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Full Length Research Paper

A study of the relationship between related party transactions and firm value in high technology firms in Taiwan and China

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Related-party transactions are a facet of corporate governance, due to the fact that they are usually comprised of complicated transactions between a company and its managers, directors, subsidiaries and major shareholders. It is a fact that related-party transactions result in higher agency costs due to the alignment of decision-making rights and monitoring rights. The traditional accounting performance measures (return of equity, earnings per share) only reflect short-term performance, and are unable to express an enterprise's long-term value. The sample of this study includes a list of high -technology firms in Taiwan and China from 1998 - 2008. We use the ordinary least squares method to test our hypothesis. Empirical results show that the account (notes) receivables and account (notes) payables from related-party transactions of high-technology firms in Taiwan exhibit a significant (positive) relationship with performance. However, the sales or purchases of goods from related party transactions of high -technology firms in China have a significant (negative) relationship with performance. We use Market value added (MVA), which is a powerful method for explaining market value. Economic value added (EVA) is also a high-power tool for explaining the relationships between related- party transactions and firm value, more so than other proxy variables of firm performance and reflects the true economic value of a firm. Therefore EVA and Market value added are used as an alternative performance measure.

Key words: Related-party transaction, firm performance, economic value added, market value added.

INTRODUCTION

In recent years, research in the area of corporate governance has increasingly shifted focus from the conflict of interest between managers and diffuse shareholders to the conflict of interest between minority shareholders and controlling block holders. Related-party transactions (RPTs) are defined as transactions between a company and its management, board members, principal owners, or members of the immediate families of any of these groups. Additionally, related-party transactions include transactions between a company and its affiliates, where affiliates are defined as entities with any of the following relationships: they control the company; they are controlled by the company or they are controlled by another entity which also controls the company (Statement of Financial Accounting Standards No. 57, 1982). For example, raising capital, acquiring production inputs, selling firm outputs, hiring employees, leasing assets, purchasing and divesting assets and signing franchising agreements are commonly referred to as related-party transactions. Related parties can therefore use their influence to procure such items and influence terms in their favor. More importantly, as (RPTs) are usually made through complicated transactions between the company and its managers, directors, subsidiaries and major shareholders, it is hard for outsiders to discover questionable or fraudulent transactions. For example, the U.S. Securities and Exchange Commission (SEC) has proposed amended disclosure rules for RPTs

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and the New York stock exchange (NYSE) and National Association of Security Dealers Automated Quotation (NASDAQ) have revised listing requirements to mandate that either a firm's audit committee or another independent body of directors review and approve all RPTs (SEC Release No. 33-8655, SEC Release No.34-48745). Both SEC and Financial Accounting Standard Board (FASB) regulations require relatively detailed disclosure of related-party transactions. La Porta et al. (2006) also find that requirements to disclose related-party arrangements are consistently found in countries with larger and more successful stock exchanges. Therefore, such requirements indicate a regulatory view that related-party transactions are relevant to decision making by financial statement users.

Two possible interpretations of related party transactions are: (1) they are potentially conflicts of interest illustrative of the principal-agency conflicts in Berle and Means (1932) and thus economically harmful to the company. For example, although, directors and officers of corporations are charged with the duty of entering into contracts that maximize shareholder wealth, this duty is undermined by RPTs which benefit insiders but extract value from the firm and pose a major risk to outside investors in many countries (Baek et al., 2006; Cheung et al., 2006). Recent accounting scandals have also raised considerable concern among regulators and stock market participants about related-party transactions. Enron's, Adelphia's and Parmalat's crises shed light on the inherent risks as related-party transactions emerged as a powerful instrument of financial frauds, shareholders' expropriation, etc., pulling back the veil to reveal many relevant loopholes affecting existing requirements. On the other hand, Gordon et al. (2004) conclude that firms reporting RPTs may be connected to weaker corporate governance practices. RPTs may imply moral hazards, and can be carried out in the interest of directors in order to expropriate wealth from shareholders. Therefore, RPTs are often viewed as being inconsistent with shareholder wealth maximization. (2) According to the efficient transaction hypothesis (Gordon et al., 2004), these transactions are considered sound business exchanges, fulfilling economic needs of the firm. For one thing, these transactions have a lower dealer cost. Furthermore, Chen (2006) points out that related party transactions are beneficial to mutual monitoring. The monitoring implied in related-party transactions suggests a difference in the agency cost, reducing role of concentrated ownership between firms with different amounts of related-party transactions. Shastri and Kahle (2004) find that executives benefit from related party loans, which, on average, have below-market interest rates. Their results also indicate that such loans are beneficial to low-ownership executives in increasing their ownership levels (that is, an increase in executive ownership levels should better align the executive's interest with those of the shareholders and reduce agency conflict.

