

The Quality of Interactive Data:

XBRL vs. Compustat, Yahoo Finance, and Google Finance

Dr. J. Efrim Boritz, FCPA, CISA

Ontario CPAs Professor of Accounting
University of Waterloo

STILL HAVEN'T FOUND WHAT
YOU'RE LOOKING FOR?
HARNESS THE POWER OF
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ACKNOWLEDGMENTS

This research was conducted by

Efrim Boritz
University of Waterloo

Won Gyun No
Iowa State University



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University of Waterloo Centre for
Information Integrity and Information Systems Assurance

AGENDA

- ❖ Background
- ❖ Research objectives
- ❖ Research method
- ❖ Analysis and results
- ❖ Summary and limitations



INTRODUCTION

❖ Former SEC chairman Christopher Cox (2006)

One of the best things about interactive data is that financial information will be more trustworthy....

*Executives who have taken the time to double check the data that financial analysts following their companies are working with can sometimes get quite a shock. That's because **some of them bear no resemblance to what the companies published**. When they are asked, **"Do you know where analysts get data on your companies to populate their valuation models?"** they usually reply, "well, **from our financial statements.**"*

*BZZZZZ. **Wrong answer.** And then, their first reaction is surprise. That surprise turns to concern when they realize that the numbers the analysts are using in their valuation models can have an error rate of 28%, or higher still if the data in question comes from the footnotes."*

❖ Mike Willis (at the 2010 World Congress of Accountants)

Provided examples of data distortions in company data provided by data distributors such as Yahoo, Google, and Money.



BACKGROUND

- ❖ Virtues of interactive data based on XBRL as contrasted with data provided by aggregators/redistributors
 - ◆ A direct reflection of the entity's financial reports.
 - ◆ Provide a greater level of detail.
 - ◆ Probably more accurate data (providing that at least some of the companies prepare the reports independently and deal with their own familiar data).
 - ◆ Proponents of XBRL have claimed (at recent XBRL International conferences) that XBRL-tagged data obtained directly from the company or from a regulator's website such as the SEC's EDGAR system, in contrast with data obtained from aggregators such as Compustat, are the closest and most accurate reflection of the company's intended communication in their official financial reports.



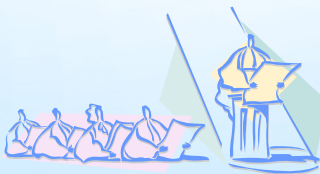
BACKGROUND

❖ Prior research

- ♦ Quality of data standards
(e.g., Bonsón et al. 2009; Zhu and Fu 2009; Zhu and Wu 2010)
- ♦ Use of extension taxonomies
(e.g., Chou 2006; Chou and Chang 2008)
- ♦ Tagging quality
(e.g., Boritz and No 2008; Debreceeny et al. 2010; Debreceeny et al. 2011; Du et al. 2011; Roohani and Zheng 2011)



However, to date, there has been no formal academic study of the quality of XBRL-tagged data compares to data already being provided by alternative sources such as the aggregators/distributors.



RESEARCH OBJECTIVES

- ❖ Since all of the data aggregators start with companies' own filings, it would be expected that no differences between the companies' data and the aggregator-provided data.

Main research questions

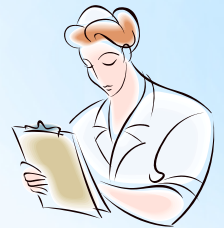
- ♦ R1: Do XBRL-tagged data on the SEC's EDGAR website match up with data provided by three well known data aggregators: Compustat, Yahoo Finance, and Google Finance?
- ♦ R2: Are any differences that are observed material?
- ♦ R3: What factors explain the differences?



SAMPLE

❖ Random sample of 75 companies

- ♦ 25 firms from each phase group
- ♦ Three years of interactive data 10-K filings:
2009, 2010, and 2011
- ♦ Three statements:
Balance Sheet, Income Statement, and the Statement of Cash Flows
- ♦ Data from three aggregators/distributors:
Compustat, Yahoo Finance, and Google Finance



Source	Phase I ^a	Phase II ^b	Phase III ^c	Total filings	Statements ^d
EDGAR	75	50	25	150	450
Compustat	75	50	25	150	450
Yahoo	75	50	25	150	450
Google	75	50	25	150	450
Total	300	200	100	600	1,800

^a 10-K filings for 2009, 2010, and 2011

^b 10-K filings for 2010 and 2011

^c 10-K filings for 2011

^d 150 filings * 3 statements (i.e., Balance Sheet, Income Statement, and the Statement of Cash Flows)



PROCEDURES & MEASURES

- ❖ Two research assistants were hired to perform the comparison.
- ❖ The comparison was conducted in six steps
 - ♦ Step 1
One hour training
 - ♦ Step 2
 - Obtain interactive data 10-K filings of 75 firms from the SEC's EDGAR site.
 - Gather the corresponding financial facts of each filing from Compustat, Yahoo Finance, and Google Finance.
 - ♦ Step 3
Compare each financial fact in the original EDGAR filing with the corresponding financial facts in the SEC's IDV and Fujitsu tool to identify any differences.



PROCEDURES & MEASURES

- ❖ Two research assistants were hired to perform the comparison.
- ❖ The comparison was conducted in six steps

Original Filing (HTML)

Consolidated Balance Sheets			
Dollars in millions except per share amounts			
	December 31,		
	2010	2009	
Assets			
Current Assets			
Cash and cash equivalents	\$ 1,437	\$ 3,741	
Accounts receivable - net of allowances for doubtful accounts of \$957 and \$1,202	13,610	14,845	
Prepaid expenses	1,458	1,562	
Deferred income taxes	1,170	1,247	
Other current assets	2,276	3,792	
Total current assets	19,951	25,187	
Property, Plant and Equipment - Net	103,196	99,519	
Goodwill	73,601	72,782	
Licenses	50,372	48,741	
Customer Lists and Relationships - Net	4,708	7,393	
Other Intangible Assets - Net	5,440	5,494	
Investments in Equity Affiliates	4,515	2,921	
Other Assets	6,705	6,275	
Total Assets	\$268,488	\$ 268,312	
Liabilities and Stockholders' Equity			
Current Liabilities			
Debt maturing within one year	\$ 7,196	\$ 7,361	
Accounts payable and accrued liabilities	20,055	21,260	
Advanced billing and customer deposits	4,086	4,170	
Accrued taxes	72	1,681	
Dividends payable	2,542	2,479	
Total current liabilities	33,951	36,951	
Long-Term Debt			
Deferred Credits and Other Noncurrent Liabilities			
Deferred income taxes	22,070	23,579	
Postemployment benefit obligation	28,803	27,847	
Other noncurrent liabilities	12,743	13,226	
Total deferred credits and other noncurrent liabilities	63,616	64,652	
Stockholders' Equity			
Common stock (\$1 par value, 14,000,000,000 authorized at December 31, 2010 and 2009; issued 6,495,231,088 at December 31, 2010 and 2009)	6,495	6,495	
Additional paid-in capital	91,731	91,707	
Retained earnings	31,792	21,944	
Treasury stock (\$84,144,220 at December 31, 2010, and \$93,300,187 at December 31, 2009, at cost)	(21,083)	(21,260)	
Accumulated other comprehensive income	2,712	2,678	
Noncontrolling interest	303	425	
Total stockholders' equity	111,950	101,989	
Total Liabilities and Stockholders' Equity	\$268,488	\$ 268,312	

The accompanying notes are an integral part of the consolidated financial statements.

Interactive Data Viewer

CONSOLIDATED BALANCE SHEETS (USD \$)		Dec. 31, 2010
In Millions		
Current Assets		
Cash and cash equivalents		\$ 1,437
Accounts receivable - net of allowances for doubtful accounts of \$957 and \$1,202		13,610
Prepaid expenses		1,458
Deferred income taxes		1,170
Other current assets		2,276
Total current assets		19,951
Property, Plant and Equipment - Net		103,196
Goodwill		73,601
Licenses		50,372
Customer Lists and Relationships - Net		4,708
Other Intangible Assets - Net		5,440
Investments in Equity Affiliates		4,515
Other Assets		6,705
Total Assets		268,488
Current Liabilities		
Debt maturing within one year		7,196
Accounts payable and accrued liabilities		20,055
Advanced billing and customer deposits		4,086
Accrued taxes		72
Dividends payable		2,542
Total current liabilities		33,951
Long-Term Debt		58,971
Deferred Credits and Other Noncurrent Liabilities		
Deferred income taxes		22,070
Postemployment benefit obligation		28,803
Other noncurrent liabilities		12,743
Total deferred credits and other noncurrent liabilities		63,616
Stockholders' Equity		
Common stock (\$1 par value, 14,000,000,000 authorized at December 31, 2010 and 2009; issued 6,495,231,088 at December 31, 2010 and 2009)		6,495
Additional paid-in capital		91,731
Retained earnings		31,792
Treasury stock (\$84,144,220 at December 31, 2010 and \$93,300,187 at December 31, 2009, at cost)		(21,083)
Accumulated other comprehensive income		2,712
Noncontrolling interest		303
Total stockholders' equity		111,950
Total Liabilities and Stockholders' Equity		\$ 268,488

Fujitsu Instance Creator

Instance Table	
Instance Table	Query Table
Filter	All Items
Columns	Value Only
User Setting	
Context Group	
Search Target	Element
Element Label	Value
Statement of Financial Position [Abstract]	(Abstract)
Assets	(Abstract)
Current Assets	(Abstract)
Cash and cash equivalents	1,437,000,000
Accounts receivable - net of allowances for doubtful accounts of \$957 and \$1,202	13,610,000,000
Prepaid expenses	1,458,000,000
Deferred income taxes	1,170,000,000
Other current assets	2,276,000,000
Total current assets	19,951,000,000
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Total Assets	268,488,000,000
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Current Liabilities	(Abstract)
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Accounts payable and accrued liabilities	20,055,000,000
Advanced billing and customer deposits	4,086,000,000
Accrued taxes	72,000,000
Dividends payable	2,542,000,000
Total current liabilities	33,951,000,000
Long-Term Debt	58,971,000,000
Deferred Credits and Other Noncurrent Liabilities	(Abstract)
Deferred income taxes	22,070,000,000
Postemployment benefit obligation	28,803,000,000
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Accumulated other comprehensive income	2,712,000,000
Noncontrolling interest	303,000,000
Total stockholders' equity	111,950,000,000
Total Liabilities and Stockholders' Equity	268,488,000,000

Identify sign reversals in the XBRL instance documents

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 - ♦ Step 4
Financial facts in interactive data are traced to and compared with the corresponding financial facts gathered from Compustat, Yahoo Finance, and Google Finance.



