Accruals and the Prediction of Future Cash Flows in Hong Kong

BY

Pun Wing Yan
02004607
Accounting Option

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## CONTENT

**Acknowledgement**

**Abstract**

1. **Introduction** 1 - 3

2. **Literature Review** 4 - 7

3. **Statement of Hypotheses** 8 - 10

4. **Methodology**
   - 4.1 Data Collection 11
   - 4.2 Equation 12 - 14
   - 4.3 Test Method 15 - 16

5. **Findings and Analysis**
   - 5.1 Descriptive Statistic 17
   - 5.2 Correlation Test 18 - 19
   - 5.3 Current Earnings verse Current Cash Flow 20
   - 5.4 Gains to Disaggregate Earnings 21 - 22
   - 5.5 Gains to Additional Accruals Data 23 - 25

6. **Limitation** 26

7. **Conclusion** 27 - 28

**Reference** 29 - 30

**Appendix** 31 - 33
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ABSTRACT

This study based on cash flow prediction models developed by Barth et al. (2001) and Al-Attar and Hussain (2004) to investigate the ability of current accounting data – earning, cash flow and accruals - to predict future cash flow for Hong Kong listed companies, as disclosed under Hong Kong Accounting Standard.

The results reveal that current cash flow alone has superiority in predicting future cash flow than current earnings alone. Also, the study finds that disaggregation of earnings into cash flow and accruals as well as adding accrual components to the model which already contains accruals data implicitly in the form of earnings generate superior explanatory power with regard to future cash flow.
1. INTRODUCTION

Cash flow data is useful in providing users of financial statements with a basis to assess the ability of the entity to generate cash and cash equivalents and the needs of the entity to utilize those cash flow. The economic decisions that are taken by users require an evaluation of the ability of an entity to generate cash and cash equivalents and the timing and certainty of their generation (HKAS 7, objective).

A firm’s ability to generate cash flow affects the value of its securities, so the ability to assess future cash flow is important for the investment community, both shareholders and creditors. While shareholders may be concerned with the stream of cash flows to perpetuity, many creditors are concerned solely the short-term cash-generating ability of a company.

The objective of this study is to investigate the usefulness of current accounting data such as earnings, cash flow and accruals\(^1\) in explaining future cash flow for Hong Kong listed companies, as disclosed under Hong Kong Accounting Standard (HKAS).

Future cash flows are considered a crucial input for financial valuation models; a major point of interest is whether past values of earnings which

\(^1\) The term “accruals” refers to adjustment from operation cash flow to earnings, e.g., change in accounts receivable, rather than adjustments from cash to net worth, e.g., which we refer to as balance sheets (Barth et al. 2001).
include accruals or past values of cash flows provide a superior explanatory
ability with respect to future cash flow. Financial Accounting Standard Board
(FASB) stated that information about enterprise earnings and its components
measured by accrual accounting generally provides a better indication of
enterprise performance than information about current cash receipts and
payments. (SFAC No.1 (1978), para.44) Thus, it asserts that current earnings
data generally provide superior insight into future cash flow than do current
cash flow data. However, many researches are done related to this topic in
recent decades. Some support the FASB, but some do not. It is debatable
whether current earnings is a better predictor of future cash flows than is
current cash flow.

This study uses the models developed by Barth et al. (2001) and modified
by Al-Attar and Hussain (2004) to explain future cash flow occurring
one-year-ahead. At first, this study examines and compares the abilities of
current earning and current cash flow to predict future cash flow. Secondly,
disaggregating earnings into cash flow and aggregated accruals as well as
further disaggregating accruals into five major components to see whether its
provide incremental information with respect to explaining future cash flow.
The five major components are change in accounts receivable, change in
inventory, change in accounts payable, depreciation and amortization, and other accruals\(^2\). Finally, the study tests whether there are informational gains provided by adding short term, long term, and both short term and long term accrual components to the model which already contains accruals data implicitly in the form of earnings. Short term accrual components included change in accounts receivable, change in inventory and change in accounts payable. Long term accruals component included depreciation and amortization.

\(^2\) Other accruals is the residual value of the aggregated accruals minus the four major accrual components.
2. LITERATURE REVIEW

Prior researches on cash flow prediction have concentrated on the usefulness of accrual earnings measures and cash flow measures as predictors of future cash flow. The results of prior research on this topic are mixed.

Greenberg et al. (1986) investigated the models containing only current earnings and only current cash flow with the horizons period of one to five years and use multiple lag periods of two to three years to predict future cash flow. Their findings show that the majority of companies\(^3\) indicate current earnings is a better predictor of future cash flow than current cash flow. Later, Lorek and Willinger (1996) and Dechow et al. (1998) find the same result.