RPTs are complex issue, and previously they are unclear as to whether they are value- destroying or value-creating. The purpose of this paper is to examine whether RPTs have a significant impact on performance in the high-technology industries of Taiwan and China.

THEORETICAL BACKGROUND AND DEVELOPMENT OF HYPOTHESES

Related-party transactions are defined as transactions between a company and its subsidiaries, affiliates, principal owners, officers or their families, directors or their families, or entities owned or controlled by its officers or their families (Statement of Financial Accounting Standards No. 57, 1982). Therefore, related-party transactions are common for firms affiliated to business groups, since most group members do a lot of RPTs within their own groups (Chen, 2006).These transactions are likely to cause wealth transfers out of a company for the benefit of shareholders with a controlling interest (Johnson et al., 2000). For example, sellers may inflate earnings simply by shifting next period's related sales to the current period (Khanna and Yafeh, 2005) or a Chief Executive Officer (CEO) may receive a lower salary (Rajan and Wulf, 2006) and the interest rates on related loans may be unfairly priced, given the potential for default (Shastri and Kahle, 2004).

Generally speaking, related-party transactions have always been studied in the literature according to two different theories. According to the conflict of interests theory, RPTs may imply moral hazard and may be carried out in the interest of directors in order to expropriate wealth from shareholders. Framed in such a context, RPTs may imply the misuse of firm resources (moral hazard) and the misrepresentation of private information (adverse selection). RPTs' potential harm in eluding alignment mechanisms, like CEO compensation and board composition, are increasingly perceived. Moreover, the potential bias in financial statements, with a negative impact on their reliability and relevance, introduces further uncertainty and weakens the effectiveness of contracts aiming at reducing agency conflicts. In contrast with the previous theory, the efficient transaction hypothesis considers RPTs as sound business exchanges fulfilling economic needs of the firm. Therefore, they do not harm the interests of shareholders and emerge as an efficient contracting arrangement where there is incomplete information. Moreover, possible benefits may include: (1) contracting party representatives appointed as board members to facilitate the achievement of better coordination of the different activities, (2) quicker feed back or more insights, (3) deeper reciprocal knowledge as well as greater familiarity, which can create more convenient terms and conditions for both parties and justify transactions that are not feasible at arm's length, (4) hold up problems

may be mitigated, (5) these transactions may also supplement CEO and director cash remuneration or compensate them for increased risk.

Studies indicate return on asset (Allgood and Farrell, 2003), earnings per share (Neumann and Voetmann, 2005), return on equity (Peng, 2004), free cash flow (Neumann and Voetmann, 2005), return on stock price (Allgood and Farrell, 2003), and stock price (Shen and Cannella, 2003), which are generally accepted as a measure of firm performance. Such measurements are generated from financial statements that follow Generally Accepted Accounting Principle (GAAP) standards that require conservatism and do not reflect future perspectives. Economics value added (EVA) is an index developed by Stern Stewart in 1990. It is used to evaluate economic value, assess funds and efficiently allocate resources, and uses adjustment items (appendix A) to reflect true economic value of a firm. Therefore, it is also a performance measurement tool (Mohanty, 2006; Copeland and Dolgoff, 2006; Kaur and Pal, 2008; O'byrne and Young, 2006). Additionally, EVA is a supplying chain strategy (Pohlen and Coleman, 2005). Also, EVA has been used for years as the basis of incentive compensation (O'byrne and Young, 2006; Ray, 2007). Market value added (MVA) calculates the difference between enterprise's market value and book value. Bigger index and shareholders have the wealth more; therefore, EVA and MVA are used as an alternative performance measure.