PROCEDURES & MEASURES

CONSOLIDATED BALANCE SHEETS (USD \$) In Millions	Dec. 31, 2010
Current Assets	
Cash and cash equivalents	\$ 1,437
Accounts receivable - net of allowances for doubtful accounts of \$957 and \$1,202	13,610
Prepaid expenses	1,458
Deferred income taxes	1,170
Other current assets	2,276
Total current assets	19,951
Property, Plant and Equipment - Net	103,196
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Other Intangible Assets - Net	5,440
Investments in Equity Affiliates	4,515
Other Assets	6,705
Total Assets	268,488
Current Liabilities	
Debt maturing within one year	7,196
Accounts payable and accrued liabilities	20,055
Advanced billing and customer deposits	4,086
Accrued taxes	72
Dividends payable	2,542
Total current liabilities	33,951
Long-Term Debt	58,971
Deferred Credits and Other Noncurrent Liabilities	
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Stockholders' Equity	
Common stock (\$1 par value, 14,000,000,000 authorized at December 31, 2010 and 2009; issued 6,495,231,088 at December 31, 2010 and 2009)	6,495
Additional paid-in capital	91,731
Retained earnings	31,792
Treasury stock (584,144,220 at December 31, 2010 and 593,300,187 at December 31, 2009, at cost)	(21,083)
Accumulated other comprehensive income	2,712
Noncontrolling interest	303
Total stockholders' equity	111,950
Total Liabilities and Stockholders' Equity	\$ 268,488

Fiscal Year: (FYR Ending):	2010 (31DEC2010)
ASSETS	
Cash & Equivalents	1,437
Receivables - Total (Net)	13,610
Inventories - Total	1,303
Prepaid Expenses	1,458
Current Assets - Other	2,143
Current Assets - Total	19,951
Plant, Property & Equip (Gross)	243,833
Accumulated Depreciation	140,637
Plant, Property & Equip (Net)	103,196
Investments at Equity	4,515
Investments and Advances - Other	-
Intangibles	134,121
Deferred Charges	-
Assets - Other	6,705
TOTAL ASSETS	268,488
LIABILITIES	
Accounts Payable	7,437
Notes Payable	1,652
Accrued Expenses	11,340
Taxes Payable	72
Debt (Long-Term) Due In One Year	5,544
Other Current Liabilities	7,906
Total Current Liabilities	33,951
Long Term Debt	58,971
Deferred Taxes (Balance Sheet)	22,070
Investment Tax Credit	-
Liabilities - Other	41,546
Noncontrolling Interest - Redeemable	-
TOTAL LIABILITIES	156,538
SHAREHOLDERS' EQUITY	
Preferred Stock	-
Common Stock	6,495
Capital Surplus	91,731
Retained Earnings (Net Other)	34,504
Less: Treasury Stock	21,083
Shareholders Equity - Parent	111,647
Noncontrolling Interest - Nonredeemable	303
TOTAL SHAREHOLDERS EQUITY	111,950
TOTAL LIABILITIES AND EQUITY	268,488

◆ Comparison result coding

▪ Match (0)

If a financial fact in the interactive data matched with the corresponding financial fact in Compustat or Yahoo Finance or Google Finance

▪ Mismatch (1)

If a financial fact in the interactive data was found in Compustat or Yahoo Finance or Google Finance with a similar label but the amounts did not match

▪ Omission (2)

If a financial fact in the interactive data was not available in Compustat or Yahoo Finance or Google Finance



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 - ♦ Step 4
Financial facts in interactive data are traced to and compared with the corresponding financial facts gathered from Compustat, Yahoo Finance, and Google Finance.
 - ♦ Step 5
Perform the reverse comparison.
 - ♦ Step 6
Compare and reconcile any differences in results.



ANALYSIS AND RESULTS

❖ Descriptive Statistics

		Phase I	Phase II	Phase III	Total
ASSETS (Million)	Min. ^a	\$4,449.90	\$484.89	\$23.85	\$23.85
	Max. ^b	\$799,625.00	\$12,995.85	\$3,320.13	\$799,625.00
	M ^c	\$101,727.50	\$3,269.69	\$509.55	\$35,168.91
	S.D. ^d	\$208,048.18	\$2,560.08	\$772.12	\$127,619.08
REVENUES (Million)	Min.	\$1,315.15	\$99.09	\$1.22	\$1.22
	Max.	\$236,286.00	\$8,134.70	\$1,231.68	\$236,286.00
	M	\$44,661.66	\$1,865.68	\$180.79	\$15,569.37
	S.D.	\$56,017.79	\$2,005.56	\$294.86	\$38,058.36
No. of Employees	Min.	116	22	10	10
	Max.	301,000	34,000	8,160	301,000
	M	64,541	5,720	1,243	23,835
	S.D.	80,966	7,203	2,201	54,659

^a Minimum ^b Maximum ^c Mean ^d Standard deviation

	2-digit SIC	Phase I	Phase II	Phase III	Total
10-19	Mining, Oil and Gas & Others	3 (12.0%)	2 (8.0%)	1 (4.0%)	6 (8.0%)
20-27	Food, Kindred, Printing & Publishing	3 (12.0%)	0 (0%)	2 (8.0%)	5 (6.7%)
28-29	Chemicals, Petroleum, Coal, Rubber & Plastics	1 (4.0%)	2 (8.0%)	2 (8.0%)	5 (6.7%)
30-39	Metal, Machinery, Equipment & Instruments	5 (20.0%)	11 (44.0%)	4 (16.0%)	20 (26.7%)
40-49	Utility & Transportation	4 (16.0%)	0 (0%)	0 (0%)	4 (5.3%)
50-59	Whole Sale & Retails	2 (8.0%)	3 (12.0%)	2 (8.0%)	7 (9.3%)
60-69	Banking & Finance	5 (20.0%)	5 (20.0%)	8 (32.0%)	18 (24.0%)
70-99	Services & Public Administration	2 (8.0%)	2 (8.0%)	6 (24.0%)	10 (13.3%)



ANALYSIS AND RESULTS

❖ Descriptive Statistics

Financial facts(i.e., Elements) reported in interactive data

Group	Statement ^a	Standard Elements				Extension Elements				Overall			
		Min. ^b	Max. ^c	M ^d	S.D. ^e	Min.	Max.	M	S.D.	Min.	Max.	M	S.D.
Phase I	BS	21	48	31.0	6.0	0	8	2.2	1.8	22	49	33.2	6.0
	IS	14	36	22.1	4.9	0	11	2.8	2.4	16	42	24.9	5.4
	SCF	23	62	33.9	6.6	0	39	5.6	6.3	27	90	39.5	11.1
	Total	14	62	29.0	7.7	0	39	3.5	4.3	16	90	32.6	9.9
Phase II	BS	20	40	29.3	4.5	0	5	1.4	1.5	22	42	30.6	4.0
	IS	11	37	20.8	5.8	0	4	1.3	1.2	15	40	22.0	5.9
	SCF	20	46	31.9	6.1	0	10	2.4	2.3	23	47	34.3	6.2
	Total	11	46	27.3	7.3	0	10	1.7	1.8	15	47	29.0	7.5
Phase III	BS	20	35	28.7	4.4	0	6	1.8	1.7	21	38	30.5	5.0
	IS	11	45	24.0	9.5	0	8	1.8	2.0	12	50	25.8	10.2
	SCF	17	49	31.0	7.5	0	11	3.2	2.9	21	52	34.2	8.2
	Total	11	49	27.9	7.9	0	11	2.2	2.3	12	52	30.2	8.7
Overall	BS	20	48	30.0	5.4	0	8	1.9	1.7	21	49	31.9	5.4
	IS	11	45	22.0	6.2	0	11	2.1	2.1	12	50	24.1	6.7
	SCF	17	62	32.8	6.7	0	39	4.1	5.0	21	90	36.9	9.6
	Total	11	62	28.3	7.6	0	39	2.7	3.4	12	90	31.0	9.1
All Three Statements ^f	Phase I	63	134	83.7	13.5	2	45	10.4	7.5	72	164	94.2	17.8
	Phase II	53	115	78.8	12.6	0	17	5.1	3.7	62	118	83.9	12.3
	Phase III	46	121	80.1	17.3	0	16	6.6	5.0	53	130	86.8	19.5
	Total	46	134	81.5	14.0	0	45	8.0	6.5	53	164	89.5	17.1

^a BS(Balance Sheet), IS(Income Statement), and SCF(Statement of Cash Flows)

^b Minimum ^c Maximum ^d Mean ^e Standard deviation

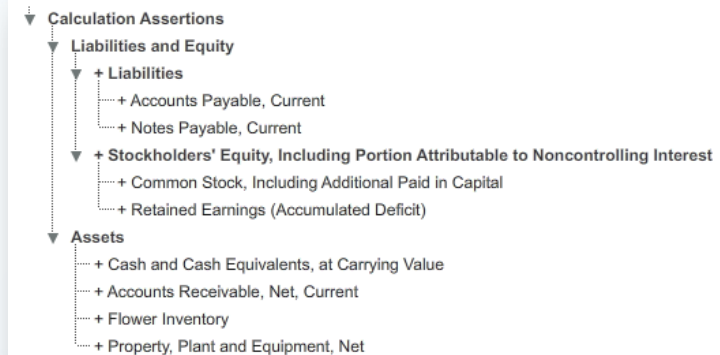
^f Since some elements are used in more than one statement (e.g., net income – IS and SCF), we also calculate the total number of elements used to tag financial facts by eliminating redundant elements.