In contrast, Bowen et al. (1986) compared the abilities of earnings and cash flow to predict one and two-year-ahead cash flow. They concluded that earnings does not provide a better prediction of future cash flows than past cash flows. This result is further supported by Al-Attar and Hussain (2004). Furthermore, Finger (1994) reported that cash flow is a better predictor in shorter horizons (i.e. one to two lags), but for longer horizons (i.e. four lags), both earnings and cash flow perform equally well in cash flow prediction. They

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\(^3\) About 60\% of 157 sample companies
also found that adding earnings data to a model already containing cash flow data did not lead to notable improvements in predictive ability.

Dechow et al. (1998) modeled cash flow and the accrual process related to accounts receivable, accounts payable, and inventory to derive the prediction that current earnings is the best predictor of future cash flow. They reported that the firm-specific variation in cash flow forecast errors based on aggregate earnings is significantly lower than that based on cash flow. They also reported that in firm-specific regression of future cash flow on current aggregate earnings and cash flow, both have incremental explanatory power.

However, Barth et al. (2001) stated that Dechow et al. (1998) ignored the effect on cash flow and cash payments related to the new levels of cost of goods sold and inventory arising from the sales shocks. They suggested neither current earnings nor current cash flow is an unbiased estimator for future cash flows. They reworked the model to account for their criticisms.

From extending the analysis of the model of Dechow et al. (1998), they revealed that various accrual components of earnings capture different information not only about delayed cash flows related to past transactions, but also about expected future cash flows related to management’s expected future operating and investing activities. Barth et al. (2001) tried to investigate
disaggregating earnings into cash flow and the major component of accruals in relation to predict future cash flow occurring one-year-ahead, or more. The result shows that disaggregating earnings into cash flow and the major accrual components have substantially more predictive ability for future cash flow than seven lags of aggregate earnings. The finding is supported by the later research, Al-Attar and Hussain (2004). Barth et al. (2001) also proved that increase in explanatory power is not attributable solely to the number of explanatory variables.

Based on the cash flow prediction model of Barth et al. (2001), Al-Attar and Hussain (2004) modified the model to re-examine the explanatory power of variables (such as earnings, cash flow, accruals) with regarding to explain future cash flow. Consistent with the result of Barth et al. (2001), disaggregated earnings shows the ability to predict future cash flow is better than aggregate earnings. Furthermore, a related question is raised:” whether there are informational gains to adding accruals data to a model which already contains accruals data implicitly in the form of earnings”. So they extended the model to test it. The finding shows adding short term, long term and both accrual components to the model generate higher explanatory power than the model with aggregate earnings only.
Jussi Nikkinen and Petri Sahlström (2004) extended the cash flow prediction model of Barth et al. (2001), which disaggregating earnings into cash flow and the components of accruals with the year and country effects, to examine the impact of accounting environment on cash flow prediction. The result performs well in countries where the accruals are used mainly to correct cash flow to better reflect current profitability of the firm, i.e., in countries with high information content of accruals. It implied that the cash flow prediction model by Barth et al. (2001) can be used in different kinds of accounting environments.
3. STATEMENT OF HYPOTHESES

H1: Current cash flow is better predictor of future cash flow than current earnings.

Barth et al. (2001) revealed that neither current aggregate earnings nor current cash flow is an unbiased predictor of future cash flow. In the studies of Al-attar and Hussain (2004) indicated that the model containing only current cash flow has superior explanatory power than a model containing only current earnings. Based on their result, I predict current cash flow provides superior explanatory power than current earnings.

H2: Disaggregating earnings provides incremental information in predicting future cash flow than aggregate earnings.

Since the analysis of Barth et al. (2001) reveals that various accruals components of earnings capture different information not only about delayed cash flows related to past transactions, but also about expected future cash flows related to management’s expected future operating and investing activity. Based on their analysis, I predict disaggregating earnings into cash flow and accruals components enhance the predictive ability than aggregate earnings.
H3: Adding accruals data to the model which already contains accruals data implicitly in the form of earnings provides incremental information in predicting future cash flow.

Based on the finding of Al-attar and Hussain (2004), I predict adding accruals data to the model already contains accruals data implicitly in the form of earnings has superior explanatory power than aggregate earnings, in relation to predict future cash flow.

Using the model of the accruals process developed by Barth et al. (2001), it provides insights into the role of accruals in predicting future cash flow; following is the pre-experimental signs based on the theoretical analysis provided by them:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>EARN</td>
<td>+</td>
</tr>
<tr>
<td>CF&lt;sub&gt;t&lt;/sub&gt;</td>
<td>+</td>
</tr>
<tr>
<td>ACCRUALS</td>
<td>+/-</td>
</tr>
<tr>
<td>∆AR</td>
<td>+</td>
</tr>
<tr>
<td>∆INV</td>
<td>+</td>
</tr>
<tr>
<td>∆AP</td>
<td>-</td>
</tr>
<tr>
<td>DEPR</td>
<td>+</td>
</tr>
<tr>
<td>OTHER</td>
<td>+/-</td>
</tr>
</tbody>
</table>

The sign of earnings (EARN) and current cash flow (CF<sub>t</sub>) are positive because assume the operating environment is constant, earnings performance and cash flow in next year is similar with current year. Thus, future cash flow
will increase if earnings is increase. The sign of aggregated accruals (ACCRUALS) is undetermined because aggregated accruals is affected by the components of accrual. The sign of accrual component will be discussed in next paragraph.

