CHAPTER 4

EMPIRICAL RESULTS

This study examines earnings management through related party transactions by investigating the relationship between the related party transactions and the log of discretionary accruals.

This section reports descriptive statistics and multiple regression results from four models. The net value of all related party transactions collected from notes to financial statements is explored in model (1). This amount is then classified by activities, these are operating, investing and financing, in model (2). After that, model (3) separates the inflow and outflow from each activity. Finally, all types of related party transactions in each activity are investigated in model (4).

These models investigate three groups of samples. These are full sample, positive discretionary accruals sample and negative discretionary accruals sample.

Removal of Outliers

The sample sizes of each model are not equal due to the removal of influential outliers from the sample for related party transactions examination. Influential outliers are detected by *Cook's Distance* (D_i). A rule of thumb is to identify observations with a value of D_i equal to 1.0 or greater, although the threshold of 4/(n-p-1), where n is the number of observations and p is the number of independent variables, is suggested as a more conservative measure (Hairs, Anderson, Tatham, and Black, 1998).

If the criterion is a value of D_i equal to 1.0 or greater, only one influential outlier is found in model (4) with the negative discretionary accruals sample. No influential outliers are found in models (1) to (3) with full, positive and negative discretionary accruals samples. In addition, no influential outliers are found in model (4) with full and positive discretionary accruals samples. From this criterion, the relationship between the log of discretionary accruals and the related party transactions is also significant,[1] but at a lower level of confidence than the results from the first criterion of D_i higher than 4/(n-p-1).

Therefore, the results based on a more conservative measure, a value of D_i higher than 4/(n-p-1), are chosen to report in this study.

Linear Regression Assumptions

The assessment of linear regression assumptions shows that all twelve data sets in this study (four models with three sample groups) do not violate the linear regression assumptions. This is explained in (1) to (5) below.

(1) *Variance Inflation Factors* (VIF) are lower than 5 indicating no multicollinearity problem among variables.

(2) *Darbin-Watson* coefficient value is between 1.5 and 2.5 and run tests confirm that an autocorrelation problem does not exist.

(3) *White's tests* are investigated to ensure there are no heteroscadasticity problems.

[1] The results are provided in Appendix C.

(4) Based on the *Central Limit Theorem*, the distribution of residuals in a large sample size is normal. A general rule accepts a sample size of 30 or more as large (Dielman, 2005). The lowest sample size of this study is 174, in model (4) with negative discretionary accruals sample, which far larger than 30, so the assumption of normal distribution of residuals is justified.

(5) The mean value of residuals is zero.

4.1 Model 1: Net Value of Related Party Transactions

This section reports descriptive statistics and multiple regression results of the association of log of discretionary accruals and the net value of all related party transactions collected from the notes to financial statements of listed companies.

4.1.1 Descriptive Statistics

The descriptive statistics of model (1) are reported in Table 4.1. For all samples, the mean value of discretionary accruals is -0.0009 and the average value of the net amount of related party transactions is 5.56% of the lagged total assets.

The mean value of discretionary accruals of both the positive and negative discretionary accruals samples is approximately the same. That is 0.071 in the positive discretionary accruals sample and -0.072 in the negative discretionary accruals sample. However, compared to the positive discretionary accruals sample, on average the negative discretionary accruals sample has a higher net value of all related party transactions. That is 7.8% compared to 4.7 % of the lagged total assets.

The average firm size, leverage and financial performance of the negative discretionary accruals sample are greater. However, the positive discretionary accruals sample has higher growth opportunity.

Table 4.1

Descriptive Statistics of Model 1

	Mean	Median	Standard Deviation
Panel A: Full Sample (N = 392)			
DAC	-0.0009	-0.0005	0.0989
NetRPT	0.0556	-0.0002	0.3328
TA	9.40	2.68	21.37
Leverage	0.43	0.44	0.21
ABS_TAC	0.08	0.06	0.07
Growth	12.94	10.64	26.96
Panel B: Positive Discretionary Accruals Sample (N = 201)			
DAC	0.071	0.047	0.075
NetRPT	0.047	-0.001	0.303
TA	8.25	2.94	15.45
Leverage	0.40	0.39	0.21
ABS_TAC	0.08	0.05	0.08
Growth	14.76	11.82	27.19
Panel C: Negative Discretionary Accruals Sample (N = 190)			
DAC	-0.072	-0.055	0.064
NetRPT	0.078	0.001	0.352
TA	10.21	2.39	23.85
Leverage	0.47	0.48	0.22
ABS_TAC	0.09	0.08	0.06
Growth	11.52	9.60	27.00

The variables are defined in Table 3.5.

4.1.2 Multiple Regression Results

Table 4.2 presents the multiple regression results of the association between the log of discretionary accruals and net value of related party transactions. Models with full samples, positive discretionary accruals samples and negative discretionary accruals samples have goodness of fit[2] with adjusted R^2 equal to 25.7%, 30.1%, and 24.6%, respectively. Their significance levels are at 0.01.

