The Research on Utilization and Interoperability of XBRL Taxonomy Elements of Listed Companies Financial Report

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Keywords: *XBRL taxonomy; elements utilization; elements interoperability.*

I. Introduction

In October 2010, the Chinese National Standardization Management Committee and the Ministry of Finance issued a standard of the common XBRL taxonomy, which not only provides XBRL elements standard to financial software manufacturers and comprises who use it, but also unifies data format of financial reporting and improve relevance of the fina-ncial information, to promote the development of data industry and the efficient use of data as well. In the past three years, the application of practitioners and the research of theorists continue to test the accuracy and applicability of XBRL taxonomy, send various proposals to improve the quality of financial data generated by XBRL taxonomy. However, there is still missing and ambiguity in the elements of Chinese XBRL taxonomy elements (We call them XBRL-China in the following text), which caused some hinders when listed enterprises try to extend it. Redundancy and insufficiency of XBRL-China affect the interoperability of financial reporting data.

With the development of XBRL both at home and abroad , XBR plays a very important role in the development of information technology., The unique advantage of XBRL--- the unstructured data structures, makes the correlation between data more dimensional. XBRL can process more complex multi-dimensional data. These advantages make XBRL gains more concern, and the constitution of data directly related to the XBRL taxonomy modeling methods. International organizations and countries have already formulated and promulgated the standard of XBRL taxonomy according to their accounting standards. The standard XBRL taxonomy directly affect the accuracy, relevance and understandability of XBRL financial reporting. Chinese scholar Zhang Tianxi [1], foreign scholar Roger[2], Bovee[3] all found evidences of this view.

Through the study on the utilization and interoperability of XBRL-China, we match the disclosure elements of financial reporting and XBRL-China. We find the unreasonable XBRL element definitions, point out the existing problems of XBRL taxonomy to improve the situation of insufficient XBRL-China. So that we can improve the interloper ability of financial reports in all industries. Meanwhile, by additions and amendments to the elements , reducing the number of future expansion by companies, we can reduce the possibility of future expansion and differences caused due to the applica-tion of XBRL in more comprises, to improve the quality of financial reporting disclosure .

II. Current Situation of Chinese XBRL Taxonomy

Bovee [4] [5] pointed out that in the constitution of taxonomy standard, there must be some differences between the taxonomy standard and elements required by the comprises. On the one hand, because the high gather level of standard taxonomy elements, if companies prepare financial reports all by the taxonomy standard, part of the standard may not be suitable to the enterprises, which will lead to the loss of information.

However, if the gather level of taxonomy standard is too low, the companies have to expand the elements by themselves which will lead to the lack of comparability of financial data.

The constitution of Chinese XBRL taxonomy also faces the same situation, which Bovee [4] [5] has identified. Gao Jinping [1](2006) compared the "Chin-ese Listed Company Information Disclosure classific-ation standards" issued by SSE and annual reports of 117 Listed Companies, found that there existed great differences between SSE standard and annual reports, which could not meet the need of disclosing data.

Zhao Xianming [6] (2010) studied the influence of earnings on annual reports, the results showed: although XBRL had disclosed information, it had not been recognized by the market. There were two reasons: First, the quality of standard XBRL taxonomy need improvement to meet the requirements of the

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financial disclosure. Second, it was not enough only apply XBRL to financial reporting, it should be extended. Our standard XBRL taxonomy is promulgated in accordance with the relevant Chinese accounting standards , so there are some differences between XBRL-China defined by authorities and elements used by comprises. The differences will effect the utilization and efficiency of the element. There exist elements with very low utilization, but there also exist some elements used by different companies frequently but have not been defined by the standard. In addition, the suitability of elements definition also have impact on the interoperability. The Higher the interoperability is, the better the definition is made.

III. Utilization and Interoperability of XBRL Taxonomy Elements

a) XBRL Taxonomy Elements and Elements Disclosed by Companies

The differences between the standard XBRL-China and the disclosed elements of comprises effect the interoperability of financial reports. For example (Please see table 3-1 for the Descriptive Statistics), the elements of individual balance sheet "Net Oil and Gas Assets" and "Special Reserve" as well as the consolidated balance sheet elements "Settlement Provisions", "Net Premiums Receivable", "Net Receiva-bles from Reinsurers", "Net Reserve Reinsurance Contract" and so on are all defined by the standard. But many companies do not use them in the disclosure process. Another example, the balance sheet element "Insurance Contract Reserve", "Total Long-term Liabilities", "Total Non-current Liabilities" and so on, which many companies disclosed in their reports but have not defined in the taxonomy standard.