The sign of change in account receivable (ΔAR) is positive because increase in current period receivables leads to defer the collection to next period. The sign of change in inventory (ΔINV) is positive because increase in inventory leads to decrease in the inventory requirement in next period. Thus, the cash paid to purchase inventory decrease. The sign of change in accounts payable (ΔAP) is positive because increase in current period payables leads to defer the payment to next period. The sign of depreciation and amortization (DEPR) is positive because investment in fixed assets generates operating cash flow because it is a non-cash items, it should be deducted from operating activities. The sign of other accruals (OTHER) is undetermined because it only a residual value of aggregated accruals minus the four major accrual components.
4 METHODOLOGY

4.1 Data Collection

This study focuses on future cash flow occurring one-year-ahead for Hong Kong Listed Companies using data disclosed under Hong Kong Accounting Standard. The data is collected from the company annual reports announced on http://www.hkex.com.hk and http://www.irasia.com. Total 100 listed companies are randomly selected from industries of Industrial Goods, Service, Properties and Construction, Information Technology and Conglomerates. The data is either extracted directly or calculated by using the available data from income statement, balance sheet and cash flow statement. The sample consists of the data between the year 2002 and 2004 and which maintained either December 31st or March 31st accounting year-ends throughout the sample period. The data from year 2002/03 is set as current year, t. Hence, the data from year 2003/04 is said to be one-year-ahead, t+1. After the raw data is grouped and organized, it transfers to SPSS for statistical analysis.

4 For the company list, please refer to Appendix.
5 Service included the industry sector of retailing, transportation and telecommunication.
6 Classification of industry is according to the Hang Seng Stock Classification System introduced by HSI Service Limited (a wholly-owned subsidiary of Hang Seng Bank). The system divided the listed companies into nine categories: Oil and Resources, Industrial Goods, Consumer Goods, Services, Utilities, Financials, Properties and Construction, Information Technology and Conglomerates. For more details, please visit http://www.hsi.com.hk.
4.2 Equation

The equations used in this study are based on the cash flow prediction models developed by Barth et al. (2001) and Al-Attar and Hussain (2004) to investigate the ability to explain future cash flow.

The first set of tests uses the following equations to test the abilities of current aggregate earnings and current cash flow to predict future cash flow (H1):

\[ CF_{i,t+1} = \beta + \beta_E \text{EARN}_{i,t} + u_{i,t} \quad (1) \]

\[ CF_{i,t+1} = \beta + \beta_{CF} \text{CF}_{i,t} + u_{i,t} \quad (2) \]

The second set of tests uses the following equations to see whether disaggregation of earnings provides informational gains with respect to explaining future cash flow (H2):

\[ CF_{i,t+1} = \beta + \beta_{CF} \text{CF}_{i,t} + \beta_{ACC} \text{ACCRUALS}_{i,t} + u_{i,t} \quad (3) \]

\[ CF_{i,t+1} = \beta + \beta_{CF} \text{CF}_{i,t} + \beta_{AR} \Delta \text{AR}_{i,t} + \beta_{INV} \Delta \text{INV}_{i,t} + \beta_{AP} \Delta \text{AP}_{i,t} + \beta_{DPR} \Delta \text{DEPR}_{i,t} \]
\[ + \beta_{OTHER} \Delta \text{OTHER}_{i,t} + u_{i,t} \quad (4) \]

In equation 3, earnings is disaggregated into cash flow and aggregated accruals; in equation 4, aggregated accruals is further disaggregated into five major components.