The result from the full sample shows that the coefficient of the net value of related party transactions is significant and positive at the significance level of 0.01. This is consistent with the hypothesis that discretionary accruals are positively associated with related party transactions. The result suggests that higher related party transactions are associated with greater earnings management.

When the samples are examined separately for positive and negative discretionary accruals, the result from the positive discretionary accruals sample is consistent with the full sample's result, whereas the result from the negative discretionary accruals sample is not.

Further analyses were conducted to examine the possible explanation for the insignificant results in the negative discretionary accruals sample. The un-tabulated

[2] The goodness of fit of the models is examined by adjusted R^2. Coefficient of determination (R^2) is the proportion of the variation in the dependent variables explained by the independent variables. R^2 is a statistic that measures the goodness of fit of the model. It provides information of how well the regression model fits the data. It can be range from 0 to 1.0. An R^2 of 1.0 indicates that the regression model perfectly fits the data. However, R^2 will increase as the increase of the number of independent variables in the model. This drawback leads to the alternative statistic to measure the goodness of fit of the model. Adjusted R^2 is the coefficient of determination adjusted for the number of independent variables in the regression model. Unlike R^2, adjusted R^2 may decrease if independent variables that are entered into the model do not add significantly to the model's fit. Comparison of adjusted R^2 with other studies is provided in Appendix D.

analyses show that the results are not dominated by the industry. Each of three sample sets has no significant differences in the distribution of samples by industry across the four models.

The coefficient of the financial performance measure is significant and positive at the significance level of 0.01. This is consistent with prior findings. These studies advocate controlling for the firm's financial performance in earnings management studies since it is significantly and positively associated with the level of discretionary accruals (Dechow et al., 1995; Bartov et al., 2001; Frankel et al., 2002; Klien, 2002; Barwhede et al., 2003; Haw et al., 2004).

In addition, the coefficient of the firm size is significant and positively associated with the level of the log of discretionary accruals at the significance level of 0.01 in the positive discretionary accruals sample, but at 0.05 in the full sample. This positive relationship is contrary to prior literatures but the coefficient is almost zero, implying the effect of firm size to the level of discretionary accruals is next to null.

Table 4.2

Multiple Regression of Log of Discretionary Accruals on

Net Value of Related Party Transactions

$$\text{Log DAC}_{it} = \alpha_0 + \boldsymbol{\alpha_1\, \text{NetRPT}_{it}} + \alpha_2\, \text{TA}_{it} + \alpha_3\, \text{Leverage}_{it} + \alpha_4\, \text{ABS\_TAC}_{it} + \alpha_5\, \text{Growth}_{it} + \alpha_6\, Y_{1it} + \alpha_7\, Y_{2it} + \varepsilon_{it}$$

	Full Sample (N = 392)			**Positive DAC Sample (N = 201)**			**Negative DAC Sample (N = 190)**		
	b	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**
Intercept	-1.493	-28.42	0.000	-1.558	-20.82	0.000	-1.576	-20.87	0.000
NetRPT	**0.160**	3.063	0.002	**0.320**	3.652	0.000	0.014	0.208	0.836
TA	**0.002**	2.227	0.027	**0.005**	3.171	0.002	0.001	0.530	0.597
Leverage	-0.111	-1.359	0.175	0.004	0.027	0.978	-0.069	-0.667	0.505
ABS_TAC	**2.565**	10.58	0.000	**2.470**	7.421	0.000	**2.934**	7.844	0.000
Growth	-0.001	-1.871	0.062	-0.001	-0.929	0.354	-0.001	-1.375	0.171
Y_1	-0.051	-1.163	0.246	-0.094	-1.408	0.161	0.053	0.919	0.360
Y_2	0.085	1.856	0.064	0.036	0.521	0.603	0.172	2.892	0.004
Adj. R^2	**25.7%**			**30.1%**			**24.6%**		
F-stat.		**20.328**	**0.000**		**13.299**	**0.000**		**9.822**	**0.000**

The variables are defined in Table 3.5.
b is the coefficient estimate.

4.2 Model 2: Activities of Related Party Transactions

This section shows descriptive statistics and multiple regression results of the association of the log of discretionary accruals and related party transactions classified by activities. These are operating, investing and financing activities.

4.2.1 Descriptive Statistics

The descriptive statistics of model (2) are presented in Table 4.3. The descriptive statistics indicate that the majority of related party transactions come from operating activities.

For all samples, the mean value of discretionary accruals is -0.0028. On average, the net values of related party transactions from operating activities, investing activities and financing activities are respectively 5.0%, -0.4% and 1.2% of lagged total assets.