Compustat, Yahoo, and Google

Statement ^a	Compustat	Yahoo Finance	Google Finance
BS	65	34	42
IS	47	23	49
SCF	33	19	19
All Three Statement ^b	145	75	109

^a BS(Balance Sheet), IS(Income Statement), and SCF(Statement of Cash Flows)

^b The total is different from the sum of three statements because some facts are used in more than one statement.



Validation Results

Group	2009		2010		2011		Total	
	Filings ^a	N ^b (%)	Filings	N (%)	Filings	N (%)	Filings	N (%)
Phase I	25	8 (32.0%)	25	23 (92.0%)	25	22 (88.0%)	75	53 (70.7%)
Phase II	-	-	25	6 (24.0%)	25	23 (92.0%)	50	29 (58.0%)
Phase III	-	-	-	-	25	11 (44.0%)	25	11 (44.0%)
Total	25	8 (32.0%)	50	29 (58.0%)	75	56 (74.7%)	150	93 (62.0%)

^a No. of filings

^b No. of calculation warnings

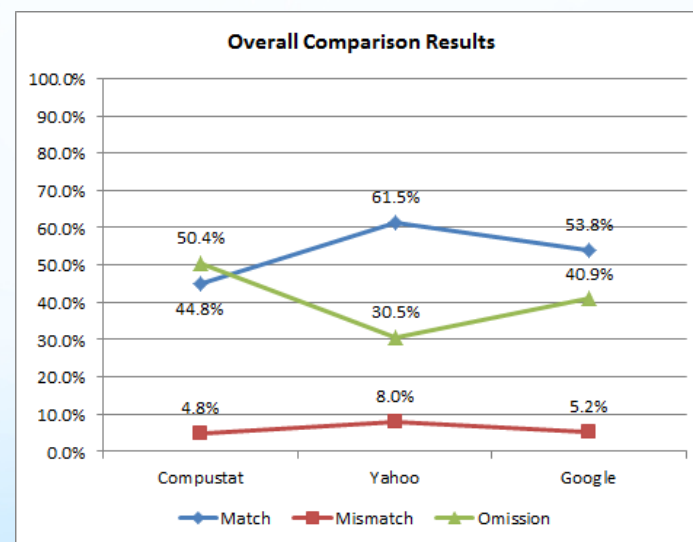
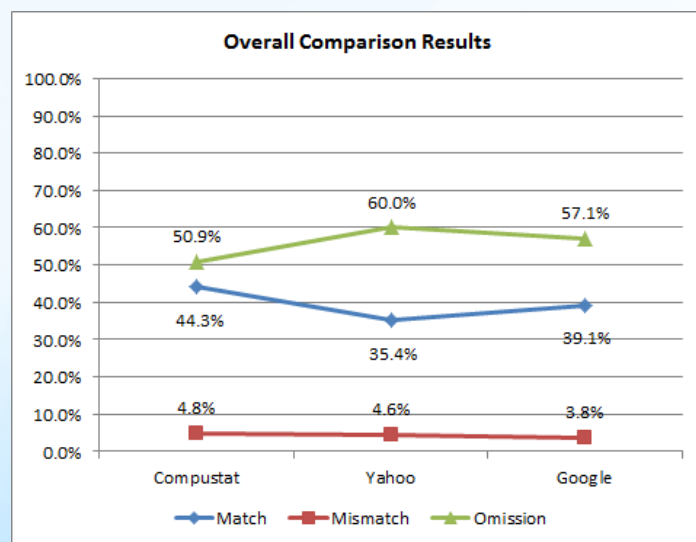


ANALYSIS AND RESULTS

❖ Comparison results

		Comparison						Reverse Comparison					
		Compustat		Yahoo		Google		Compustat		Yahoo		Google	
		N ^a (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total
Overall	Match	6,279 (44.3%)	14,163	5,012 (35.4%)	14,163	5,540 (39.1%)	14,163	6,279 (44.8%)	14,014	5,012 (61.5%)	8,152	5,540 (53.8%)	10,290
	Mismatch	677 (4.8%)	14,163	653 (4.6%)	14,163	538 (3.8%)	14,163	677 (4.8%)	14,014	653 (8.0%)	8,152	538 (5.2%)	10,290
	Omission	7,207 (50.9%)	14,163	8,498 (60.0%)	14,163	8,085 (57.1%)	14,163	7,058 (50.4%)	14,014	2,487 (30.5%)	8,152	4,212 (40.9%)	10,290

^a Total number of financial facts

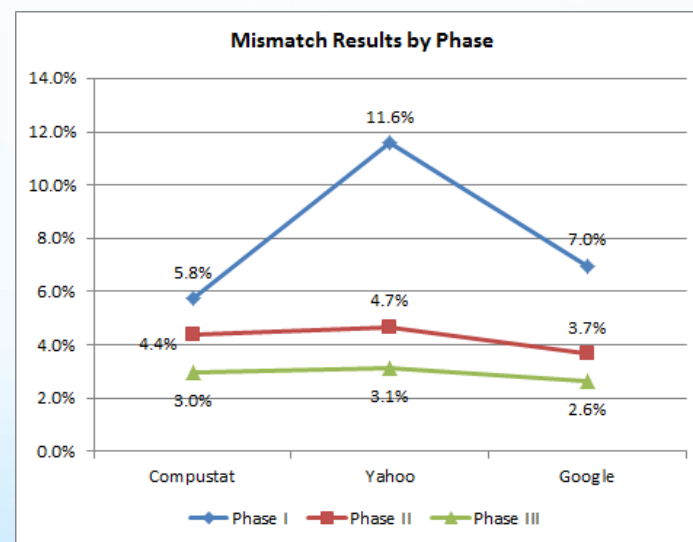
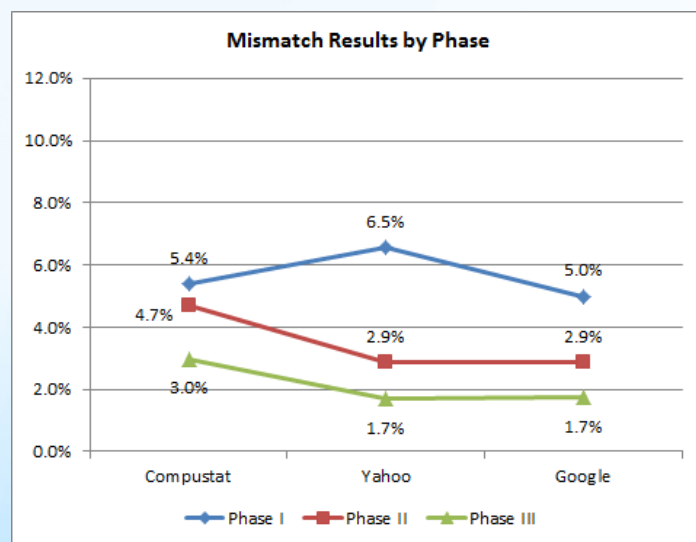


ANALYSIS AND RESULTS

❖ Comparison results

		Comparison						Reverse Comparison					
		Compustat		Yahoo		Google		Compustat		Yahoo		Google	
		N ^a (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total
Overall	Match	6,279 (44.3%)	14,163	5,012 (35.4%)	14,163	5,540 (39.1%)	14,163	6,279 (44.8%)	14,014	5,012 (61.5%)	8,152	5,540 (53.8%)	10,290
	Mismatch	677 (4.8%)	14,163	653 (4.6%)	14,163	538 (3.8%)	14,163	677 (4.8%)	14,014	653 (8.0%)	8,152	538 (5.2%)	10,290
	Omission	7,207 (50.9%)	14,163	8,498 (60.0%)	14,163	8,085 (57.1%)	14,163	7,058 (50.4%)	14,014	2,487 (30.5%)	8,152	4,212 (40.9%)	10,290
Mismatch by Phase-in Group	Phase I	402 (5.4%)	7,453	488 (6.5%)	7,453	372 (5.0%)	7,453	402 (5.8%)	6,989	488 (11.6%)	4,214	372 (7.0%)	5,331
	Phase II	206 (4.7%)	4,401	126 (2.9%)	4,401	126 (2.9%)	4,401	206 (4.4%)	4,693	126 (4.7%)	2,698	126 (3.7%)	3,438
	Phase III	69 (3.0%)	2,309	39 (1.7%)	2,309	40 (1.7%)	2,309	69 (3.0%)	2,332	39 (3.1%)	1,240	40 (2.6%)	1,521

