

China vs. US: Earnings Management Confronting the Market Fall – Evidence from Information Technology Industry

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Presentation Outline

- 1) Introduction
(Background, Literature ...)
- 2) Research Question
- 3) Data & Sample
- 4) Research Methodology
- 5) Test Results
- 6) Conclusion

Burst of "dotcom (IT) bubble"

Nasdaq Crash



Earnings Management Literature

- **U.S.** (tremendous)
 - Tremendous... *Artificial* increase (mostly) of assets, revenues, profits ...
- **CHINA** (emerging)
 - EM & IPO (e.g. *Chui et al, 2001; Wang, 2005; Cheng, 2007; Kao et al, 2009*)
 - EM & rights issue/SEO – tightened requirement (e.g. *Chen & Yuan, 2004; Haw et al, 2005; Yu et al, 2006; Chen et al, 2008*)
 - EM & corporate governance (*Liu & Lu, 2007*)
 - EM & ownership concentration (*Ding et al, 2007*)

You All Heard Of These...

- *The Accounting Scandals*

Enron

- 2001, Hidden debt/loss; Insider trading
- \$90+/sh dropped to \$0.5/sh

Fall of Arthur Anderson

CEO: Jeffrey Skilling
- 24-year prison; \$45m fine

CFO: Andrew Fastow
- 6-year prison

Chairman: Kenneth Lay
- died (could be 20-30 yr)

WorldCom

- Telecom company
- Since 1999, capitalized expenses to mark loss ...
- Jul 2002, internal auditors discovered \$3.8 billion fraud ...

CEO: Bernard Ebbers
- 25-year prison

CFO: Scott Sullivan
- 5-year prison

Yin-Guang-Sha (银广夏)

- Blue-chip high-tech company
- Aug 2001, "Caijing" journal article
- forged customs receipts; 6+ billion RMB loss to investors

Fall of Zhong-Tian-Qin (中天勤)

TJ Chair & TJ CFO: Dong, Bo (董博)
- 3-year prison; 100k RMB fine

CEO, CFO, TJ Vice Chair
- 2.5-year prison; 30k - 80k RMB

Chinese Stock Market

- 1978 – Transformation to market economy
- 1990 – Shanghai Stock Exchange
- 1991 – Shenzhen Stock Exchange
- Capitalization / GDP: 4% 1992; 100%+ Aug 2007
- 1992 – CSRC (*China Securities Regulatory Commission*)
- 1998 – 1st securities law
- 1999~2002 – Many new disclosure regulations

Fast developing; Less regulated

“Conservative” U.S. IT Industry

- Francis et al (1994); Johnson et al (2001); etc.
 - high-tech firms are more vulnerable to litigations due to the highly volatile stock prices à incentive to be “conservative”
- Kwon et al (2006) - higher level of accounting conservatism in high-tech firms (c.f. low-tech firms); 1990-1998

What if market crashed?

Research Questions

- **China vs. U.S. ?**
 - Expectation: EM degree is higher in China
- **IT industry confronting market fall ?**

Chinese IT industry ?

- Expectation: EM degree is even higher

U.S. IT industry ?

- Expectation: Could be either way

Data & Sample

CHINA Sample: 483 obs.

U.S. Sample: 4,682 obs.

- Sample Period: 1999 – 2006
- Data Source:
 - Chinese IT firms: Wind Financial Database
 - U.S. IT firms: Compustat Research Insight
- CYN à USD
 - by year-end interbank exchange rates
- FYE: December
- Matched Industry
 - China: Industry Code of “G”
 - U.S.: Matched SIC descriptions
- Matched TA Range (base range: China)