For the positive discretionary accruals sample and the negative discretionary accruals sample, the average values of discretionary accruals are 0.07 and -0.08, respectively. From Table 4.1, on average, the negative discretionary accruals sample has a higher net value of related party transactions than the positive discretionary accruals sample. Table 4.3 shows that the net value of related party transactions from operating and financing activities of the negative discretionary accruals sample are also higher than that of the positive discretionary accruals sample.

The net amount of related party transactions from operating activities in the negative discretionary accruals sample is 6.7% of lagged total assets, compared to 2.9%

in the positive discretionary accruals sample. The net amount of related party transactions from investing activities is -0.68% of lagged total assets in the negative discretionary accruals sample and -0.32% in the positive discretionary accruals sample. The net amount of related party transactions from financing activities is 1.5% of lagged total assets in the negative discretionary accruals sample and 1% in the positive discretionary accruals sample.

On average, the growth opportunity is better in the positive discretionary accruals sample. However, the firm size of the negative discretionary accruals sample is bigger. The leverage and the financial performance of the negative discretionary accruals sample are also higher.

Table 4.3

Descriptive Statistics of Model 2

	Mean	Median	Standard Deviation
Panel A: Full Sample (N = 395)			
DAC	-0.0028	0.0041	0.1054
NetO	0.0508	0.0000	0.3253
NetI	-0.0037	0.0000	0.0364
NetF	0.0121	0.0005	0.0348
TA	9.28	2.68	21.29
Leverage	0.43	0.43	0.21
ABS_TAC	0.08	0.06	0.08
Growth	13.53	10.64	28.88
Panel B: Positive Discretionary Accruals Sample (N = 199)			
DAC	0.0712	0.0477	0.0757
NetO	0.0292	-0.0005	0.3079
NetI	-0.0032	0.0000	0.0270
NetF	0.0101	0.0003	0.0306
TA	8.25	2.94	15.53
Leverage	0.40	0.39	0.21
ABS_TAC	0.08	0.05	0.08
Growth	14.26	11.58	27.15
Panel C: Negative Discretionary Accruals Sample (N = 201)			
DAC	-0.0816	-0.0554	0.0831
NetO	0.0667	0.0000	0.3332
NetI	-0.0068	-0.0001	0.0502
NetF	0.0154	0.0011	0.0407
TA	9.77	2.42	23.21
Leverage	0.47	0.47	0.25
ABS_TAC	0.10	0.08	0.09
Growth	12.95	9.69	30.68

The variables are defined in Table 3.5.

4.2.2 Multiple Regression Results

Table 4.4 shows the multiple regression results of the association between the log of discretionary accruals and related party transactions classified as operating, investing and financing activities. The adjusted R^2 of models with full samples, positive discretionary accruals samples and negative discretionary accruals samples are 29.1%, 33.2% and 25.0% at the significance level of 0.01.

Results from the full sample show that the coefficient of the net amount of related party transactions from every activity is significant. The log of the discretionary accruals is positively associated with the net value of related party transactions from investing activities and operating activities at the significance level of 0.01 and 0.05, respectively. While the net value of related party transactions from financing activities has a negative association with the log of discretionary accruals at the significance level of 0.01.

In other words, the greater the related party transactions from the operating and investing activities, the higher the level of discretionary accruals. This is consistent with earlier analyses. In contrast, the greater the related party transactions from the financing activities, the lower the level of discretionary accruals. This result can be explained as follows.

Prior literatures suggest that firms manage earnings to avoid the constraints in debt covenants and the costs from debt covenant violations (Watts and Zimmerman, 1986; 1990; DeFond and Jiambalvo, 1994). In general, the constraints of debt covenants with related parties are less strict than that with outsiders. Therefore, firms with larger

borrowing from related parties, which implies lower borrowing from outsiders, have less incentive to manage earnings. Consequently, the amount of financing activities with related parties has a negative association with the level of discretionary accruals.

In the positive discretionary accruals sample, the net value of related party transactions from operating activities is positively associated with the log of discretionary accruals at the significance level of 0.01. In contrast, the net value of related party transactions from financing activities is negatively associated with the log of discretionary accruals at the significance level of 0.01.

In the negative discretionary accruals sample, the net value of related party transactions from the investing activities is positively related to the log of discretionary accruals at the significance level of 0.05. However, the net value of related party transactions from the financing activities is negatively related to the log of discretionary accruals at the significance level of 0.05.

In addition, the coefficient of the financial performance measure is also significant and positive at the significance level of 0.01, consistent with the prior literature. The coefficient of the firm size is significant and positive at the significance level of 0.05 in the positive discretionary accruals sample. This result is contrary to prior studies but the coefficient is close to zero.

Table 4.2 shows that related party transactions are positively associated with discretionary accruals. The occurrence of related party transactions involves various business activities. In Table 4.4, results from the full sample show the positive relationship of discretionary accruals and related party transactions from operating and

investing activities. While discretionary accruals have a negative relationship with related party transactions from financing activities.