^a Total number of financial facts

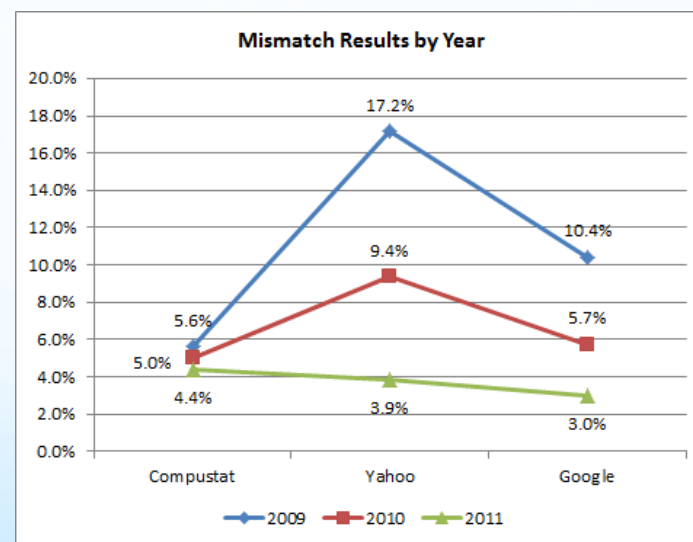
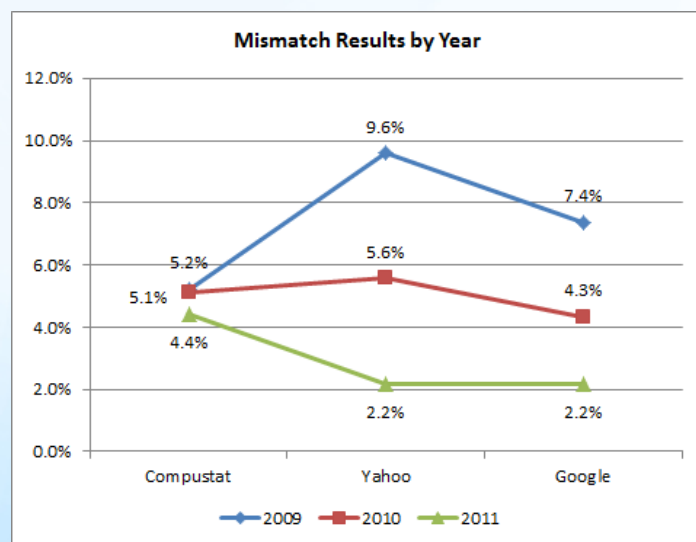


ANALYSIS AND RESULTS

❖ Comparison results

		Comparison						Reverse Comparison					
		Compustat		Yahoo		Google		Compustat		Yahoo		Google	
		N ^a (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total
Overall	Match	6,279 (44.3%)	14,163	5,012 (35.4%)	14,163	5,540 (39.1%)	14,163	6,279 (44.8%)	14,014	5,012 (61.5%)	8,152	5,540 (53.8%)	10,290
	Mismatch	677 (4.8%)	14,163	653 (4.6%)	14,163	538 (3.8%)	14,163	677 (4.8%)	14,014	653 (8.0%)	8,152	538 (5.2%)	10,290
	Omission	7,207 (50.9%)	14,163	8,498 (60.0%)	14,163	8,085 (57.1%)	14,163	7,058 (50.4%)	14,014	2,487 (30.5%)	8,152	4,212 (40.9%)	10,290
Mismatch by Phase-in Group	Phase I	402 (5.4%)	7,453	488 (6.5%)	7,453	372 (5.0%)	7,453	402 (5.8%)	6,989	488 (11.6%)	4,214	372 (7.0%)	5,331
	Phase II	206 (4.7%)	4,401	126 (2.9%)	4,401	126 (2.9%)	4,401	206 (4.4%)	4,693	126 (4.7%)	2,698	126 (3.7%)	3,438
	Phase III	69 (3.0%)	2,309	39 (1.7%)	2,309	40 (1.7%)	2,309	69 (3.0%)	2,332	39 (3.1%)	1,240	40 (2.6%)	1,521
Mismatch by Year	2009	131 (5.2%)	2,510	241 (9.6%)	2,510	185 (7.4%)	2,510	131 (5.6%)	2,324	241 (17.2%)	1,403	185 (10.4%)	1,777
	2010	236 (5.1%)	4,627	258 (5.6%)	4,627	201 (4.3%)	4,627	236 (5.0%)	4,682	258 (9.4%)	2,752	201 (5.7%)	3,502
	2011	310 (4.4%)	7,026	154 (2.2%)	7,026	152 (2.2%)	7,026	310 (4.4%)	7,008	154 (3.9%)	3,997	152 (3.0%)	5,011

^a Total number of financial facts

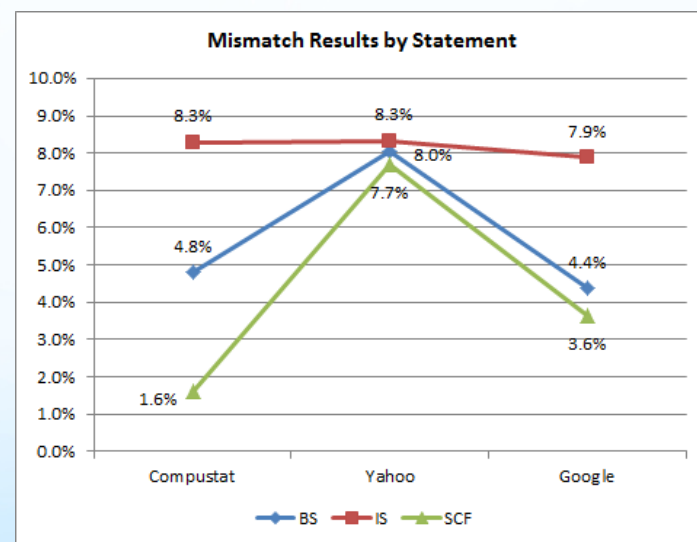
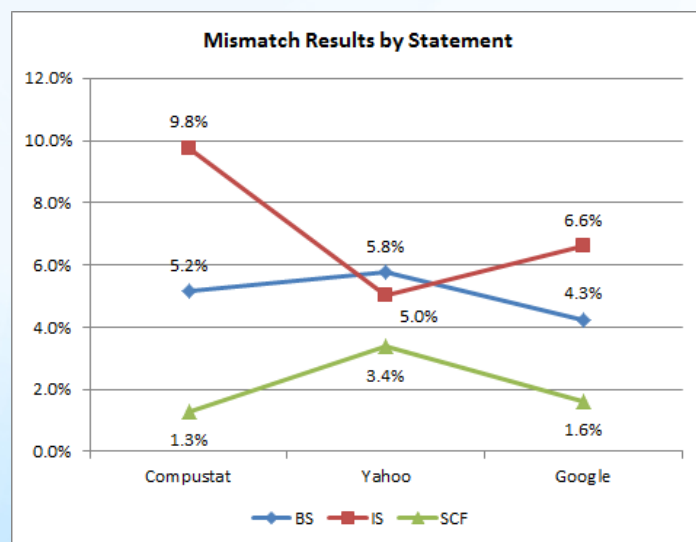


ANALYSIS AND RESULTS

❖ Comparison results

		Comparison						Reverse Comparison					
		Compustat		Yahoo		Google		Compustat		Yahoo		Google	
		N* (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total	N (%)	Total
Overall	Match	6,279 (44.3%)	14,163	5,012 (35.4%)	14,163	5,540 (39.1%)	14,163	6,279 (44.8%)	14,014	5,012 (61.5%)	8,152	5,540 (53.8%)	10,290
	Mismatch	677 (4.8%)	14,163	653 (4.6%)	14,163	538 (3.8%)	14,163	677 (4.8%)	14,014	653 (8.0%)	8,152	538 (5.2%)	10,290
	Omission	7,207 (50.9%)	14,163	8,498 (60.0%)	14,163	8,085 (57.1%)	14,163	7,058 (50.4%)	14,014	2,487 (30.5%)	8,152	4,212 (40.9%)	10,290
Mismatch by Phase-in Group	Phase I	402 (5.4%)	7,453	488 (6.5%)	7,453	372 (5.0%)	7,453	402 (5.8%)	6,989	488 (11.6%)	4,214	372 (7.0%)	5,331
	Phase II	206 (4.7%)	4,401	126 (2.9%)	4,401	126 (2.9%)	4,401	206 (4.4%)	4,693	126 (4.7%)	2,698	126 (3.7%)	3,438
	Phase III	69 (3.0%)	2,309	39 (1.7%)	2,309	40 (1.7%)	2,309	69 (3.0%)	2,332	39 (3.1%)	1,240	40 (2.6%)	1,521
Mismatch by Year	2009	131 (5.2%)	2,510	241 (9.6%)	2,510	185 (7.4%)	2,510	131 (5.6%)	2,324	241 (17.2%)	1,403	185 (10.4%)	1,777
	2010	236 (5.1%)	4,627	258 (5.6%)	4,627	201 (4.3%)	4,627	236 (5.0%)	4,682	258 (9.4%)	2,752	201 (5.7%)	3,502
	2011	310 (4.4%)	7,026	154 (2.2%)	7,026	152 (2.2%)	7,026	310 (4.4%)	7,008	154 (3.9%)	3,997	152 (3.0%)	5,011
Mismatch by Statement	BS	249 (5.2%)	4,822	278 (5.8%)	4,822	205 (4.3%)	4,822	249 (4.8%)	5,188	278 (8.0%)	3,459	205 (4.4%)	4,685
	IS	355 (9.8%)	3,639	183 (5.0%)	3,639	240 (6.6%)	3,639	355 (8.3%)	4,284	183 (8.3%)	2,198	240 (7.9%)	3,049
	SCF	73 (1.3%)	5,702	192 (3.4%)	5,702	93 (1.6%)	5,702	73 (1.6%)	4,542	192 (7.7%)	2,495	93 (3.6%)	2,556