Past studies are unclear as to whether RPTs are value-destroying or value-creating; however, Chiou and Huang (2006); Cheung et al. (2009); Berkman et al. (2009) point out that related-party transactions relate to firm value. Thus, through the following hypotheses, we will seek to prove that related-party transactions have a significant relationship with firm value.

H1: Related-party transactions have significant relationship with Tobin's Q
H2: Related-party transactions have significant relationship with ROE
H3: Related-party transactions have significant relationship with ROA
H4: Related-party transactions have significant relationship with MVA
H5: Related-party transactions have significant relationship with EVA

METHODOLOGY

We used the ordinary least squares (OLS) method. The proxy variables are as follows: Q_t is the Tobin's Q at time t measured in the market value of equity minus the book value of equity plus the book value of assets divided by the book value of assets. Return of equity (ROE_t) is at time t measured in net incomes divided by equity. Return of assets (ROA_t) is at time t measured in net incomes divided by assets. EVA_t is the economic valued added measured in Appendix A. Market value added (MVA_t) is at time t measured in the difference between market value of equity and book value of equity.

According to statement of Financial Accounting Standards No. 57(1982), RPTs include transactions between a company and its affiliates, where affiliates are defined as entities with any of the following relationships: they control the company; they are controlled by the company or they are controlled by another entity which also controls the company. $SRPT_t$ is the sales of goods from RPTs at time *t* measured in sales of goods from RPTs divided by sales × 100%. $PRPT_t$ is the purchases of goods from RPTs at time *t* measured in the purchases of goods from RPTs divided by operating cost × 100%. $ARRPT_t$ is the notes receivable and accounts receivable from RPTs at time *t* measured in the notes receivable and accounts receivable from RPTs divided by equity × 100%. $APRPT_t$ is the notes payable and accounts payable from RPTs at time *t* measured in the notes payable and accounts payable from RPTs divided by equity × 100%.

Drobetz et al. (2004) point out that better corporate governance practices result in better firm value. Therefore we adapt controlling variables as follow: $BOARD_t$ is the board size at time *t* measured in total board directors. ODP_t is the proportion of outside directors at time *t* measured in the number of outside directors divided by total directors. The outside director is a member of the board of directors of a company who does not form part of the executive management team. He or she is not an employee of the company or affiliated with it in any other way (e.g. former employees, family members of employees, or those with business relations with the firm). $INST_t$ is the percentage of institutional shareholding at time *t* measured in institutional shareholder stocks divided by outstanding common stocks. The institutional shareholder is defined as a member of institutions, e.g. company, bank, mutual-fund, the government, foreign institutions. $INSOWN_t$ is the percentage of board of directors and supervisor stock-holding at time *t* measured in board of directors and supervisor shareholder stocks divided by outstanding common stocks. This paper also measures related robustness test. We adopted the continuous performance variable and only included the sample data between 5 and 95% as measures for robustness.

RESULTS

Descriptive statistics

According to the descriptive statistics analysis in Table 1, the mean of all performance is positive, showing that high-technology firms have great ability to be profitable. On the other hand, the high-technology firms in China have a lower Tobin's-Q, showing that the high-technology firms in China have worse growth in future. Besides, the related party transactions of high-technology firms in China have more than high-technology firms in Taiwan. A comparison of Taiwan shows that high-technology firms in China have the less proportion of outside directors or the more board of directors and supervisor stockholding ratio.

Table 1. Descriptive statistics for variables (US dollars in millions).

Areas	Taiwan	China	T-test (p-value)
Q	2.1815	1.2897	0.053
ROE	8.14%	7.58%	0.197
ROA	6.08%	4.72%	0.012
MVA	358.25	192.5	0.000
EVA1	3.3216	1.2615	0.000
EVA2	2.9258	1.0917	0.000
EVA3	2.5469	0.9936	0.000
SRPT	2.7923%	23.232%	0.000
PRPT	4.9780%	23.601%	0.000
ARRPT	7.852%	10.65%	0.057
APRPT	6.663%	7.17%	0.128
BOARD	6.28	5.68	0.136
ODP	18.27%	8.55%	0.001
INST	28.55%	37.66%	0.212
INSOWN	11.28%	19.25%	0.039
Sample	958	144	

This indicates that the high-technology firms in these two areas have different governance mechanisms.