In the positive discretionary accruals sample, discretionary accruals have a positive association with related party transactions from operating activities and a negative relationship with related party transactions from financing activities.

In the negative discretionary accruals sample, discretionary accruals have a positive relationship with related party transactions from investing activities and a negative association with related party transactions from financing activities.

Table 4.4

Multiple Regression of Log of Discretionary Accruals on

Related Party Transactions Classified by Activities

$$\text{Log DAC}_{it} = \alpha_0 + \boldsymbol{\alpha_1 \text{NetO}_{it} + \alpha_2 \text{NetI}_{it} + \alpha_3 \text{NetF}_{it}} + \alpha_4 \text{TA}_{it} + \alpha_5 \text{Leverage}_{it} + \alpha_6 \text{ABS\_TAC}_{it} + \alpha_7 \text{Growth}_{it} + \alpha_8 Y_{1it} + \alpha_9 Y_{2it} + \varepsilon_{it}$$

	Full Sample (N = 395)			**Positive DAC Sample (N = 199)**			**Negative DAC Sample (N = 201)**		
	b	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**
Intercept	-1.481	-27.67	0.000	-1.533	-21.10	0.000	-1.359	-18.86	0.000
NetO	**0.139**	2.546	0.011	**0.238**	2.783	0.006	0.084	1.166	0.245
NetI	**1.583**	3.160	0.002	1.617	1.622	0.106	**1.125**	2.247	0.026
NetF	**-2.175**	-4.118	0.000	**-2.562**	-2.871	0.005	**-1.386**	-2.308	0.022
TA	0.001	1.645	0.101	**0.004**	2.445	0.015	0.000	0.310	0.757
Leverage	0.008	0.090	0.928	0.060	0.447	0.656	-0.125	-1.213	0.227
ABS_TAC	**2.496**	10.520	0.000	**2.613**	7.976	0.000	**2.015**	6.863	0.000
Growth	-0.001	-1.899	0.058	-0.001	-0.825	0.411	-0.001	-1.496	0.136
Y_1	-0.098	-2.148	0.032	-0.115	-1.769	0.078	-0.054	-0.881	0.380
Y_2	0.070	1.489	0.137	0.024	0.342	0.732	0.083	1.307	0.193
Adj. R^2	**29.1%**			**33.2%**			**25.0%**		
F-stat.		**18.982**	**0.000**		**11.947**	**0.000**		**8.403**	**0.000**

The variables are defined in Table 3.5.
b is the coefficient estimate.

4.3 Model 3: Inflow and Outflow of Related Party Transactions Classified by Activities

This section presents descriptive statistics and multiple regression results of the association of the log of discretionary accruals and related party transactions examined by the inflow and outflow from operating, investing and financing activities.

4.3.1 Descriptive Statistics

The descriptive statistics of model (3) are shown in Table 4.5. From the descriptive statistics, the inflow from operating activities is the largest of the transactions with related parties.

For all samples, the mean value of discretionary accruals is -0.0045. For related party transactions from operating activities, the average amount of inflow is 15.75% of lagged total assets and that of outflow is 9.95%. For related party transactions from investing activities, the mean value of inflow is 0.42% of lagged total assets and that of outflow is 0.90%. For related party transactions from financing activities, the average inflow is 1.33% of lagged total assets and that of outflow is 0.02%.

For the positive discretionary accruals sample and negative discretionary accruals sample, the mean value of discretionary accruals is 0.077 and -0.087, respectively. From Tables 4.1 and 4.3, on average, the negative discretionary accruals sample has a higher net value of related party transactions. The classification into inflow and outflow from each activity also provides the same conclusion, except for the average

outflow from operating and financing activities, which is higher in the positive discretionary accruals sample.

Compared to the negative discretionary accruals sample, the average growth opportunity of the positive discretionary accruals sample is better. However, the firm size of the former is bigger. The leverage and the firm performance of the former are also higher.

Table 4.5

Descriptive Statistics of Model 3

	Mean	Median	Standard Deviation
Panel A: Full Sample (N = 402)			
DAC	-0.0045	0.0006	0.1226
O_IN	0.1575	0.0123	0.3341
O_OUT	0.0995	0.0186	0.1892
I_IN	0.0042	0.0000	0.0185
I_OUT	0.0090	0.0004	0.0252
F_IN	0.0133	0.0007	0.0351
F_OUT	0.0002	0.0000	0.0027
TA	8.45	2.66	19.32
Leverage	0.44	0.44	0.23
ABS_TAC	0.09	0.06	0.09
Growth	14.44	11.16	29.18
Panel B: Positive Discretionary Accruals Sample (N = 199)			
DAC	0.0772	0.0477	0.0952
O_IN	0.1489	0.0180	0.2896
O_OUT	0.1134	0.0212	0.2038
I_IN	0.0034	0.0000	0.0119
I_OUT	0.0071	0.0004	0.0189
F_IN	0.0108	0.0003	0.0300
F_OUT	0.0006	0.0000	0.0050
TA	8.26	2.90	15.53
Leverage	0.41	0.39	0.20
ABS_TAC	0.08	0.05	0.09
Growth	15.34	11.96	27.91