The third set of test uses the following equations to see whether there is an informational gain by adding accruals data to a model which already
contains accruals data implicitly in the form of earnings in related to predict future cash flow (H3):

\[ CF_{i,t+1} = \beta + \beta_E EARN_{i,t} + \beta_{AR} \Delta AR_{i,t} + \beta_{INV} \Delta INV_{i,t} + \beta_{AP} \Delta AP_{i,t} + u_{i,t} \quad \ldots \quad (5) \]

\[ CF_{i,t+1} = \beta + \beta_E EARN_{i,t} + \beta_{DEPR} \Delta DEPR_{i,t} + u_{i,t} \quad \ldots \quad (6) \]

\[ CF_{i,t+1} = \beta + \beta_E EARN_{i,t} + \beta_{AR} \Delta AR_{i,t} + \beta_{INV} \Delta INV_{i,t} + \beta_{AP} \Delta AP_{i,t} + \beta_{DEPR} \Delta DEPR_{i,t} + u_{i,t} \quad \ldots \quad (7) \]

In equation 5, short term accruals are added; in equation 6, only a major long term accruals is added; in equation 7, both short term and long term accruals are added.

where  \( CF \) = net cash flow from operating activities  
       \( t \) = time period  
       \( i \) = firm  
       \( EARN \) = earnings  
       \( ACCRUALS \) = aggregated accruals  
       \( \Delta AR \) = change in accounts receivable  
       \( \Delta AP \) = change in accounts payable  
       \( \Delta INV \) = change in inventory  
       \( DEPR \) = depreciation and amortization  
       \( OTHER \) = other accruals

The variables are extracted or calculated by the following formulas:

\[ CF \] is net cash flow from operating activities; \( EARN \) defined as profit after tax and adjusted for extraordinary items and discontinued operations; \( \Delta AR \) included change in trade

\[ \text{In the model of Barth et al. (2001), depreciation and amortization expenses are separated into two variables. This study combined depreciation and amortization expenses in one variable because only less than a half of the sample companies report amortization.} \]

\[ \text{Extraordinary items and discontinued operation items are excluded because least attention should be given when predicting and entity’s future performance (HKAS1).} \]
receivable, deposit, amount due from related parties and other receivable; 
Change in accounts payable (ΔAP) included change in trade payable, accrued 
expense, customer deposit, amount due to related parties and other payable; 
Change in inventory (ΔINV) included change in raw materials, work-in-process, 
finished goods and properties hold for sales; DEPR equals depreciation 
expense and amortization expense.

The following variables are created by the following formulas:

Aggregated accruals (ACCRUALS) defined as EARN – CF or ΔAR 
+ΔINV – ΔAP – DEPR + OTHER; other accruals (OTHER) defined as EARN – 
CF – ΔAR – ΔINV + ΔAP + DEPR.

Following Barth et al. (2001), all variables are deflated by average total 
assets\(^9\).

\(^9\) It is calculated by the average of the beginning and end of year book value of total assets.
4.3 Test Method

This study consists of three test methods, following Barth et al. (2001), to predict future cash flow.

The first test method is test of the descriptive statistics of all the variables. The test of descriptive statistics reports mean, median and standard derivation of the variables. Mean shows the average value of the variables. Median is the middle of the distribution and it will not be affected by the variables with extreme value. Standard derivation shows the dispersion around the mean of the variables. Large standard derivation means the variation is great among each variable.

The second test method is Pearson Correlation Test. It measures how variables are correlated. Positive and significantly correlated among two variables mean if one variable increases, the other variable increases too.

The third test method is regression analysis. This study contains totally seven regression equations. The regression analysis is used to examine the relationship between the dependent variable (future cash flow) and independent variable(s) (including current aggregate earnings, current cash flow, aggregated accruals, change in accounts receivable, change in inventory, change in accounts payable, depreciation and amortization, and other accruals).
as well as the significance. Coefficient indicates the slope of the independent variables. T-statistic indicates the significance of the variables. The higher value of t-statistic means the more significant of the variables. Throughout this study, the significant level is set at five percent. Adjusted R-square indicates overall explanatory power of all independent variable(s) in each equation to predict future cash flow. The study mainly focuses on comparing the adjusted R-square among the model in order to conclude the superiority in predicting future cash flow.
5 FINDINGS AND ANALYSIS

5.1 Descriptive Statistics

Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF_{t+1}</td>
<td>0.050</td>
<td>0.046</td>
<td>0.097</td>
</tr>
<tr>
<td>EARN_t</td>
<td>0.021</td>
<td>0.039</td>
<td>0.157</td>
</tr>
<tr>
<td>CF_t</td>
<td>0.032</td>
<td>0.042</td>
<td>0.120</td>
</tr>
<tr>
<td>ACCRUALS_t</td>
<td>-0.010</td>
<td>-0.005</td>
<td>0.143</td>
</tr>
<tr>
<td>\Delta AR_t</td>
<td>0.019</td>
<td>0.004</td>
<td>0.114</td>
</tr>
<tr>
<td>\Delta INV_t</td>
<td>0.005</td>
<td>0.001</td>
<td>0.060</td>
</tr>
<tr>
<td>\Delta AP_t</td>
<td>0.010</td>
<td>0.004</td>
<td>0.058</td>
</tr>
<tr>
<td>DEPR_t</td>
<td>0.030</td>
<td>0.022</td>
<td>0.028</td>
</tr>
<tr>
<td>OTHER_t</td>
<td>-0.046</td>
<td>-0.037</td>
<td>0.180</td>
</tr>
</tbody>
</table>

Table 1 presents descriptive statistic for the variables. Consistent with prior result, e.g. Barth et al. (2001), it reveals that the means and median of EARN and CF are positive and those of aggregated accruals, ACCRUALS = EARN - CF are negative. The reason for the negative ACCRUALS is that EARN includes depreciation and amortization but CF excludes investments to depreciable and amortizable assets. The means of \Delta AR, \Delta INV, \Delta AP and DEPR are positive while OTHER is negative.