* Total number of financial facts



ANALYSIS AND RESULTS

❖ ANCOVA results: Among phase-in group

		Comparison												Reverse Comparison																	
GROUP ^a	Source ^b	Interactive Data vs. Compustat					Interactive Data vs. Yahoo Finance					Interactive Data vs. Google Finance					Interactive Data vs. Compustat					Interactive Data vs. Yahoo Finance					Interactive Data vs. Google Finance				
		df	MS	F	p	η ²	df	MS	F	p	η ²	df	MS	F	p	η ²	df	MS	F	p	η ²	df	MS	F	p	η ²	df	MS	F	p	η ²
Phase I	REVENUES	1	.003	1.263	.262	.006	1	.015	2.357	.126	.011	1	.003	.423	.516	.002	1	.006	3.412	.066	.016	1	.038	2.224	.137	.010	1	.009	.914	.340	.004
	INDUSTRY	1	.004	1.973	.162	.009	1	.017	2.631	.106	.012	1	.015	2.202	.139	.010	1	.001	.263	.609	.001	1	.078	4.572	.034	.021	1	.030	2.916	.089	.013
	YEAR	2	.001	.180	.836	.002	2	.088	13.457	.001	.112	2	.053	7.822	.001	.068	2	.001	.050	.951	.001	2	.261	15.325	.001	.125	2	.096	9.468	.001	.081
	TYPE	2	.126	59.331	.001	.357	2	.015	2.341	.099	.021	2	.076	11.273	.001	.095	2	.068	38.333	.001	.264	2	.001	.036	.965	.001	2	.041	4.078	.018	.037
	YEAR * TYPE	4	.001	.098	.983	.002	4	.006	.871	.482	.016	4	.005	.781	.539	.014	4	.001	.093	.985	.002	4	.014	.828	.508	.015	4	.005	.509	.729	.009
	Error	214	.002				214	.007				214	.007				214	.002				214	.017				214	.010			
Phase II	REVENUES	1	.001	.001	.970	.001	1	.130	26.694	.001	.158	1	.001	.001	.984	.001	1	.001	.053	.818	.001	1	.127	16.248	.001	.103	1	.001	.056	.813	.001
	INDUSTRY	1	.002	.722	.397	.005	1	.020	4.180	.043	.029	1	.016	4.573	.034	.031	1	.001	1.014	.316	.007	1	.031	3.987	.048	.027	1	.023	7.031	.009	.047
	YEAR	1	.001	.001	.978	.001	1	.053	10.932	.001	.071	1	.013	3.908	.050	.027	1	.001	.010	.920	.001	1	.078	9.946	.002	.065	1	.011	3.509	.063	.024
	TYPE	2	.218	81.254	.001	.534	2	.005	.966	.383	.013	2	.037	10.839	.001	.132	2	.109	79.403	.001	.528	2	.003	.436	.647	.006	2	.030	9.275	.001	.116
	YEAR * TYPE	2	.001	.114	.893	.002	2	.012	2.466	.089	.034	2	.011	3.377	.037	.045	2	.001	.046	.955	.001	2	.016	2.068	.130	.028	2	.010	3.020	.052	.041
	Error	142	.003				142	.005				142	.003				142	.001				142	.008				142	.003			
Phase III	REVENUES	1	.001	.431	.514	.006	1	.001	.829	.366	.012	1	.001	1.079	.302	.015	1	.001	.068	.794	.001	1	.001	.550	.461	.008	1	.002	.790	.377	.011
	INDUSTRY	1	.005	1.866	.176	.026	1	.001	.123	.727	.002	1	.002	1.647	.204	.023	1	.004	2.121	.150	.029	1	.001	.004	.949	.001	1	.001	.629	.430	.009
	TYPE	2	.028	9.649	.001	.216	2	.004	8.901	.001	.203	2	.003	2.365	.101	.063	2	.013	7.816	.001	.183	2	.009	5.535	.006	.137	2	.004	1.635	.202	.045
	Error	70	.003				70	.001				70	.001				70	.002				70	.002				70	.002			

^a GROUP: Phase I, phase II, and phase III firms.

^b REVENUES: Total revenues

INDUSTRY: Industry classification based on two-digit SIC code

YEAR: 2009, 2010, and 2011

TYPE: Balance sheet (BS), Income statement (IS), and The statement of cash flows (SCF)

	Comparison								Reverse Comparison							
	YEAR				TYPE				YEAR				TYPE			
	Difference	C ^a	Y ^b	G ^c	Difference	C	Y	G	Difference	C	Y	G	Difference	C	Y	G
Phase I	2009 vs. 2010				BS vs. IS	○**			2009 vs. 2010				BS vs. IS			
	2009 vs. 2011		○*	○*	BS vs. SCF	○*		○*	2009 vs. 2011		○*	○*	BS vs. SCF			
	2010 vs. 2011		○*	○***	IS vs. SCF	○**		○*	2010 vs. 2011		○*	○**	IS vs. SCF	○**		○***
Phase II					BS vs. IS	○*							BS vs. IS	○**		○***
					BS vs. SCF	○*		○***					BS vs. SCF			
	2010 vs. 2011		○*		IS vs. SCF	○*		○***	2010 vs. 2011		○**		IS vs. SCF	○**		○**
Phase III					BS vs. IS			○***					BS vs. IS			
					BS vs. SCF	○*		○*					BS vs. SCF	○*		○**
					IS vs. SCF	○*							IS vs. SCF	○*		

^a Compustat

^b Yahoo Finance

^c Google Finance

○ The difference was found in the each phase-in group.

* $p < .001$

** $p < .01$

*** $p < .05$



ANALYSIS AND RESULTS

❖ ANCOVA results: Across years

		Comparison															Reverse Comparison														
YEAR	Source	Interactive Data vs. Compustat					Interactive Data vs. Yahoo Finance					Interactive Data vs. Google Finance					Interactive Data vs. Compustat					Interactive Data vs. Yahoo Finance					Interactive Data vs. Google Finance				
		df	MS	F	p	η^2	df	MS	F	p	η^2	df	MS	F	p	η^2	df	MS	F	p	η^2	df	MS	F	p	η^2	df	MS	F	p	η^2
2009	REVENUES	1	.001	.268	.607	.004	1	.016	1.325	.254	.019	1	.015	1.228	.272	.017	1	.001	.486	.488	.007	1	.036	1.170	.283	.016	1	.029	1.476	.229	.021
	INDUSTRY	1	.001	.121	.728	.002	1	.011	.925	.339	.013	1	.019	1.487	.227	.021	1	.001	.101	.751	.001	1	.058	1.889	.174	.026	1	.037	1.889	.174	.026
	TYPE	2	.037	16.031	.001	.314	2	.013	1.065	.350	.030	2	.045	3.563	.034	.092	2	.020	9.636	.001	.216	2	.020	.658	.521	.018	2	.025	1.278	.285	.035
	Error	70	.002				70	.012				70	.013				70	.002				70	.031				70	.020			
2010	REVENUES	1	.001	.282	.596	.002	1	.005	.675	.413	.005	1	.001	.019	.891	.001	1	.002	1.197	.276	.008	1	.015	.880	.350	.006	1	.001	.213	.645	.001
	INDUSTRY	1	.001	.477	.491	.003	1	.046	6.631	.011	.045	1	.031	5.745	.018	.039	1	.001	.006	.936	.001	1	.126	7.411	.007	.050	1	.043	6.567	.011	.044
	GROUP	1	.001	.023	.880	.001	1	.011	1.648	.201	.011	1	.008	1.552	.215	.011	1	.002	1.079	.301	.008	1	.055	3.232	.074	.022	1	.018	2.761	.099	.019
	TYPE	2	.151	67.535	.001	.487	2	.014	2.078	.129	.028	2	.077	14.270	.001	.167	2	.073	47.566	.001	.401	2	.008	.474	.624	.007	2	.059	9.008	.001	.113
	GROUP * TYPE	2	.022	9.666	.001	.120	2	.008	1.170	.313	.016	2	.002	.365	.695	.005	2	.010	6.575	.002	.085	2	.009	.516	.598	.007	2	.001	.209	.812	.003
	Error	142	.002				142	.007				142	.005				142	.002				142	.017				142	.007			
2011	REVENUES	1	.002	.658	.418	.003	1	.001	1.515	.220	.007	1	.002	1.522	.219	.007	1	.003	2.158	.143	.010	1	.002	1.147	.285	.005	1	.002	1.064	.304	.005
	INDUSTRY	1	.011	4.257	.040	.020	1	.001	1.512	.220	.007	1	.001	.326	.569	.002	1	.002	1.545	.215	.007	1	.001	.404	.526	.002	1	.001	.001	.983	.001
	GROUP	2	.008	3.057	.049	.028	2	.003	6.118	.003	.054	2	.002	1.693	.186	.016	2	.006	4.114	.018	.037	2	.011	6.639	.002	.058	2	.002	1.021	.362	.009
	TYPE	2	.158	64.197	.001	.375	2	.013	23.663	.001	.181	2	.015	10.448	.001	.089	2	.076	48.418	.001	.312	2	.017	10.463	.001	.089	2	.010	4.846	.009	.043
	GROUP * TYPE	4	.011	4.531	.002	.078	4	.001	.942	.440	.017	4	.001	.257	.905	.005	4	.006	3.620	.007	.063	4	.002	1.167	.327	.021	4	.001	.053	.995	.001
	Error	214	.002				214	.001				214	.001				214	.002				214	.002				214	.002			

* GROUP: Phase I, phase II, and phase III firms.