(Continued on Page 89)

Table 4.5 (Continued from Page 88)

Descriptive Statistics of Model 3

	Mean	Median	Standard Deviation
Panel C: Negative Discretionary Accruals Sample (N = 202)			
DAC	-0.0870	-0.0572	0.0926
O_IN	0.1697	0.0083	0.3797
O_OUT	0.0854	0.0137	0.1751
I_IN	0.0062	0.0000	0.0346
I_OUT	0.0100	0.0006	0.0282
F_IN	0.0158	0.0011	0.0394
F_OUT	0.0000	0.0000	0.0004
TA	10.00	2.36	24.80
Leverage	0.47	0.47	0.25
ABS_TAC	0.09	0.07	0.09
Growth	14.38	10.60	31.86

The variables are defined in Table 3.5.

4.3.2 Multiple Regression Results

Table 4.6 presents the multiple regression results of the association between the log of discretionary accruals and the related party transactions inflow and outflow from operating, investing and financing activities. The adjusted R^2 of models with full samples, positive discretionary accruals samples and negative discretionary accruals samples are 27.1%, 31.2% and 18.8%. Their significance levels are at 0.01.

For the full sample, the coefficient of the inflow of related party transactions from operating activities is significant in a positive relationship at the significance level of 0.01. The coefficients of the related party transactions outflow from operating activities and inflow from financing activities are significant in a negative direction at the significance level of 0.01. Whereas the coefficient of the outflow of related party transactions from investing activities is significant in negative direction at the significance level of 0.05.

Table 4.4 provides evidence of a relationship between discretionary accruals and related party transactions in all three business activities. Table 4.6 further shows that the level of discretionary accruals has a positive relationship with the inflow of related party transactions from operating activities. The level of discretionary accruals has a negative association with related party transactions outflows from operating and investing activities as well as related party transactions inflow from the financing activities.

The negative association between the level of discretionary accruals and related party transactions outflow from investing activities is consistent with the finding

from a prior study. An earlier study reports that managers decrease investment expenditure (research and development expenditure) to improve earnings performance during the final year of their employment contract (Dechow and Sloan, 1991).

For the positive accruals sample, the coefficient of the inflow of related party transactions from operating activities is significant and positive at the significance level of 0.01. The coefficients of related party transactions inflow from financing activities and outflow from operating activities are significant and negative at the significance level of 0.01 and 0.05, respectively.

Table 4.4 shows the positive association of discretionary accruals with related party transactions from operating activities and the negative association with related party transactions from financing activities. Table 4.6 further shows that the level of discretionary accruals has a positive association with the inflow of related party transactions from operating activities. Whereas the level of discretionary accruals has a negative relationship with related party transactions outflow from operating activities and inflow from financing activities.

For the negative discretionary accruals sample, the coefficient of the inflow of related party transactions from financing activities is significant and negative at the significance level of 0.05. The coefficients of the related party transactions inflow and outflow from investing activities are significant in positive and negative directions, respectively. These are significant at the level of 0.10.

Table 4.4 reports the positive association of discretionary accruals with related party transactions from investing activities and the negative association with related party transactions from financing activities. Table 4.6 further suggests that the level of discretionary accruals has a positive association with the inflow of related party transactions from investing activities. The level of discretionary accruals also has a negative relationship with the related party transactions outflow from investing activities and inflow from the financing activities.

Moreover, the coefficient of the financial performance measure is significant and positive at the significance level of 0.01. This is consistent with prior research. However, the coefficient of the firm size is significant and positive at the significance level of 0.05 in the positive discretionary accruals sample. Even though this finding is contrary to prior literature, the coefficient is almost zero.

Overall, in the full sample, Table 4.4 shows the relationship between discretionary accruals and related party transactions in all three business activities. The value of related party transactions in each activity will change following the change in income transactions or expenditure transactions or both. Results from Table 4.6 show that the related party transactions that are positively associated with discretionary accruals are operating income from related parties. Whereas the operating expenditure, investing expenditure and financing from related parties are negatively associated with discretionary accruals.

In positive discretionary accruals sample, operating income from related parties has a positive relationship with discretionary accruals. While operating expenditure and financing from related parties have a negative relationship with discretionary accruals.

In the negative discretionary accruals sample, discretionary accruals have a positive relationship with investing income from related parties. Also, it has a negative association with investment expenditure and financing from related parties.