Empirical test

The empirical results in Table 2 show that the link between performance and sales or purchases of goods from RPTs of high-technology firms in Taiwan is insignificant (Q, ROE, ROA, MVA, EVA1, EVA2 and EVA3). It is likely that these transactions represent a lower percentage of the sales and operating cost and therefore have a lower impact on operating and firm value. The hypothesis 1.2.3.4.5 is not supported.

On the other hand, the accounts (notes) receivable and accounts (notes) payable from RPTs of high-technology firms in Taiwan exhibit a significant (positive) relationship with performance (Q, ROE, ROA, MVA, EVA1, EVA2 and EVA3). These findings support hypotheses 1, 2, 3, 4 and 5. High-technology listed firms in Taiwan have more affiliates entities and complete supply chains they deal with. In order to develop more niche market, these companies may have to contract party representatives to act as liaisons. These liaisons can help to create more convenient terms for both parties and board members. Such representatives can also improve the coordination of various activities. In other words, the life cycle of the electronics industry is short. Taiwan mainly exports manufactured goods, and the inventory turnover rate and capital requirements are high. Related parties allocate funds (accounts receivable and accounts payable), and integrate production and shipping to enhancing capital efficiency and economic benefits. The efficient transaction hypothesis considers RPTs dealings as sound business exchanges fulfilling the economic needs of the firm. We found that the value of high-technology firms listed in Taiwan is promoted by accounts (notes) receivable and accounts (notes) payable from party-related transactions. Therefore, RPTs advances the interests of shareholders. This paper supports the theory of efficient transaction hypothesis (Taiwan).

The sale or purchase of goods from RPTs of high-technology firms in China has a significant (negative) effect on performance (Q, ROE, ROA, MVA, EVA1, EVA2 and EVA3). These findings support the hypotheses 1, 2, 3, 4, and 5. In 1993, China passed corporate reforms, in which state enterprises were privatized, leading to increased financial transparency. However, due to market share it retains, the government is still in control. Most of the managers are government officials, promoted to management based on their political affiliations, rather than performance (Qiang, 2003). Because they pursue their own personal interest, the risk shifts to the government, which results in high agency cost. As a result, the Chinese government does not have adequate power to control the listed firms, and executives can infringe on shareholder benefits through these party-related transactions, thereby reducing the corporate performance or efficiency of funds (e.g., EVA). This indicates that party-related transactions have a significant negative impact on business performance, due to weakened monitoring functions. It also indicates that a company conducting

Table 2. Regressions of the RPTs and firm-value (Taiwan Sample = 958).

	Panel-A	Panel-B	Panel-C	Panel-D	Panel-E	Panel-F	Panel-G
Intercept	-0.533	0.117***	0.182***	0.274***	0.318**	0.863***	0.438**
SRPT	0.028	0.001	0.005	0.023	0.112	0.251	0.105
PRPT	0.017	0.007	0.004	0.013	0.146	0.081	0.069
ARRPT	0.279***	0.164***	0.135**	0.579***	0.715**	0.602**	0.757***
APRPT	0.197***	0.307***	0.107**	0.337**	0.442***	0.296*	0.516***
BOARD	-0.922	0.002	-0.023	0.06	-0.236**	-0.288*	-0.059
ODP	-0.413	0.04	0.059	0.013	0.129	0.759***	0.445**
INST	0.5864**	-0.029	0.037	-0.015	0.212*	0.702**	0.835***
INSOWN	-0.442	0.008	0.022	0.042	0.078	-0.296*	-0.342*
adj- R^2	13.92	14.42	15.59	19.37	22.58	25.66	31.58
F-value	18.57	22.42	25.18	23.93	27.17	28.59	29.32

*: p-value < 0.1,**: p-value < 0.05,***: p-value < 0.01, Panel A: Dependent variable is Q Panel B: Dependent variable is ROE, Panel C: Dependent variable is ROA, Panel D: Dependent variable is MVA Panel E: Dependent variable is EVA1, Panel F: Dependent variable is EVA2, Panel G: Dependent variable is EVA 3.

party-related transactions may work against the interests of outside shareholders, as well as other high-technology firms in China. The paper supports the theory of conflict of interest in China.