* REVENUES: Total revenues

* INDUSTRY: Industry classification based on two-digit SIC code

* YEAR: 2009, 2010, and 2011

* TYPE: Balance sheet (BS), Income statement (IS), and The statement of cash flows (SCF)

	Comparison								Reverse Comparison							
	GROUP				TYPE				GROUP				TYPE			
	Difference	C	Y	G	Difference	C	Y	G	Difference	C	Y	G	Difference	C	Y	G
2009					BS vs. IS								BS vs. IS			
					BS vs. SCF		○*						BS vs. SCF		○**	
					IS vs. SCF		○*	○***					IS vs. SCF		○**	
2010	Phase I vs. Phase II				BS vs. IS		Δ*	○***	Phase I vs. Phase II				BS vs. IS		Δ*	○***
					BS vs. SCF		○**	○**					BS vs. SCF		○***	○**
					IS vs. SCF		○*	○*					IS vs. SCF		○*	
2011	Phase I vs. Phase II		○*		BS vs. IS		Δ*	○*	Phase I vs. Phase II		○*		BS vs. IS		Δ*	○*
	Phase I vs. Phase III		○**		BS vs. SCF		○**	○*	Phase I vs. Phase III		○**		BS vs. SCF		○***	○**
	Phase II vs. Phase III				IS vs. SCF		○**	○*	Phase II vs. Phase III				IS vs. SCF		○**	○***

○ The difference was found in the each phase-in group (i.e., phase I in 2009, phase I and II in 2010, and all phase-in groups in 2011).

Δ The difference was found only in the phase II group.

* $p < .001$ ** $p < .01$ *** $p < .05$



ANALYSIS AND RESULTS

❖ Materiality of the differences (i.e., mismatches)

Materiality:

A Balance Sheet materiality of .5% of total assets,

An Income Statement materiality of 5% of income before tax,

A Statement of Cash Flows materiality of 5% of net increase/decrease in cash and cash equivalents



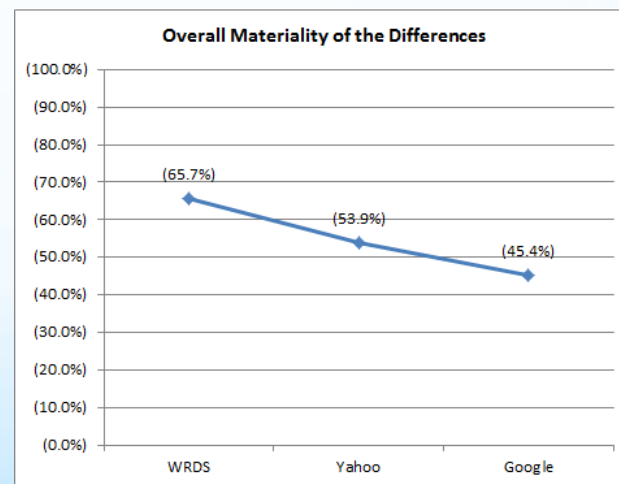
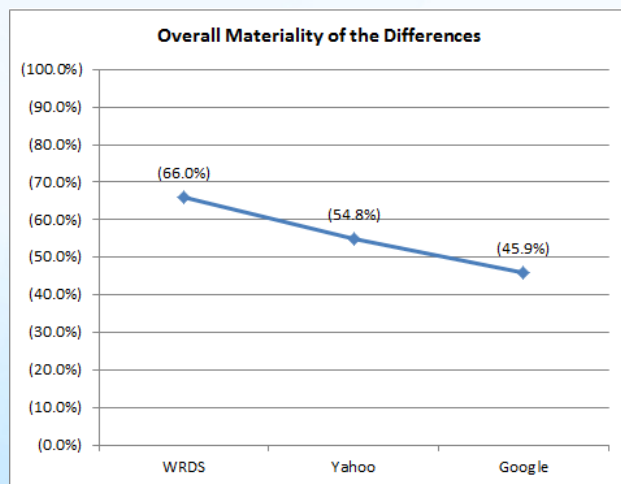
ANALYSIS AND RESULTS

❖ Materiality of the differences (i.e., mismatches)

	Comparison								Reverse Comparison							
	Compustat		Yahoo		Google		Total		Compustat		Yahoo		Google		Total	
	N (%)	M ^a	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M
Overall	447 (66.0%)	677	358 (54.8%)	653	247 (45.9%)	538	1,052 (56.3%)	1,868	445 (65.7%)	677	352 (53.9%)	653	244 (45.4%)	538	1,041 (55.7%)	1,868

^a Total number of material differences

^b Total number of mismatches



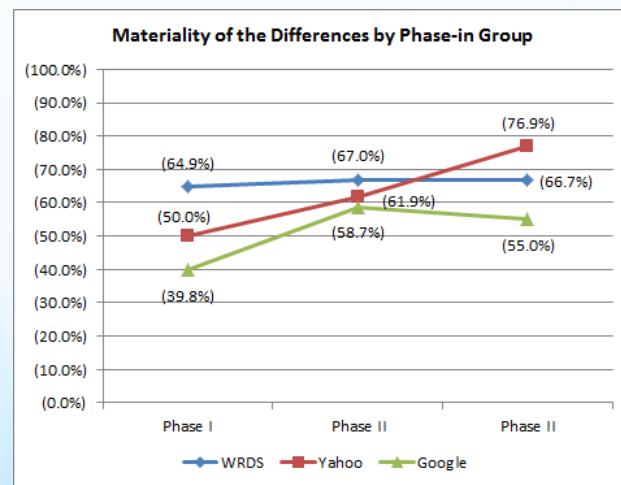
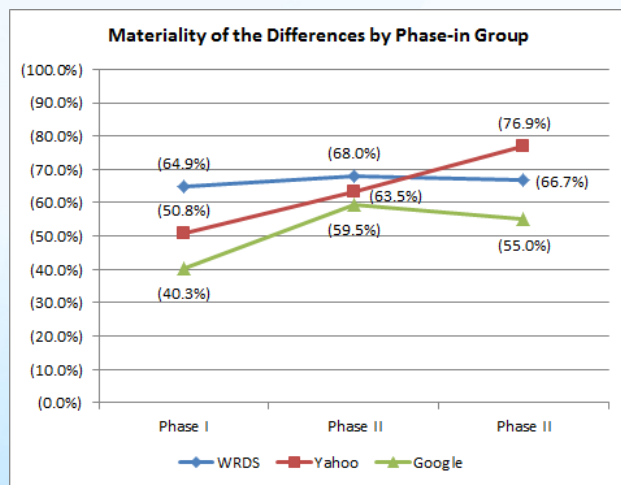
ANALYSIS AND RESULTS

❖ Materiality of the differences (i.e., mismatches)

		Comparison								Reverse Comparison							
		Compustat		Yahoo		Google		Total		Compustat		Yahoo		Google		Total	
		N* (%)	M*	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M
Overall		447 (66.0%)	677	358 (54.8%)	653	247 (45.9%)	538	1,052 (56.3%)	1,868	445 (65.7%)	677	352 (53.9%)	653	244 (45.4%)	538	1,041 (55.7%)	1,868
Mismatch by Phase-in Group	Phase I	261 (64.9%)	402	248 (50.8%)	488	150 (40.3%)	372	659 (52.2%)	1,262	261 (64.9%)	402	244 (50.0%)	488	148 (39.8%)	372	653 (51.7%)	1,262
	Phase II	140 (68.0%)	206	80 (63.5%)	126	75 (59.5%)	126	295 (64.4%)	458	138 (67.0%)	206	78 (61.9%)	126	74 (58.7%)	126	290 (63.3%)	458
	Phase III	46 (66.7%)	69	30 (76.9%)	39	22 (55.0%)	40	98 (66.2%)	148	46 (66.7%)	69	30 (76.9%)	39	22 (55.0%)	40	98 (66.2%)	148

* Total number of material differences

* Total number of mismatches



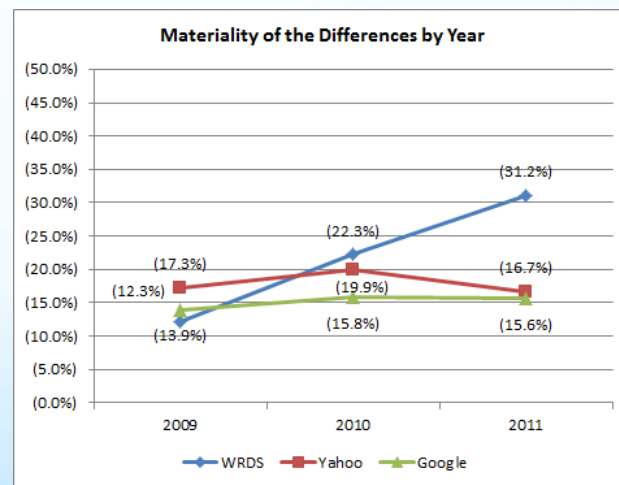
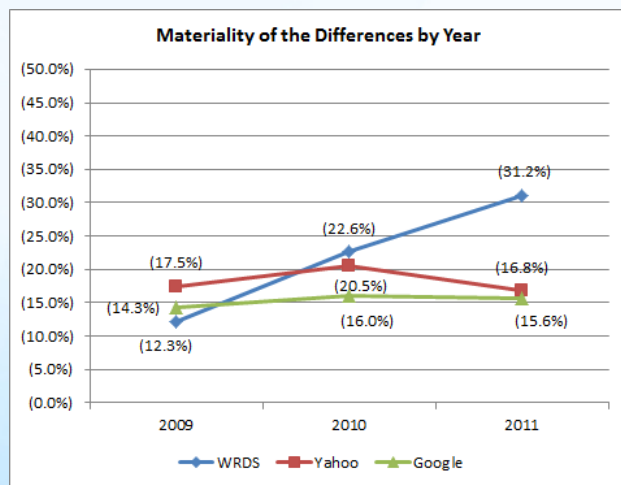
ANALYSIS AND RESULTS

❖ Materiality of the differences (i.e., mismatches)