Table 4.6

Multiple Regression of Log of Discretionary Accruals on

Inflow and Outflow of Related Party Transactions

Classified by Activities

$$\text{Log DAC}_{it} = \alpha_{0} + \boldsymbol{\alpha_1 O\_IN_{it}} + \boldsymbol{\alpha_2 O\_OUT_{it}} + \boldsymbol{\alpha_3 I\_IN_{it}} + \boldsymbol{\alpha_4 I\_OUT_{it}} + \boldsymbol{\alpha_5 F\_IN_{it}} + \boldsymbol{\alpha_6 F\_OUT_{it}} + \alpha_7 \text{TA}_{it} + \alpha_8 \text{Leverage}_{it} + \alpha_9 \text{ABS\_TAC}_{it} + \alpha_{10} \text{Growth}_{it} + \alpha_{11} Y_{1it} + \alpha_{12} Y_{2it} + \varepsilon_{it}$$

	Full Sample (N = 402)			**Positive DAC Sample (N = 199)**			**Negative DAC Sample (N = 202)**		
	b	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**
Intercept	-1.411	-25.60	0.000	-1.552	-18.80	0.000	-1.330	-16.19	0.000
O_IN	**0.213**	3.387	0.001	**0.312**	3.060	0.003	0.136	1.440	0.152
O_OUT	**-0.403**	-3.561	0.000	**-0.325**	-2.219	0.028	-0.270	-1.274	0.204
I_IN	1.439	1.381	0.168	3.232	0.795	0.428	1.438	1.716	0.088
I_OUT	**-1.574**	-2.113	0.035	-1.257	-0.813	0.417	-1.662	-1.689	0.093
F_IN	**-1.721**	-3.068	0.002	**-2.541**	-2.617	0.010	**-1.637**	-2.156	0.032
F_OUT	5.497	0.777	0.437	-2.543	-0.265	0.791	-62.044	-0.845	0.399
TA	0.001	1.429	0.154	**0.005**	2.363	0.019	0.001	0.919	0.359
Leverage	-0.070	-0.813	0.417	0.039	0.275	0.783	-0.098	-0.828	0.409
ABS_TAC	**2.029**	9.051	0.000	**2.451**	7.214	0.000	**1.789**	5.330	0.000
Growth	0.000	-0.757	0.450	-0.001	-1.178	0.240	-0.001	-0.888	0.376
Y_1	-0.091	-1.922	0.055	-0.079	-1.141	0.255	-0.090	-1.282	0.201
Y_2	0.100	2.044	0.042	0.100	1.373	0.171	0.079	1.116	0.266
Adj. R^2	**27.1%**			**31.2%**			**18.8%**		
F-stat.		**13.403**	**0.000**		**8.467**	**0.000**		**4.870**	**0.000**

The variables are defined in Table 3.5.
b is the coefficient estimate.

4.4 Model 4: Types of Related Party Transactions

This section presents descriptive statistics and multiple regression results of the association of the log of discretionary accruals and types of related party transactions.

4.4.1 Descriptive Statistics

Descriptive statistics of model (4) are presented in Table 4.7. For all samples, the average value of discretionary accruals is -0.001. The three greatest items of related party transactions are sales and services revenue, purchase of materials and services, and short-term borrowing. Their average values are respectively 13.66%, 8.95% and 0.95% of lagged total assets.

For the positive discretionary accruals sample, the mean value of discretionary accruals is 0.081. The three highest items of related party transactions are sales and services revenue, purchase of materials and services, and other expenses. These are respectively 15.19%, 11.08% and 1.19% of lagged total assets.

For the negative discretionary accruals sample, the average value of discretionary accruals is -0.082. The three largest items of the related party transactions are sales and services revenue, purchase of materials and services, and short-term borrowing. These are respectively 16.69%, 7.69% and 1.04% of lagged total assets.

While the positive discretionary accruals sample has better growth opportunity, the average firm size of the negative discretionary accruals sample is bigger. The leverage and the financial performance of the latter are also higher.

Table 4.7

Descriptive Statistics of Model 4

	Mean	Median	Standard Deviation
Panel A: Full Sample (N = 398)			
DAC	-0.0010	0.0041	0.1244
SSR	0.1366	0.0050	0.2864
MRI	0.0014	0.0000	0.0050
OI	0.0018	0.0000	0.0057
PUR	0.0895	0.0096	0.1859
MRE	0.0019	0.0000	0.0062
OE	0.0087	0.0000	0.0441
AS	0.0003	0.0000	0.0018
DR	0.0014	0.0000	0.0053
IR	0.0010	0.0000	0.0069
AA	0.0012	0.0000	0.0067
STL	0.0043	0.0000	0.0151
LTL	0.0032	0.0000	0.0198
STB	0.0095	0.0003	0.0265
LTB	0.0019	0.0000	0.0078
DP	0.0005	0.0000	0.0055
TA	8.89	2.67	20.83
Leverage	0.44	0.44	0.24
ABS_TAC	0.09	0.06	0.09
Growth	14.49	11.05	29.06