The standard derivation of earnings is greater than cash flow, that means earnings is more volatile than cash flow. Also, consistent with Barth et al. (2001), current accruals, i.e. \Delta AR, \Delta INV and \Delta AP, are smaller in magnitude and the standard derivation are greater than DEPR, long-term accrual.
Table 2 presents the correlations among the variables. Consistent with the assumption of Dechow et al. (1998), Earnings equals cash flow plus accruals. EARN is significantly positive correlated with CF and ACC while CF and ACC are significantly negatively correlated. Not all the accrual components are correlated with EARN and CF as well as correlated with each other.

Also, consistent with the assumption of current cash flow equals to EARN - \( \Delta AR - \Delta INV + \Delta AP + DEPR + OTHER \), change in accounts receivable and change in inventory are negatively correlated to current cash flow while change in accounts payable, depreciation and amortization and other accruals are positively related to current cash flow. Change in accounts receivable and other accruals indicate significant results.
The correlations between accrual components and cash flow in current year and future year are different. Change in inventory become positive and other accruals become negative. Change in accounts receivable, change in accounts payable and depreciation and amortization remain the same with the current cash flow. Change in accounts receivable and depreciation and amortization indicates significant result.
5.3 Current Earnings verse Current Cash Flow

Table 3: Regression Summary Statistics of Future Cash Flow on Current Aggregate Earnings

\[ CF_{i,t+1} = \beta_0 + \beta_1 EARN_{i,t} + u_{i,t} \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prediction</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>0.046</td>
<td>4.893*</td>
</tr>
<tr>
<td>EARN_{i,t}</td>
<td>+</td>
<td>0.199</td>
<td>3.356*</td>
</tr>
<tr>
<td>Adjusted R^2</td>
<td></td>
<td>0.103</td>
<td></td>
</tr>
</tbody>
</table>

* Indicates that a t-statistic is significantly different from zero at the 0.05 level

Table 4: Regression Summary Statistics of Future Cash Flow on Current Cash Flow

\[ CF_{i,t+1} = \beta_0 + \beta_2 CF_{i,t} + u_{i,t} \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prediction</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>0.036</td>
<td>4.111*</td>
</tr>
<tr>
<td>OCF_{i,t}</td>
<td>+</td>
<td>0.418</td>
<td>5.875*</td>
</tr>
<tr>
<td>Adjusted R^2</td>
<td></td>
<td>0.260</td>
<td></td>
</tr>
</tbody>
</table>

* Indicates that a t-statistic is significantly different from zero at the 0.05 level

Table 3 and 4 show the explanatory powers of current earnings and current cash flow in respect of predicting future cash flow. The results show that both current aggregate earnings and current cash flow are positive and significant in predicting future cash flow. The explanatory power of current earnings and current cash flow are 10.3% and 26% respectively. Current operating cash flow is 2.5 times higher than current aggregate earnings. Supporting H1, it indicates current cash flow has superior predictive ability for future cash flow than current aggregate earnings.
5.4 Gains to disaggregated earnings

Table 5: Regression Summary Statistics of Future Cash Flow on Current Cash Flow and Current Aggregated Accruals

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prediction</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>0.037</td>
<td>4.223*</td>
</tr>
<tr>
<td>CF$_t$</td>
<td>+</td>
<td>0.427</td>
<td>5.755*</td>
</tr>
<tr>
<td>ACCRUALS$_t$</td>
<td>+/-</td>
<td>0.060</td>
<td>0.962</td>
</tr>
</tbody>
</table>

Adjusted R$^2$ 0.243

* Indicates that a t-statistic is significantly different from zero at the 0.05 level

Table 6: Regression Summary statistics of Future Cash Flow on Current Cash Flow and Accrual Components

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prediction</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>0.012</td>
<td>0.983</td>
</tr>
<tr>
<td>CF$_t$</td>
<td>+</td>
<td>0.400</td>
<td>5.298*</td>
</tr>
<tr>
<td>∆AR$_t$</td>
<td>+</td>
<td>-0.186</td>
<td>-1.950*</td>
</tr>
<tr>
<td>∆INV$_t$</td>
<td>+</td>
<td>0.056</td>
<td>0.268</td>
</tr>
<tr>
<td>∆AP$_t$</td>
<td>-</td>
<td>0.115</td>
<td>0.505</td>
</tr>
<tr>
<td>DEPR$_t$</td>
<td>+</td>
<td>1.141</td>
<td>3.506*</td>
</tr>
<tr>
<td>OTHER$_t$</td>
<td>+/-</td>
<td>0.152</td>
<td>2.105*</td>
</tr>
</tbody>
</table>