In the case of listed high-technology firms in both Taiwan and China, performance will be promoted by the higher outside director and institutional shareholding ratios, because they can supervise authority effectively and promote an enterprise's value. Additionally, the board of directors and supervisors stockholding ratio has a significant negative relationship with performance because higher board of director and supervisor stockholding ratios are likely related to selfish interest, thus reducing performance. Also, board sizes have a significant relation to performance in the listed high-technology firms in Taiwan and China. For example, with the firms in Taiwan, as a board size increases, the directors are less likely to function effectively and are easier for the CEO to control, the costs of agency problems and coordination/communication problems overwhelm the potential advantages of having more directors to draw on, leading to a lower level of corporate performance. On the other hand, the listed high-technology firms in China have smaller board sizes, and as the board increases in size, the directors are likely to get more knowledge and professional ability, and the firms' values are promoted.

More importantly, from Tables 2 and 3, we see that MVA is a more powerful method for explaining the relationships between RPTs with firm value than the Tobin- Q method; Tables 2 and 3 shows that MVA is a better index to explain market value. In addition, EVA (EVA1, EVA2 and EVA3) is more effective in explaining the relationships between RPTs and firm value than other proxy variables of firm performance. Indeed, EVA stands out as the best powerful model to reflect true economic value of a firm. Therefore EVA and MVA are used as an alternative performance measure. Results form variance inflation factors to explain fifteen variables for correlation; the result lies between 1.026 and 1.099[1]. There is no correlation problem. In order to avoid possible bias from extreme values, we also adopt those samples only include the sample data of from the 5th percentile to the 95th percentile as measures for the robustness test[2], the results show that most of them are consistent with Tables 2 and 3.

Conclusion

The purpose of this paper is to examine whether RPTs indicates a significantly impact on performance in the high-tech industries of Taiwan and China. The sample spans from 1998 to 2008 in the TEJ database. RPTs may be a matter corporate governance because RPTs are usually complicated transactions between a company and its managers, directors, subsidiaries, and major shareholders. It is hard for outsiders to discover question-able or fraudulent transactions. More importantly, this study also shows that RPTs result in higher agency costs due to the alignment of decision-making rights and monitoring right.

A few previous studies have indicated that RPT have a relationship with firm value. On the other hands, most of the relevant literatures argue that firm value is defined as

[1].In order to shorten the tables, we omit the solution.

[2] In order to shorten the tables, we omit the solution.

Table 3. Regressions of the RPTs and firm-value (China sample = 144).

	Panel-A	Panel-B	Panel-C	Panel-D	Panel-E	Panel-F	Panel-G
Intercept	1.317***	0.307***	0.118***	0.554***	0.694***	0.671***	0.826***
SRPT	-0.823***	-0.289***	-0.305***	-1.907***	-1.262***	-0.621***	-0.745***
PRPT	-0.758***	-0.268***	-0.324***	-1.389***	-1.274***	-0.367	-0.463**
ARRPT	-0.025	0.014	-0.018	0.031	0.118	-0.175	-0.213
APRPT	0.017	0.036	0.042	0.061	-0.355	-0.187	0.205
BOARD	-0.03	0.011	0.361***	0.122*	-0.058	-0.211	0.246*
ODP	0.179**	-0.002	0.052	0.0161	0.388**	0.238*	0.233
INST	0.274**	00.168**	0.05	0.0143	0.568**	0.684***	0.583**
INSOWN	0.042	-00.028	-0.037	0.0235	-0.247*	-0.618	-0.493**
adj- R^2	10.55	13.01	14.90	16.58	18.32	21.56	23.74
F-value	17.06	18.28	19.36	25.36	27.54	28.96	32.66

*: p-value < 0.1, **: p-value < 0.05, ***: p-value < 0.01, Panel A: Dependent variable is Q, Panel B: Dependent variable is ROE, Panel C: Dependent variable is ROA, Panel D: Dependent variable is MVA, Panel E: Dependent variable is EVA1, Panel F: Dependent variable is EVA2, Panel G: Dependent variable is EVA 3.

