2^2			0.07	0.06	0.038
Pearson r Return & ADJ	-	--+	-0.40** (.000)	-0.47** (.000)	+0.14 (0.41)
Pearson r NI & ADJ	-	---	-0.40** (.000)	-0.48** (.000)	-0.30 (0.075)
Pearson r Return & NI	+	+++	+0.40** (.000)	+0.54** (.000)	+0.17 (0.31)

Two-tailed p -values are reported in brackets. ** Correlation is significant at the 0.01 level (one-tailed).
1. R_{it} is a yearly return. The right-hand side variables are deflated by beginning market value. This yields a regression of change in firm value on net income, transaction gains or losses, and translation adjustments.

$Return = (\text{share price at the end of the year} - \text{share price at the beginning of the year} + \text{dividend}) / \text{share price in the beginning of the year}$

$NI = \text{net income for the year.}$

$ADJ = \text{change in foreign currency translation adjustment.}$

2. Under the temporal method, ADJ includes both the translation adjustments (ADJ) and transaction gains/losses (TADJ). This is because these two items are often not separately reported.

$TADJ = \text{transaction gains or losses.}$

TABLE 3

REGRESSION MODEL 2 RESULTS

$$R_{it} = b_0 + b_1NI^{**}_{it} + b_2ADJ_{it} + b_3TADJ_{it} + e_{it}$$

Parameter	Results
b_1	0.69 (.000)
b_2	- 0.46 (.000)
b_3	0.73 (.000)
t_1	4.97 (.000)
t_2	-3.94 (.000)
t_3	5.45 (.000)
R^2	0.60
Adj. R^2	0.57
F	20.6 (.000)
r_1	0.49
r_2	- 0.39
r_3	0.54
r_1^2	0.24
r_2^2	0.15
r_3	0.29

Two-tailed p -values are reported in brackets.

R is a yearly return. The right-hand side variables are deflated by beginning market value. This yields a regression of change in firm value on net income, transaction gains or losses, and translation adjustment.

$Return = (\text{share price at the end of the year} - \text{share price at the beginning of the year}) + \text{dividend} / \text{share price at the beginning of the year}$.

NI^{**} = net income for the year, excluding transaction gains/losses.

ADJ = change in foreign currency translation adjustments.

$TADJ$ = transaction gains or losses.

TABLE 4**ACCOUNTING AND FINANCIAL DATA OF SANTOS LIMITED**

	UNDER AASB 1012			UNDER AASB 121		
	2002	2003	2004 Original	2004 Restated	2005	2006
Net Profits (mil.) (compared to previous year)	322.1	327.0 (increase)	379.9 (increase)	354.7	762.1 (increase)	643.4 (decrease)
Foreign translation differences (gain/loss)	N/A	(91.1) (loss)	(12.3) (loss)	(52.7)	57.1 (gain)	(81.6) (loss)
Change in share price in dollar amount (increase/ decrease)	(0.3)	0.85 (increase)	1.61 (increase)	1.61	3.77 (increase)	(2.38) (decrease)
Change in share price in percentage (exclude dividend) (increase/decrease)	(3.0)	14.1 (increase)	23.4 (increase)	23.4	44.0 (increase)	(19.4) (decrease)
Change in share price in percentage (include dividend) (increase/decrease)	2.0	19.1 (increase)	27.8 (increase)	27.8	48.7 (increase)	(19.4) (decrease)

Sources: Annual reports, www.santos.com, www.oanda.com/convert/fxhistory

TABLE 5

	UNDER AASB 1022		UNDER AASB 6		
	2003	2004 Original	2004 Restated	2005	2006
Exploration costs carried as assets (ACCA)	2,945,3	3,210,3	272,0	339,1	360,3
Total Non-Current Assets (TN-CA)	4,808,0	5,280,1	4,169,0	5,283,9	5,842,4
ACCA/TN-CA %	61.2	60.8	6.5	6.4	6.2
Exploration costs, expensed	(59,7)	(22,1)	(117,4)	(142,1)	(268,8)

TABLE 6**ACCOUNTING AND FINANCIAL DATA OF WOODSIDE LIMITED**

	UNDER AASB 1012	UNDER AASB 121		
	2004 Original	2004 Restated	2005	2006
Net Profits (mil.) (compared to previous year)	1,083.6	1,146.4	1,107.4 (increase)	1,427.0 (increase)
Foreign translation differences (gain/loss)	Temporal method	(7.1)	7.8 (gain)	(57.1) (loss)
Change in share price in percentage (exclude dividend) (increase/decrease)	35.8%	35.8%	94.5% (increase)	(2.5)% (decrease)

Sources: Annual reports, www.asx.com, www.oanda.com/convert/fxhistory

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¹ Notwithstanding that a translation adjustment represents a “paper” gains or loss, such gain or loss impacts on headline reported figures and is likely to impact on the usefulness of accounting information to analysts and investors in setting fair prices for a firm’s shares and decision making process.

² It is important to point that Australian accounting standard AASB 1034 “Financial Report Presentation and Disclosure” required entities to present their financial report in Australian currency. It means that Australian dollar was a measurement (functional) and reporting (presentation) currency. In other words, all transactions have been measured as if the transactions occurred in Australian dollars. Thus, Australian dollar was a “single unit of measure”.

³ Since 1 January 2005, Australia has adopted a new set of standards, namely Australian Equivalents to International Financial Reporting Standards.