Adjusted R$^2$ 0.336

* Indicates that a t-statistic is significantly different from zero at the 0.05 level

Table 5 and 6 reveal whether there are informational gains to disaggregate earnings in predicting future cash flow. H2 is supported by comparing the results of above two tables with Table 3. There is clear evidence of the explanatory gains to disaggregate earnings in respect to predict future cash flow. Table 5 reveals disaggregating earnings into cash flow and
aggregated accruals leads to increase in the adjusted R-square from 10.3% to 24.3%. Table 6 indicates that disaggregation of accruals leads to further increase in the adjusted R-square from 24.3% to 33.6%.

Comparing the result with Table 4, a slight decrease in adjusted R-square from 26% to 24.3% and insignificant coefficient of aggregated accruals show that adding the aggregated accruals in equation 2 is not contributable in predicting future cash flow. However, with further disaggregating the accruals, the adjusted R-square increases from 26% to 33.6%. Thus, it enhances the predictive ability.

The above results indicate that there is a greater superiority of using current cash flow in conjunction with accruals data to forecast future cash flow.

The slope of current cash flow remains positive and significant for both equations. However, not all the accrual components are significant and consistent with the estimated sign of coefficients. Only depreciation and amortization, the long term accruals, is positively consistent with the prediction of the sign and significant. For the short-term accruals, change in account receivable is contradictory to the prediction of the sign; change in inventory is insignificant; change in accounts payable is insignificant and inconsistent with the prediction of sign.
### 5.5 Gains to additional accruals data

Table 7: Regression Summary statistics of Future Cash Flow on Current Earnings and Short Term Accruals

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prediction</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>+</td>
<td>0.049</td>
<td>5.522*</td>
</tr>
<tr>
<td>(EARN_i)</td>
<td>+</td>
<td>0.223</td>
<td>3.936*</td>
</tr>
<tr>
<td>(\Delta AR_i)</td>
<td>+</td>
<td>-0.340</td>
<td>-4.170*</td>
</tr>
<tr>
<td>(\Delta INV_i)</td>
<td>+</td>
<td>0.028</td>
<td>0.165</td>
</tr>
<tr>
<td>(\Delta AP_i)</td>
<td>-</td>
<td>0.251</td>
<td>1.365</td>
</tr>
</tbody>
</table>

\(\text{Adjusted } R^2\) 0.213

* Indicates that a t-statistic is significantly different from zero at the 0.05 level

Table 8: Regression Summary statistics of Future Cash Flow on Current Earnings and Long Term Accruals

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prediction</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>+</td>
<td>0.011</td>
<td>0.800</td>
</tr>
<tr>
<td>(EARN_i)</td>
<td>+</td>
<td>0.250</td>
<td>4.309*</td>
</tr>
<tr>
<td>(\Delta DEPR_i)</td>
<td>+</td>
<td>1.131</td>
<td>3.490*</td>
</tr>
</tbody>
</table>

\(\text{Adjusted } R^2\) 0.187

* Indicates that a t-statistic is significantly different from zero at the 0.05 level

Table 9: Regression Summary statistics of Future Cash Flow on Current Earnings and Both Short Term and Long Term Accruals

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prediction</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>+</td>
<td>0.016</td>
<td>1.256</td>
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<tr>
<td>(EARN_i)</td>
<td>+</td>
<td>0.271</td>
<td>4.923*</td>
</tr>
<tr>
<td>(\Delta AR_i)</td>
<td>+</td>
<td>-0.329</td>
<td>-4.281*</td>
</tr>
<tr>
<td>(\Delta INV_i)</td>
<td>+</td>
<td>0.055</td>
<td>0.337</td>
</tr>
<tr>
<td>(\Delta AP_i)</td>
<td>-</td>
<td>0.175</td>
<td>1.001</td>
</tr>
<tr>
<td>(\Delta DEPR_i)</td>
<td>+</td>
<td>1.092</td>
<td>3.610*</td>
</tr>
</tbody>
</table>

\(\text{Adjusted } R^2\) 0.301

* Indicates that a t-statistic is significantly different from zero at the 0.05 level
Table 7, 8 and 9 indicate whether there are informational gains to inclusion of short term accruals and long term accruals to the model which already contains accruals data implicitly in the form of earnings. The results support H3. All the above tables reveal that the explanatory power of adding accruals data to model 1 have increased with regard to predict future cash flow.