Data & Sample

- Sample Distribution by Sub-Industry

CNINA		
<u>Ind. Code</u>	<u>Description</u>	<u>#Obs.</u>
G	Information Technology	71
G81	Communication, Audio, Video and Related Equipment	179
G83	Computer Hardware and Related Equipment	58
G85	Communication Services	29
G87	Computer Software Development Services	<u>146</u>
Total		483
U.S.		
<u>SIC code</u>	<u>Description</u>	<u>#Obs.</u>
357	Computer and Office Equipment	496
365	Household Audio, Video Equipment, Audio Receiving	45
366	Communication Equipment	593
367	Electronic Components, Semiconductors	682
481	Telephone Communications	611
737	Computer Programming, Software, Data Processing	<u>2,255</u>
Total		4,682

Data & Sample

- Sample Distribution by Year

	<u>Total</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
CNINA	483	38	41	53	64	68	73	76	70
U.S.	4,682	458	580	666	634	647	620	606	471

Data & Sample

- Descriptive Statistics

CNINA									
	Total	1999	2000	2001	2002	2003	2004	2005	2006
<i>N</i>	483	38	41	53	64	68	73	76	70
<i>TA_t</i>	366.1 ***	129.1 **	172.7 **	193.0 **	226.4 **	496.2 *	473.0 **	459.9 **	527.1 *
<i>Sales_t</i>	260.0 ***	89.9 **	117.9 **	152.2 ***	181.4 **	295.8 *	311.3 ***	330.1 **	424.5
<i>NI_t</i>	6.4	5.5	8.5	6.6	4.3	4.6	6.8	3.8 *	11.6 *
$\Delta Sales\%_t$	28.0%	37.0%	49.3%	60.2% ***	34.0% **	18.5%	12.7% *	14.2%	21.2%
<i>ROA_t</i>	0.90% ***	3.05% *	4.50% **	3.65% ***	1.20% ***	-0.14% ***	0.32% *	-2.13%	0.28%
U.S.									
	Total	1999	2000	2001	2002	2003	2004	2005	2006
<i>N</i>	4,682	458	580	666	634	647	620	606	471
<i>TA_t</i>	1100.7 ***	1059.2 **	1103.6 **	964.3 **	982.5 **	1067.2 *	1261.7 **	1212.3 **	1179.7 *
<i>Sales_t</i>	681.1 ***	660.9 **	618.3 **	550.9 ***	573.5 **	654.4 *	823.2 ***	790.9 **	815.7
<i>NI_t</i>	8.7	39.3	-3.7	-104.9	-33.1	29.2	41.9	60.0 *	73.6 *
$\Delta Sales\%_t$	30.7%	45.0%	80.7%	17.2% ***	9.0% **	19.2%	27.6% *	31.2%	22.9%
<i>ROA_t</i>	-14.50% ***	-5.64% *	-19.69% **	-42.45% ***	-21.21% ***	-9.08% ***	-5.16% *	-3.21%	-2.87%

Research Methodology

EM Measurement (EM1), higher variance \Rightarrow lower EM

(1) Volatility of Earnings – variance of change in net income conditional on control factors [e.g. Lang et al (2006)]

$$DNI_t = Grow_t + Debt_t + Levg_t + AsTn_t + Size_t + \varepsilon^1_t \quad (1)$$

Where

DNI_t = change in net income from year t-1 to year t deflated by average total assets

$Grow_t$ = percentage change in annual net sales revenues from year t-1 to year t

$Debt_t$ = percentage change in total liabilities from year t-1 to year t

$Levg_t$ = leverage ratio for year t, equals to total liabilities over total equity

$AsTn_t$ = asset turnover for year t, equals to total annual net sales over total assets

$Size_t$ = natural log of total assets at the end of year t in millions.

All test/control variables are winsorized at 2% (top 1%, bottom 1%)

All residuals are winsorized at 1% (top .5%, bottom .5%).

Research Methodology

EM Measurement (higher variance ratio \Rightarrow lower EM)

(2) Variability of Earnings over Cash Flows – variance of change in net income over variance of change in cash flows conditional on control factors [e.g. Machuga & Teitel (2007)]

$$DCFO_t = Grow_t + Debt_t + Levg_t + AsTn_t + Size_t + \varepsilon^2_t \quad (2)$$

Where

DCFO_t = change in operating cash flows from year t-1 to year t deflated by average total assets

All test/control variables are winsorized at 2% (top 1%, bottom 1%)

All residuals are winsorized at 1% (top .5%, bottom .5%).