		Comparison								Reverse Comparison							
		Compustat		Yahoo		Google		Total		Compustat		Yahoo		Google		Total	
		N ^a (%)	M ^a	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M
Overall		447 (66.0%)	677	358 (54.8%)	653	247 (45.9%)	538	1,052 (56.3%)	1,868	445 (65.7%)	677	352 (53.9%)	653	244 (45.4%)	538	1,041 (55.7%)	1,868
Mismatch by Phase-in Group	Phase I	261 (64.9%)	402	248 (50.8%)	488	150 (40.3%)	372	659 (52.2%)	1,262	261 (64.9%)	402	244 (50.0%)	488	148 (39.8%)	372	653 (51.7%)	1,262
	Phase II	140 (68.0%)	206	80 (63.5%)	126	75 (59.5%)	126	295 (64.4%)	458	138 (67.0%)	206	78 (61.9%)	126	74 (58.7%)	126	290 (63.3%)	458
	Phase III	46 (66.7%)	69	30 (76.9%)	39	22 (55.0%)	40	98 (66.2%)	148	46 (66.7%)	69	30 (76.9%)	39	22 (55.0%)	40	98 (66.2%)	148
Mismatch by Year	2009	83 (12.3%)	677	114 (17.5%)	653	77 (14.3%)	538	274 (14.7%)	1,868	83 (12.3%)	677	113 (17.3%)	653	75 (13.9%)	538	271 (14.5%)	1,868
	2010	153 (22.6%)	677	134 (20.5%)	653	86 (16.0%)	538	373 (20.0%)	1,868	151 (22.3%)	677	130 (19.9%)	653	85 (15.8%)	538	366 (19.6%)	1,868
	2011	211 (31.2%)	677	110 (16.8%)	653	84 (15.6%)	538	405 (21.7%)	1,868	211 (31.2%)	677	109 (16.7%)	653	84 (15.6%)	538	404 (21.6%)	1,868

^a Total number of material differences

^b Total number of mismatches



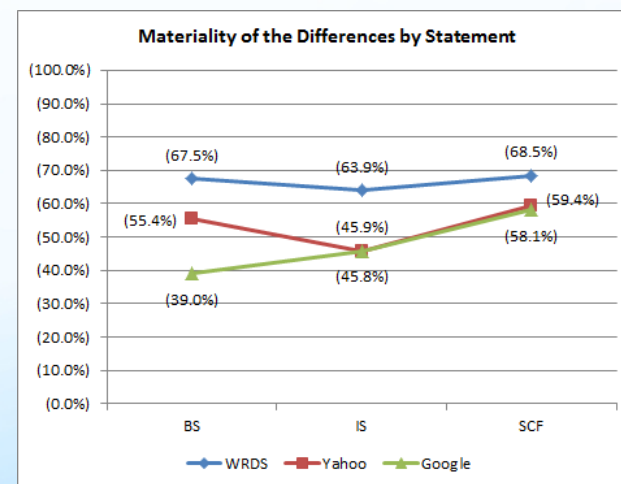
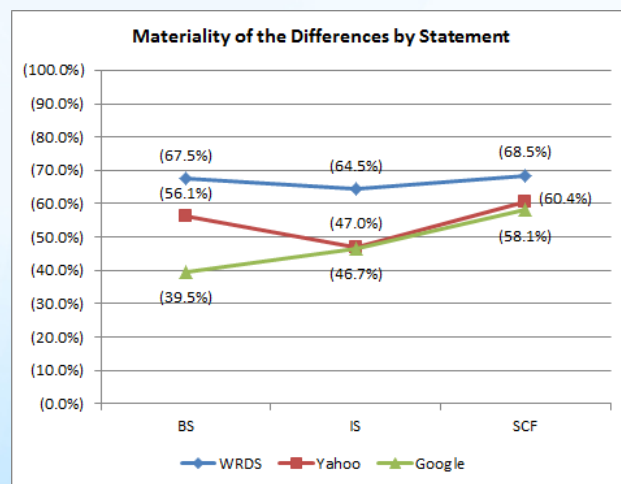
ANALYSIS AND RESULTS

❖ Materiality of the differences (i.e., mismatches)

		Comparison								Reverse Comparison							
		Compustat		Yahoo		Google		Total		Compustat		Yahoo		Google		Total	
		N* (%)	M*	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M	N (%)	M
Overall		447 (66.0%)	677	358 (54.8%)	653	247 (45.9%)	538	1,052 (56.3%)	1,868	445 (65.7%)	677	352 (53.9%)	653	244 (45.4%)	538	1,041 (55.7%)	1,868
Mismatch by Phase-in Group	Phase I	261 (64.9%)	402	248 (50.8%)	488	150 (40.3%)	372	659 (52.2%)	1,262	261 (64.9%)	402	244 (50.0%)	488	148 (39.8%)	372	653 (51.7%)	1,262
	Phase II	140 (68.0%)	206	80 (63.5%)	126	75 (59.5%)	126	295 (64.4%)	458	138 (67.0%)	206	78 (61.9%)	126	74 (58.7%)	126	290 (63.3%)	458
	Phase III	46 (66.7%)	69	30 (76.9%)	39	22 (55.0%)	40	98 (66.2%)	148	46 (66.7%)	69	30 (76.9%)	39	22 (55.0%)	40	98 (66.2%)	148
Mismatch by Year	2009	83 (12.3%)	677	114 (17.5%)	653	77 (14.3%)	538	274 (14.7%)	1,868	83 (12.3%)	677	113 (17.3%)	653	75 (13.9%)	538	271 (14.5%)	1,868
	2010	153 (22.6%)	677	134 (20.5%)	653	86 (16.0%)	538	373 (20.0%)	1,868	151 (22.3%)	677	130 (19.9%)	653	85 (15.8%)	538	366 (19.6%)	1,868
	2011	211 (31.2%)	677	110 (16.8%)	653	84 (15.6%)	538	405 (21.7%)	1,868	211 (31.2%)	677	109 (16.7%)	653	84 (15.6%)	538	404 (21.6%)	1,868
Mismatch by Statement	BS	168 (67.5%)	249	156 (56.1%)	278	81 (39.5%)	205	405 (55.3%)	732	168 (67.5%)	249	154 (55.4%)	278	80 (39.0%)	205	402 (54.9%)	732
	IS	229 (64.5%)	355	86 (47.0%)	183	112 (46.7%)	240	427 (54.9%)	778	227 (63.9%)	355	84 (45.9%)	183	110 (45.8%)	240	421 (54.1%)	778
	SCF	50 (68.5%)	73	116 (60.4%)	192	54 (58.1%)	93	220 (61.5%)	358	50 (68.5%)	73	114 (59.4%)	192	54 (58.1%)	93	218 (60.9%)	358

* Total number of material differences

* Total number of mismatches



ANALYSIS AND RESULTS

❖ Materiality of the differences (i.e., sensitivity analysis - doubling the materiality level)

Materiality:

A Balance Sheet materiality of 1% of total assets,

An Income Statement materiality of 10% of income before tax,

A Statement of Cash Flows materiality of 10% of net increase/decrease in cash and cash equivalents

	Comparison								Reverse Comparison							
	Compustat		Yahoo		Google		Total		Compustat		Yahoo		Google		Total	
	N ^a (%)	M ^a	N(%)	M	N(%)	M	N(%)	M	N(%)	M	N(%)	M	N(%)	M	N(%)	M
Overall	386(57.0%)	677	303(46.4%)	653	192(35.7%)	538	881(47.2%)	1,868	383(56.6%)	677	297(45.5%)	653	190(35.3%)	538	870(46.6%)	1,868
Mismatch by Phase I	222(55.2%)	402	207(42.4%)	488	118(31.7%)	372	547(43.3%)	1,262	220(54.7%)	402	203(41.6%)	488	117(31.5%)	372	540(42.8%)	1,262
Phase II	123(59.7%)	206	70(55.6%)	126	56(44.4%)	126	249(54.4%)	458	122(59.2%)	206	68(54.0%)	126	55(43.7%)	126	245(53.5%)	458
Phase III	41(59.4%)	69	26(66.7%)	39	18(45.0%)	40	85(57.4%)	148	41(59.4%)	69	26(66.7%)	39	18(45.0%)	40	85(57.4%)	148
Mismatch by Year 2009	76(11.2%)	677	91(13.9%)	653	59(11.0%)	538	226(12.1%)	1,868	76(11.2%)	677	91(13.9%)	653	58(10.8%)	538	225(12.0%)	1,868
2010	125(18.5%)	677	118(18.1%)	653	71(13.2%)	538	314(16.8%)	1,868	123(18.2%)	677	114(17.5%)	653	70(13.0%)	538	307(16.4%)	1,868
2011	185(27.3%)	677	94(14.4%)	653	62(11.5%)	538	341(18.3%)	1,868	184(27.2%)	677	92(14.1%)	653	62(11.5%)	538	338(18.1%)	1,868
Mismatch by Statement BS	139(55.8%)	249	137(49.3%)	278	61(29.8%)	205	337(46.0%)	732	140(56.2%)	249	134(48.2%)	278	60(29.3%)	205	334(45.6%)	732
IS	203(57.2%)	355	68(37.2%)	183	88(36.7%)	240	359(46.1%)	778	200(56.3%)	355	67(36.6%)	183	87(36.3%)	240	354(45.5%)	778
SCF	44(60.3%)	73	98(51.0%)	192	43(46.2%)	93	185(51.7%)	358	43(58.9%)	73	96(50.0%)	192	43(46.2%)	93	182(50.8%)	358

^a Total number of material differences

^b Total number of mismatches



ANALYSIS AND RESULTS

❖ Material differences between interactive data and aggregators by financial statement item