Economic value added, Market value added, return of asset, return of equity. Therefore, this paper expands on previous research to inquire how unitary RPTs impact business performance (we adopt Q, ROE, ROA, MVA and EVA). According to the results of our analysis, we will relate the findings as follows: (1) the accounts(notes) receivable and accounts (notes) payable from RPTs of high-technology firms in Taiwan exhibit a significant (positive) relationship with performance (Q, ROE, ROA, MVA, EVA1, EVA2 and EVA3) and the efficient transaction hypothesis is supported, (2) the sales or purchases of goods from RPTs of high-technology firms in China have a significant (negative) relationship with performance (Q, ROE, ROA, MVA, EVA1, EVA2 and EVA3). More importantly, the RPTs in China have a significant negative impact on business performance due to weak monitoring functions in China. This also indicates that a company with RPTs may work against the interests of outside shareholders and other classes of listed high-technology firms in China. On the other hand, RPTs may also have a significantly positive impact on business performance due to exchanges fulfilling economic needs of firms in Taiwan.

This paper also shows that MVA is a more powerful method for explaining the relationships between RPTs with firm value than the Tobin-Q method, and shows that MVA is a better index to explain market value. Also, EVA (EVA1, EVA2 and EVA3) is a stronger method for explaining the relationships between RPTs with firm value than other proxy variables of firm performance. In particular, EVA stands out as the best model to reflect the true economic value of a firm. Therefore EVA and MVA are used as an alternative performance measure.

The results of this study indicate that a company with RPTs may be advantageous or harmful for outside shareholders, while being potentially beneficial to the firm itself. However, this research focuses on high-technology industries and does not apply to other industries. Also, this study measures enterprise value by alternative variables. At the same time, we point out that the RPTs affect enterprise value, but cannot be used to estimate the optimal results. More importantly, RPTs are usually conducted through complicated processes and there are many types of RPTs. It becomes quite difficult for outsiders to accurately identify which RPTs damage corporate value. Therefore legal factors and actual relationships should be taken into consideration. Besides, anyone who wields influence or control over corporate decision-making or behavior could be regarded as a related party. In order to enhance corporate governance and protect the interests of investors and creditors, our study also supports recommendations for stricter regulations to detect RPTs, and certified professional accountants (CPAs) should pay more attention when auditing a financial statement and its footnotes. Of special importance is the fact that China is an emerging economic superpower, in light of its lack of governance. We also suggest that future studies examine the impact factors of RPTs in other nations, because different nations have different cultural and political environments and industry characters. Thus, the research will cover a complete study of how RPTs affects enterprise value in high-technology firms.

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APPENDIX A

A. Stewart (1991) point out relevant adjust items such as R&D, depreciation, allowance for account receivable, allowance for loss on inventory, allowance for loss on short-term investment securities, construction in process and short-term investment securities.
B. This research defines the EVA (Steward, 1991) model in three ways as follows:

1. EVA1: (unadjusted EVA) = NOPAT - (WACC × IC)

NOPAT = Pretax operating income (1 - cash tax rate)

Invest capital(IC) = asset- non bear debt- short term securities investment - construction in process

2. EVA2: adjusted EVA (join adjusted items) = NOPAT - (WACC × IC)

NOPAT = pretax operating income (1-cash tax rate) + adjustment items

Invest capital(IC) = asset - non bear debt - short term securities investment-construction in process + adjusted items

3. EVA3: adjusted EVA (join economic deprecation adjusted items) = NOPAT-(WACC × IC)

NOPAT = pretax operating income (1 - cash tax rate) + adjustment items ± economic deprecation adjusted items

Invest capital = asset- non bear debt - short term securities investment - construction in process + adjusted items

In addition,

1. Weight average capital cost (WACC) =

$$\frac{Interest..\exp ense}{debt} \times \frac{debt}{capital} \times (1-tax\%) + equity.\cos t \times \frac{equity}{capital}$$

2. Equity cost is measured by capital asset price model and calculated by $R_f + \beta (R_m - R_f)$ R_f is the risk free (fixed deposit interest rate in one year). β is risk Coefficient. R_m is return of market (portfolio).

3.No bear debt = account payable + account notes + accrued expense + pre-earned revenue + other 3.No bear debt = account payable + account notes + accrued expense + pre-earned revenue + other account payable + account tax payable + other current liabilities

4. Adjust items, un-amortization research expense (5 years, Straight-line method)) + un-amortization marketing expense (5 years, Straight-line method)) + allowance for account receivable + allowance for loss on inventory + allowance for loss on short term investment securities.

5. Economic deprecation adjusted items is measured by funds method as it is better.