Table 7 shows adding short term accrual components leads to increase in the adjusted R-square from 10.3% to 21.3%. Table 8 indicates addition of depreciation leads to an increase in the adjusted R-square to 18.7%. However, contradicted with Al-Attar and Hussain’s (2004) result, the increase in adding short term data is larger than adding long term data. Table 9 reveals that adding both short term and long term accrual components leads to the highest explanatory power (30.1%) for other two earnings-based models.

However, the explanatory powers of earnings-based model with either short term or long term accruals are not as superior as the model consists of cash flow only where they are 4.7% and 7.3% lower than cash flow data only respectively.

The slope of earnings remains positive and significant for all three models. However, same as the result of Table 6, not all the accrual components are significant and consistent with the estimated sign of coefficients in predicting
future cash flow. The coefficient sign of the accrual components remains the same with the result of Table 6. Only depreciation and amortization, the long term accruals, is positively consistent with the prediction of the sign and significant. For the short-term accruals, change in account receivable is contradict to the prediction of the sign; change in inventory is insignificant and change in accounts payable is insignificant and inconsistent with the prediction of sign.

All the above results indicate that there is a greater superiority of using current earnings in conjunction with accruals data to forecast future cash flow.
6. LIMITATION

There are several limitations on above study. Firstly, the sample size is too small. In 2004, there are nearly 1,100 listed companies in Hong Kong, including both main board and growth enterprise market. The sample consists of less than 10% of Hong Kong listed companies, the coverage is relatively small. Increase of sample size will brings a positive impact on the representative power of the results.

Secondly, the period time tested is too short. Test of longer horizons may find different results. Finger (1994) has tested the abilities of earning and cash flow to predict future cash flow, the result is various from different horizons.

Finally, this study does not cover all industries in Hong Kong. The sample consists of only five out of nine industries. The results may be different if the sample is combined with different industries. It is because the magnitude and the composition of variable are varying from industry. For example, variation of change in inventories for property and construction industry is great since selling or construction of properties, the ordinary operating activities, leads to a significant change in relative value of their inventories. It may deteriorate the significance and explanatory power for the equation included short term accruals.
7. CONCLUSION

Through a number of different analyses, this study provides evidence on the explanatory power of current accounting data that is earnings, cash flow and accruals, with respect to future cash flow. The above equations is based on the models developed by Barth et al. (2001) and Al-Attar and Hussain (2004).

The findings indicate that current cash flow appears to explain future cash flow better than do current earnings. Consistent with Barth et al. (2001) and Al-Attar and Hussain (2004), with disaggregating earnings into cash flow and aggregated accruals, the predictive ability significantly increases relative to aggregate earnings. Disaggregating earnings into cash flow and accrual components further enhances the predictive ability of aggregate earnings. It generates greatest explanatory power.

Also, adding more accrual components to the model contain only cash flow as the independent variable, the explanatory power enhances too. This supports the view of Hong Kong Accounting Standard (HKAS7, para 13), informational about specific components of historical operating cash flows is useful, in conjunction with other information, in forecasting future operating cash flows.
Finally, the results show that either adding short term accruals or long term accruals and both to the earnings-based model lead to increase the explanatory power with regard to forecast future cash flow in compare with the model with aggregate earnings. However, contradict with Al-Attar and Hussain (2004), this is a larger increase in short term accruals than occurred from the addition of the long term accruals.

In conclusion, either only earnings or only cash flow is insufficient to fully understand future cash flows. In order to enhance the predictive ability, more components should be added.
REFERENCE


Hong Kong Institute of Certified Public Accountants. 2005. 
*Hong Kong Accounting Standard (HKAS) 1: Presentation of Financial Statements*