Moreover, there existed mismatch between XBRL-China and corporate disclosure elements. For example (Please see table 3-2 for the Descriptive Statistics), when matching the elements of Inventories (general industrial and commercial sectors) in the notes, different companies have different descriptions for "Goods in Transit", such as "Merchandising", "Goods in transit" and "Material Procurement". The disclosure of these elements does not belong to the provisions of accounts and cannot meet the requirements of accounting comparability and understandability.

b) Utilization of XBRL Taxonomy Standard Elements

The list of Chinese Standard XBRL Taxonomy Elements has defined 2845 elements, but the frequencies of different elements varies greatly (Please see the picture 3-1 for the utilization of XBRL taxonomy). We find that about 35 % of the elements have high utilization, such as "Currency Funds", "Other Receivables", "Paid-up Capital or Equity". But nearly 50 percent of the elements have low utilization, utilization of

such elements as "Special Reserve" is almost zero. Thus, the differences between standard XBRL-China and disclosing elements used by companies are very large. All of the above will affect the interoperability of financial reports.

c) Interoperability of Standard XBRL Taxonomy Elements

Due to the differences between standard XBRL-China and disclosing elements used by companies, and the differences in the utilization of XBRL-China, there are differences in the interoperability of financial reports. These Mainly reflected in the following aspects: First, the interoperability of the financial statements level is different. Second, there are differences in the interoperability of financial reporting elements within the same industry, which means on the enterprise level there are different disclosure elements. Finally, the interoperability of elements between different industries is also different. (Please see the picture3-2 for the interoperability).

d) Interoperability of Extended XBRL Taxonomy Elements

Now the XBRL taxonomy are not decided by the companies, and the extended XBRL-China are also not be decided by the companies themselves. But because there are some elements the standard taxonomy has not defined (we call these elements: missing elements), and the listed companies have to use lots of elements exceeded the standard taxonomy, the companies have to extend the taxonomy (we call these elements: extended elements). Meanwhile, the extended elements are defined by different companies, so that there are some differences in their disclosure elements with the same meaning, which in turn affect the interoperability.

IV. Policy Recommendations for XBRL-China

a) Standard of Corporate Disclosure Elements

In the process of enterprises disclosing their financial reports based on XBRL taxonomy in China, there exist some issues such as inaccurate elements. Some elements disclosed by companies and defined by standard XBRL taxonomy are totally different. Such as the element in the note: inventory. The enterprises will disclose "Product", "Stock Goods", "Raw Material", but the standard XBRL taxonomy defined "Inventories Beginning Balance", "Increase of the Amount of Inventories ", "Decrease of the Amount of Inventory", "Inventory Impairment". Companies should strictly follow the XBRL taxonomy to define the elements and disclose information in accordance with accounting standards, thereby they can improve the interoperability of their financial reports.

b) Adjust Part of the Elements in XBRL Taxonomy

XBRL defines some elements that companies almost do not use in their disclosure (we call them: redundant elements), such as the elements in the balance sheet, "Net Oil and Gas Assets" and so on. Moreover, the utilization of some elements is low, or even zero, we recommend that such elements could be adjusted or omitted in the standard. More prominent problem is that the XBRL-China are insufficient and missing, leading to the definitions of the elements by enterprises is not unified and not standardized. All these cause the low interoperability of the XBRL financial reports. Therefore, we recommend toadd new XBRL-China. Set bank as an example, we can add the elements such as "Financial Subsidiaries Deposit". In addition, we have to add elements to standardize and refine the notes. For example, "Other Current Assets" can be roughly divided into "Prepaid Items"," Deductible Items", "Financial Products", "Accounts Receivable", "Entrusted loan Items" and so on.

c) Add Extended XBRL Taxonomy Elements

The Outstanding issue of XBRL-China is the missing elements, which lead to the low interoperability of the elements defined by the companies themselves. Therefore, the extended XBRL taxonomy have to be added to the the development of existing standard XBRL taxonomy, so that the quality and comparability of financial reports of all the industries and different companies can be improved

V. Summary

Based on the research on utilization and interoperability of XBRL-China by analyzing the descriptive statistics of Chinese listed companies, we find that XBRL-China and companies disclosed elements are not matched. There are redundant elements and insufficient elements both existed in the standard, and nearly 50% of all the standard XBRL-China are low utilized, which all seriously affect the interoperability of financial reporting data. Therefore, this paper also put forward a proposal to amend the existing XBRL taxonomy, aimed at improving the interoperability of financial reporting and enhancing the quality of financial information.