(Continued on Page 97)

Table 4.7 (Continued from Page 96)

Descriptive Statistics of Model 4

	Mean	Median	Standard Deviation
Panel B: Positive Discretionary Accruals Sample (N = 193)			
DAC	0.0814	0.0485	0.1043
SSR	0.1519	0.0116	0.2972
MRI	0.0010	0.0000	0.0029
OI	0.0026	0.0000	0.0075
PUR	0.1108	0.0169	0.2115
MRE	0.0020	0.0000	0.0060
OE	0.0119	0.0000	0.0610
AS	0.0003	0.0000	0.0018
DR	0.0026	0.0000	0.0113
IR	0.0001	0.0000	0.0005
AA	0.0011	0.0000	0.0052
STL	0.0032	0.0000	0.0089
LTL	0.0004	0.0000	0.0016
STB	0.0088	0.0003	0.0279
LTB	0.0025	0.0000	0.0101
DP	0.0006	0.0000	0.0051
TA	7.90	2.68	15.62
Leverage	0.40	0.39	0.21
ABS_TAC	0.08	0.05	0.09
Growth	15.18	11.24	29.30

(Continued on Page 98)

Table 4.7 (Continued from Page 97)

Descriptive Statistics of Model 4

	Mean	Median	Standard Deviation
Panel C: Negative Discretionary Accruals Sample (N = 174)			
DAC	-0.0822	-0.0572	0.0835
SSR	0.1669	0.0036	0.3880
MRI	0.0018	0.0000	0.0065
OI	0.0010	0.0000	0.0026
PUR	0.0769	0.0068	0.1584
MRE	0.0018	0.0000	0.0070
OE	0.0039	0.0000	0.0093
AS	0.0006	0.0000	0.0035
DR	0.0007	0.0000	0.0032
IR	0.0006	0.0000	0.0025
AA	0.0001	0.0000	0.0007
STL	0.0019	0.0000	0.0039
LTL	0.0016	0.0000	0.0072
STB	0.0104	0.0004	0.0248
LTB	0.0011	0.0000	0.0045
DP	0.0000	0.0000	0.0004
TA	9.51	2.42	22.08
Leverage	0.47	0.47	0.26
ABS_TAC	0.09	0.08	0.09
Growth	13.50	10.00	31.82

The variables are defined in Table 3.5.

4.4.2 Multiple Regression Results

Table 4.8 shows multiple regression results of the association between the log of discretionary accruals and various types of related party transactions. Models with full samples, positive discretionary accruals samples, and negative discretionary accruals samples have adjusted R^2 values equal to 21.5%, 23.9% and 12.2% at the significance level of 0.01.

From the full sample, the coefficient of the sales and services revenue from related parties is significant and positive at the significance level of 0.01, while the coefficient of the purchase of materials and services from related parties is significant and negative at the significance level of 0.05. Moreover, the coefficient of the assets acquisition from related parties is significant and negative at the significance level of 0.10.

Table 4.6 provides evidence of the positive association between discretionary accruals and operating income. It also presents the evidence of the negative association between discretionary accruals and operating expenditure, investing expenditure and financing from related parties. Table 4.8 further shows that discretionary accruals have a positive relationship with sales and services revenue from related parties. It also has a negative relationship with the purchase of materials and services and the assets acquisition from related parties. An earlier study also finds a huge amount of related party sales in firms that will have rights issue in the next year and in firms that aim to avoid reporting losses (Jian and Wong, 2003).

For the positive discretionary accruals sample, the coefficient of the sales and services revenue from related parties is significant and positive at the significance level of 0.01. While the coefficient of the long-term borrowing from related parties is significant and negative at the significance level of 0.10.

Table 4.6 shows a positive relationship between discretionary accruals and operating income and a negative association with operating expenditure and financing from related parties. Table 4.8 further explains that discretionary accruals have a positive relationship with sales and services revenue from related parties. Discretionary accruals also have negative association with long-term borrowing from related parties.

In the negative discretionary accruals sample, the coefficient of the assets acquisition from related parties is significant and negative at the significance level of 0.05. Table 4.6 presents the positive relationship between discretionary accruals and investing income from related parties. It also has a negative association with investment expenditure and financing from related parties. Table 4.8 shows that discretionary accruals have a negative association with assets acquisition from related parties.

Furthermore, the coefficient of the financial performance measure is significant and positive. This is consistent with existing research.

In conclusion, Table 4.6 shows that, in a full sample, discretionary accruals are positively associated with operating income and negatively associated with operating expenditure, investing expenditure and financing from related parties. Table 4.8 shows that the operating income transaction that is positively associated with discretionary accruals is sales and services revenue from related parties. Whereas the operating

expenditure transaction that is negatively associated with discretionary accruals is the purchase of materials and services from related parties. Moreover, the assets acquisition from related parties, which is an investing expenditure transaction, is negatively related to discretionary accruals.