*Hong Kong Accounting Standard (HKAS) 7: Cash Flow Statement.*


APPENDIX

List of sample companies

<table>
<thead>
<tr>
<th>CODE</th>
<th>COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Conglomerates</strong></td>
</tr>
<tr>
<td>13</td>
<td>Hutchison Whampoa Limited</td>
</tr>
<tr>
<td>19</td>
<td>Swire Pacific Limited (A Share)</td>
</tr>
<tr>
<td>73</td>
<td>Alpha General (Holdings) Limited</td>
</tr>
<tr>
<td>84</td>
<td>Stelux Holdings International Limited</td>
</tr>
<tr>
<td>113</td>
<td>Dickson Concept Limited</td>
</tr>
<tr>
<td>152</td>
<td>Shenzhen International Holdings Limited</td>
</tr>
<tr>
<td>171</td>
<td>Silver Grant International Industries Limited</td>
</tr>
<tr>
<td>174</td>
<td>Kee Shing (Holdings) Limited</td>
</tr>
<tr>
<td>199</td>
<td>Cheung Tai Hong Holdings Limited</td>
</tr>
<tr>
<td>238</td>
<td>Lei Shing Hong Limited</td>
</tr>
<tr>
<td>279</td>
<td>Hansom Eastern (Holdings) Limited</td>
</tr>
<tr>
<td>291</td>
<td>China Resources Enterprise, Limited</td>
</tr>
<tr>
<td>308</td>
<td>China Travel International Investment Hong Kong Limited</td>
</tr>
<tr>
<td>341</td>
<td>Café de Coral Holdings Limited</td>
</tr>
<tr>
<td>363</td>
<td>Shanghai Industrial Holdings Limited</td>
</tr>
<tr>
<td>595</td>
<td>AV Concept Holdings Limited</td>
</tr>
<tr>
<td>635</td>
<td>Playmates Holdings Limited</td>
</tr>
<tr>
<td>677</td>
<td>Golden Resource Development International Limited</td>
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<tr>
<td>1064</td>
<td>Zhong Hau International Holdings Limited</td>
</tr>
<tr>
<td>1168</td>
<td>Sinolink Worldwide Holdings Limited</td>
</tr>
<tr>
<td></td>
<td><strong>Industrial Goods</strong></td>
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<tr>
<td>40</td>
<td>Gold Peak Industries (Holdings) Limited</td>
</tr>
<tr>
<td>44</td>
<td>Hong Kong Aircraft engineering Company Limited</td>
</tr>
<tr>
<td>114</td>
<td>Herald Holdings Limited</td>
</tr>
<tr>
<td>203</td>
<td>Denway Motors Limited</td>
</tr>
<tr>
<td>255</td>
<td>Lung Kee (Bermuda) Holdings Limited</td>
</tr>
<tr>
<td>304</td>
<td>Peace Mark (Holdings) Limited</td>
</tr>
<tr>
<td>321</td>
<td>Texwinca Holdings Limited</td>
</tr>
<tr>
<td>328</td>
<td>Alco Holdings Limited</td>
</tr>
<tr>
<td>332</td>
<td>Nagi Lik Industrial Holdings Limited</td>
</tr>
<tr>
<td>334</td>
<td>Provie International Holdings Limited</td>
</tr>
</tbody>
</table>
387  Leepor (Holdings) Limited
403  Starlite Holdings Limited
406  Yau Lee Holdings Limited
418  Founder Holdings Limited
439  Climax International Limited
494  Li & Fung Limited
518  Tungtex (Holdings) Company Limited
601  Group Sense (International) Limited
622  Enervhina Holdings Limited
669  Techtronic Industries Company Limited
725  Perennial International Limited
978  Tonic Industries Holdings Limited
1225  Lerado Group (Holding) Company Limited
1229  Artfield Group Limited
8132  Panva Gas Holdings Limited

Property and Construction
14  Hysan Development Company Limited
34  Kowloon Development Company Limited
41  Great Eagle Holdings Limited
89  Tai Sang Land Development
127  Chinese Estate Holdings Limited
129  Asia Standard International Limited
163  Emperor International Holdings Limited
164  Premium Land Limited
190  Hong Kong Construction (Holdings) Limited
237  Safety Godown Company, Limited
355  Century City International Holdings Limited
373  Allied Group Limited
650  Shun Cheong Holdings Limited
683  Kerry Properties Limited
754  Hopson Development Holdings Limited
983  Shui On Construction and Materials Limited
1036  Winsor Properties Holdings Limited
1109  China Resources Land Limited

Service
62  The Kowloon Motor Bus Holdings Limited
MTR Corporation Limited
Century Legend (Holdings) Limited
Moiselle International Holdings Limited
China Merchants Holdings (International) Company Limited
Beijing Development (Hong Kong) Limited
IDT International Limited
Sa Sa International Holdings Limited
Cathay Pacific Airways Limited
New World TMT Limited
Vitasoy International Holdings Limited
Four Seas Mercantile Holdings Limited
YGM Trading Limited
Oriental Watch Holdings Limited
Goldlion Holdings Limited
Chu Kong Shipping Development Company Limited
Luk Fuk Holdings Limited
Bossini International Holdings Limited
Quality Healthcare Asia Limited
Joyce Boutique Holdings Limited
Wo Kee Hong (Holdings) Limited
Le Saunda Holdings Limited
Elegance International Limited
Hengan International Group Company Limited

Information Technology
ABC Communication Limited
Far East Technology International Limited
Fortune Telecom Holdings Limited
New World Cyberbase Limited
Stone Group Holdings Limited
DVN (Holdings) Limited
EC-Founder (Holdings) Company Limited
Global Bio-Chem Technology Group Company Limited
Prosten Technology Holdings Limited
Excel Technology International Holdings Limited
Proactive Technology Holdings Limited
ITE (Holdings) Limited
Thiz Technology Group Limited