Financial statement item that had material difference by more than 5 companies

<i>Compustat: Financial Statement Item^a</i>	<i>C^b</i>	<i>M^c</i>	<i>T^d</i>
BS Retained Earnings (Accumulated Deficit)	27	69	139
Cash and Cash Equivalents, at Carrying Value	25	54	141
Liabilities	19	29	92
Accounts Receivable, Net, Current	5	10	81
Other Assets, Noncurrent	5	5	109
IS Gross Profit	29	56	57
Selling, General and Administrative Expense	27	49	75
Interest Expense	19	38	100
Operating Income (Loss)	14	25	115
Cost of Revenue	14	25	33
Cost of Goods Sold	12	25	40
Cost of Goods and Services Sold	11	22	28
Revenues	6	13	74
Depreciation, Depletion and Amortization	6	11	22
Income (Loss) from Continuing Operations before Equity Method Investments, Income Taxes, Extraordinary Items, Noncontrolling Interest	5	14	89
SCF Proceeds from (Payments for) Other Financing Activities	7	9	58
Net Income (Loss), Including Portion Attributable to Noncontrolling Interest	5	9	76

<i>Yahoo: Financial Statement Item</i>	<i>C</i>	<i>M</i>	<i>T</i>
BS Accounts Payable, Current Liabilities	32	66	89
Cash and Cash Equivalents, at Carrying Value	12	17	141
Property, Plant and Equipment, Net	11	18	134
Other Assets, Noncurrent	8	11	109
Accounts Receivable, Net, Current	6	14	81
Receivables, Net, Current	5	8	27
IS Selling, General and Administrative Expense	16	25	75
Income Tax Expense (Benefit)	11	16	131
Operating Income (Loss)	9	11	115
Revenues	8	16	74
General and Administrative Expense	7	14	57
Income (Loss) from Continuing Operations before Equity Method Investments, Income Taxes, Extraordinary Items, Noncontrolling Interest	7	12	89
Interest Expense	7	8	100
Income (Loss) from Discontinued Operations, Net of Tax, Including Portion Attributable to Noncontrolling Interest	5	10	34
Net Income (Loss) Attributable to Parent	5	8	146
SCF Net Income (Loss), Including Portion Attributable to Noncontrolling Interest	24	58	76
Net Cash Provided by (Used in) Investing Activities	8	10	132
Net Cash Provided by (Used in) Operating Activities	8	10	132
Depreciation	6	12	35
Net Cash Provided by (Used in) Financing Activities	6	8	132
Payments to Acquire Property, Plant, and Equipment	5	7	96

<i>Google: Financial Statement Item</i>	<i>C</i>	<i>M</i>	<i>T</i>
BS Liabilities	21	44	92
Property, Plant and Equipment, Net	8	22	134
Assets	5	8	150
Accounts Payable, Current	5	8	89
Stockholders' Equity Attributable to Noncontrolling Interest	5	8	72
Other Assets, Noncurrent	5	6	109
IS Operating Income (Loss)	22	36	115
Costs and Expenses	13	22	57
Operating Expenses	11	20	38
Selling, General and Administrative Expense	10	17	75
Revenues	8	13	74
Income (Loss) from Continuing Operations before Equity Method Investments, Income Taxes, Extraordinary Items, Noncontrolling Interest	7	11	89
Income (Loss) from Continuing Operations, Per Diluted Share	6	8	49
Depreciation, Depletion and Amortization, Nonproduction	5	7	30
SCF Payments to Acquire Property, Plant, and Equipment	9	16	96
Net Cash Provided by (Used in) Investing Activities	6	7	132
Net Cash Provided by (Used in) Operating Activities	6	7	132
Depreciation, Depletion and Amortization	5	6	66

^a For the sake of brevity, this table only reports items that had material difference by more than 5 companies.

^b Number of companies that had material difference

^c Number of material differences

^d Total number of times the item used in 450 interactive data filings



ANALYSIS AND RESULTS

❖ Material differences between aggregators and interactive data by financial statement item

Financial statement item that had material difference by more than 5 companies

<i>Compustat: Financial Statement Item^a</i>	<i>C^b</i>	<i>M^c</i>	<i>T^d</i>
BS Retained Earnings (Net Other)	28	70	145
Cash & Equivalents	27	58	150
Total Liabilities	19	30	150
Long Term Debt	6	15	147
Receivables - Total (Net)	6	11	150
Assets - Other	6	6	143
IS Cost of Goods Sold	38	74	150
Selling, General, & Admin Expenses	30	56	127
Gross Profit	29	56	150
Interest Expense	27	55	139
Operating Income After Depreciation	14	25	150
Sales (Net)	13	27	150
Adjusted Available for Common	7	14	150
Depreciation, Depletion, & Amortiz	7	12	142
Pretax Income	5	14	150
SCF Income Before Extraordinary Items	8	13	150
Financing Activities - Other	7	9	150

^a For the sake of brevity, this table only reports items that had material difference by more than 5 companies.

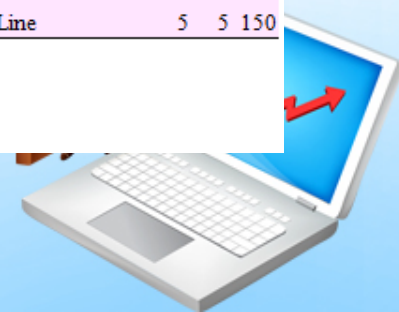
^b Number of companies that had material difference

^c Number of material differences

^d Total number of times the item used in 450 interactive data filings

<i>Yahoo: Financial Statement Item</i>	<i>C</i>	<i>M</i>	<i>T</i>
BS Accounts Payable	34	70	149
Total Liabilities	21	45	150
Cash And Cash Equivalents	14	19	149
Net Receivables	13	27	150
Property Plant and Equipment	12	20	145
Other Assets	9	12	136
Long Term Debt	7	17	130
IS Selling General and Administrative	24	40	144
Total Revenue	15	24	150
Income Before Tax	13	20	150
Income Tax Expense	11	16	140
Cost of Revenue	10	16	140
Operating Income or Loss	9	11	143
Interest Expense	8	9	123
Net Income From Continuing Ops	7	11	150
Discontinued Operations	6	11	44
Net Income	6	9	150
SCF Net Income	25	60	150
Depreciation	12	21	150
Total Cash Flows From Investing Activities	11	14	150
Total Cash Flow From Operating Activities	10	12	150
Changes In Accounts Receivables	8	13	142
Total Cash Flows From Financing Activities	8	11	150
Capital Expenditures	8	10	143
Changes In Inventories	5	7	87

<i>Google: Financial Statement Item</i>	<i>C</i>	<i>M</i>	<i>T</i>
BS Total Liabilities	21	45	150
Property/Plant/Equipment, Total-Gross	9	23	148
Total Assets	5	8	150
Accounts Payable	5	8	126
Minority Interest	5	8	80
Other Long Term Assets, Total	5	6	139
Retained Earnings (Accumulated Deficit)	5	5	145
IS Total Operating Expense	27	48	143
Operating Income	23	37	143
Diluted EPS Excluding Extraordinary Items	17	25	150
Selling/General/Admin. Expenses, Total	15	26	140
Total Revenue	14	21	143
Income Before Tax	12	18	150
Depreciation/Amortization	8	11	78
Cost of Revenue, Total	7	10	132
Net Income	6	8	150
SCF Capital Expenditures	13	20	149
Cash from Investing Activities	10	13	150
Cash from Operating Activities	9	14	150
Issuance (Retirement) of Stock, Net	7	8	147
Cash from Financing Activities	6	8	150
Depreciation/Depletion	6	7	150
Net Income/Starting Line	5	5	150



SUMMARY

- ❖ Balance Sheets, Income Statements and Cash Flow Statements of 3 aggregators have omissions and errors.
- ❖ Overall, average mismatches of up to 4.8% (comparison between interactive data and aggregators) and 8% (reverse comparison) could be considered as a small proportion of the financial items.
- ❖ More than 50% of the mismatches are material.
- ❖ The number of matches, at approximately 35-44%, is comparatively low; more than half of the items that appear in the interactive data are not available from the aggregators.
- ❖ Compustat has the largest proportion of matches at 44.3% and lowest number of omissions at 50.9% compared with Yahoo Finance (35.4% and 60%) and Google Finance (39.1% and 57.1%).
- ❖ Compustat has mismatches associated with only financial statement type whereas Yahoo Finance and Google Finance have mismatches associated with both year and financial statement type.
- ❖ In general, the differences are most frequent in the Statement of Cash Flows (comparison between interactive data and aggregators) and the Income Statement (reverse comparison).
- ❖ The number of mismatches decreases over time but is not eliminated over three years despite the interactive data being available to serve as an input into the aggregators' own data outputs.
- ❖ The most frequent mismatches appear in financial statement items that would be key to most users, including Total Liabilities, Selling General and Administrative Expenses, Cost of Revenue, and Net Cash Provided by Investing (Operating) Activities.
- ❖ Overall implication
XBRL tagged information is the most complete and most accurate source of company data.



LIMITATIONS & FUTURE WORK

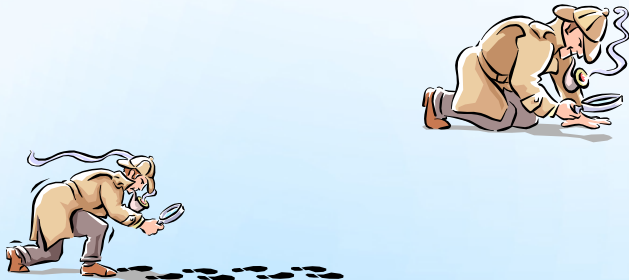
❖ Limitations

- ♦ Small sample – only 75 firms and 150 10-K filings
- ♦ Mainly investigate the accuracy of financial facts in terms of dollar amount.
Does not capture extra data provided by aggregators beyond that provided by companies (e.g., aggregations or disaggregations of company-provided data) that may be of value to users).
- ♦ Assessment of the materiality of the differences



❖ Future work

- ♦ Expand sample
- ♦ Other aggregators/distributors



QUESTIONS & SUGGESTIONS