In firms with positive discretionary accruals, Table 4.4 presents that discretionary accruals have a positive relationship with operating income from related parties and a negative association with operating expenditure and financing from related parties**.** Table 4.8 shows that an operating income transaction that is positively related to discretionary accruals is sales and services revenue from related parties. While the long-term borrowing from related parties, which is the financing transaction, is negatively associated with discretionary accruals.

In firms with negative discretionary accruals, Table 4.4 shows that discretionary accruals have a positive association with investing income and a negative relationship with investing expenditure and financing from related parties**.** Table 4.8 shows that the acquisition of assets from related parties is negatively associated with discretionary accruals.

Table 4.8

Multiple Regression of Log of Discretionary Accruals on

Types of Related Party Transactions

$$\text{Log DAC}_{it} = \alpha_{0} + \alpha_1 \mathbf{SSR_{it}} + \alpha_2 \mathbf{MRI_{it}} + \alpha_3 \mathbf{OI_{it}} + \alpha_4 \mathbf{PUR_{it}} + \alpha_5 \mathbf{MRE_{it}} + \alpha_6 \mathbf{OE_{it}} + \alpha_7 \mathbf{AS_{it}} + \alpha_8 \mathbf{DR_{it}} + \alpha_9 \mathbf{IR_{it}} + \alpha_{10} \mathbf{AA_{it}} + \alpha_{11} \mathbf{STL_{it}} + \alpha_{12} \mathbf{LTL_{it}} + \alpha_{13} \mathbf{STB_{it}} + \alpha_{14} \mathbf{LTB_{it}} + \alpha_{15} \mathbf{DP_{it}} + \alpha_{16} \text{TA}_{it} + \alpha_{17} \text{Leverage}_{it} + \alpha_{18} \text{ABS\_TAC}_{it} + \alpha_{19} \text{Growth}_{it} + \alpha_{20} Y_{1it} + \alpha_{21} Y_{2it} + \varepsilon_{it}$$

	Full Sample (N = 398)			**Positive DAC Sample (N = 193)**			**Negative DAC Sample (N = 174)**		
	b	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**	**b**	**t-stat.**	**p value**
Intercept	-1.406	-23.11	0.000	-1.502	-15.93	0.000	-1.266	-13.21	0.000
SSR	**0.211**	2.835	0.005	**0.310**	2.759	0.006	0.131	1.211	0.228
MRI	-4.994	-1.234	0.218	-12.300	-1.019	0.310	-3.941	-0.893	0.373
OI	-2.810	-0.788	0.431	0.454	0.096	0.923	6.269	0.457	0.649
PUR	**-0.267**	-2.333	0.020	-0.216	-1.376	0.171	-0.195	-0.787	0.433
MRE	3.939	1.236	0.217	8.674	1.612	0.109	0.999	0.242	0.809
OE	-0.525	-1.178	0.240	-0.162	-0.296	0.768	-5.029	-1.373	0.172
AS	14.546	1.355	0.176	22.221	1.290	0.199	3.906	0.389	0.698
DR	-0.653	-0.164	0.869	0.333	0.058	0.954	-12.836	-1.149	0.253
IR	0.176	0.062	0.951	76.517	0.959	0.339	10.896	0.825	0.411
AA	-5.179	-1.774	0.077	-8.701	-1.505	0.134	**-86.863**	-2.206	0.029
STL	-1.118	-0.836	0.404	-5.322	-1.148	0.252	-0.789	-0.090	0.929
LTL	-0.625	-0.626	0.532	-4.698	-0.232	0.817	4.026	0.854	0.394
STB	-0.950	-1.235	0.218	-1.714	-1.453	0.148	-0.706	-0.554	0.580
LTB	-3.732	-1.468	0.143	-5.439	-1.735	0.085	-0.686	-0.106	0.915
DP	-0.135	-0.035	0.972	6.052	0.473	0.637	-109.72	-1.201	0.232
TA	0.002	1.675	0.095	0.003	1.292	0.198	0.002	1.122	0.264
Leverage	-0.053	-0.590	0.555	0.160	0.959	0.339	-0.110	-0.837	0.404
ABS_TAC	**1.931**	8.116	0.000	**2.127**	5.594	0.000	**1.335**	3.403	0.001
Growth	-0.001	-0.857	0.392	-0.001	-0.452	0.652	-0.002	-1.806	0.073
Y_1	-0.091	-1.809	0.071	-0.132	-1.729	0.086	-0.105	-1.347	0.180
Y_2	0.078	1.531	0.127	-0.025	-0.318	0.751	0.051	0.669	0.504
Adj. R^2	**21.5%**			**23.9%**			**12.2%**		
F-stat.		**6.165**	**0.000**		**3.877**	**0.000**		**2.150**	**0.004**

The variables are defined in Table 3.5. b is the coefficient estimate.