Research Methodology

EM Measurement (smaller negative correlation \Rightarrow lower EM)

(3) Correlations between Accruals and Cash Flows – Spearman correlation between accruals and cash flows conditional on control factors [e.g. Leuz et al (2003)]

$$TAC_t = Grow_t + Debt_t + Levg_t + AsTn_t + Size_t + \varepsilon^3_t \quad (3)$$

$$CFO_t = Grow_t + Debt_t + Levg_t + AsTn_t + Size_t + \varepsilon^4_t \quad (4)$$

Where

$TAC_t =$ total accruals in year t , equals to net income less operating cash flows deflated by average total assets

$CFO_t =$ operating cash flows in year t deflated by average total assets

All test/control variables are winsorized at 2% (top 1%, bottom 1%)

All residuals are winsorized at 1% (top .5%, bottom .5%).

Test Results

(1) Volatility of Earnings (EM1 & EM2)

CNINA

	<u>Total</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
<i>N</i>	483	38	41	53	64	68	73	76	70
ΔNI_t Mean	-0.003 **	0.014	0.026 **	0.000	-0.016 ***	-0.015 ***	-0.001	-0.035 **	0.027
ΔCFO_t Mean	0.008 *	0.033	0.021 **	0.017	-0.019 ***	0.003 *	0.000	0.015	0.010
ϵ^1_t Var.	0.007	0.009	0.005	0.005	0.004	0.006	0.009	0.011	0.007
ϵ^2_t Var.	0.017	0.014	0.023	0.023	0.019	0.019	0.018	0.015	0.010
Var. Ratio	0.430	0.602	0.215	0.213	0.209	0.306	0.507	0.751	0.690

U.S.

	<u>Total</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
<i>N</i>	4,682	458	580	666	634	647	620	606	471
ΔNI_t Mean	0.036 **	-0.003	-0.082 **	-0.056	0.249 ***	0.113 ***	0.025	0.017 **	0.000
ΔCFO_t Mean	0.020 *	0.005	-0.042 **	0.030	0.073 ***	0.038 *	0.021	0.014	0.008
ϵ^1_t Var.	0.146	0.054	0.122	0.197	0.415	0.137	0.045	0.041	0.025
ϵ^2_t Var.	0.026	0.025	0.030	0.033	0.040	0.026	0.017	0.016	0.012
Var. Ratio	5.615	2.160	4.067	5.970	10.375	5.269	2.647	2.563	2.083

Test Results

(2) *Corr. between Accruals and Cash Flows (EM3)*

	<u>Total</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
<i># Observations</i>									
CHINA	483	38	41	53	64	68	73	76	70
U.S.	4,682	458	580	666	634	647	620	606	471
<i>Spearman Corr.</i>									
CHINA	-0.749 ***	-0.657 ***	-0.824 ***	-0.947 ***	-0.789 ***	-0.775 ***	-0.744 ***	-0.616 ***	-0.751 ***
U.S.	-0.029 **	-0.155 ***	0.007	0.108 ***	0.051	-0.159 ***	-0.121 ***	-0.102 **	-0.122 ***
<i>Z value</i> _{-obs}									
	19.65 ***	3.60 ***	7.02 ***	13.03 ***	8.35 ***	6.70 ***	6.64 ***	4.97 ***	6.53 ***



Conclusion

- U.S. IT firms experienced dramatic drop in earnings and growth during the Nasdaq fall whereas **Chinese IT firms** seemed to be less affected and achieved relatively steady increase in earnings and growth
- **Chinese IT firms** are more likely to manage financial reporting to smooth earnings and conceal shocks, especially during the period of market decline .
- There is no sign of increased earnings smoothing for the U.S. IT firms at the time of market fall

Thank You