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Table 1 : Descriptive Statistics of XBRL-China in the balance sheet

	N	Full Distance	Summary	Mean	Standard Deviation	Variance	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	standard error	Statistics	standard error
Currency Funds	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Trading Financial Assets	120	1.0	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Notes Receivable	120	1.0	83.0	.692	.4637	.215	-.841	.221	-1.316	.438
Acc Receivable	120	1.0	119.0	.992	.0913	.008	-10.954	.221	120.000	.438
Prepayments	120	1.0	118.0	.983	.1286	.017	-7.647	.221	57.432	.438
Net Interest Receivable	120	1.0	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Dividends Receivable	120	1.0	19.0	.158	.3666	.134	1.896	.221	1.620	.438
Other Receivables	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Inventories	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Non-current Assets Due Within One Year	120	1.0	18.0	.150	.3586	.129	1.985	.221	1.974	.438
Other Current Assets	120	1.0	65.0	.542	.5004	.250	-.169	.221	-2.005	.438
Total Current Assets	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Net Financial Assets Available for Sale	120	1.0	32.0	.267	.4441	.197	1.069	.221	-.873	.438
Held-to-maturity Investments	120	1.0	8.0	.067	.2505	.063	3.519	.221	10.556	.438
Long-term Receivables	120	1.0	19.0	.158	.3666	.134	1.896	.221	1.620	.438

|	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
Net Long-term Equity Investments	120	1.0	104.0	.867	.3414	.117	-2.185	.221	2.820	.438
Net Real Estate Investment	120	1.0	75.0	.625	.4862	.236	-.523	.221	-1.756	.438
Net Fixed Assets	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Net Works in progress	120	1.0	97.0	.808	.3953	.156	-1.587	.221	.526	.438
Construction Materials	120	1.0	33.0	.275	.4484	.201	1.021	.221	-.975	.438
Disposal of Fixed Assets	120	1.0	13.0	.108	.3121	.097	2.552	.221	4.591	.438
Net Production of Biological Assets	120	1.0	4.0	.033	.1803	.032	5.266	.221	26.161	.438
Net Oil and Gas Assets	120	.0	.0	.000	.0000	.000	.	.	.	.
Intangible Assets	120	1.0	112.0	.933	.2505	.063	-3.519	.221	10.556	.438
Development Expenditure	120	1.0	13.0	.108	.3121	.097	2.552	.221	4.591	.438
Goodwill	120	1.0	55.0	.458	.5004	.250	.169	.221	-2.005	.438
Long-term Prepaid Expenses	120	1.0	96.0	.800	.4017	.161	-1.519	.221	.312	.438
Deferred Tax Assets	120	1.0	112.0	.933	.2505	.063	-3.519	.221	10.556	.438
Other Non-current Assets	120	1.0	47.0	.392	.4902	.240	.450	.221	-1.829	.438
Total Non-current Assets	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Total Assets	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Short-term Borrowings	120	1.0	100.0	.833	.3742	.140	-1.812	.221	1.303	.438
Trading Financial Liabilities	120	1.0	7.0	.058	.2354	.055	3.817	.221	12.781	.438
Notes Payable	120	1.0	70.0	.583	.4951	.245	-.342	.221	-1.915	.438
Accounts Payable	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Advances	120	1.0	119.0	.992	.0913	.008	-10.954	.221	120.000	.438
Accrued Payroll Taxes	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Interest Payable	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Dividends Payable	120	1.0	74.0	.617	.4882	.238	-.486	.221	-1.794	.438
Other Payables	120	1.0	74.0	.617	.4882	.238	-.486	.221	-1.794	.438
Other Payables	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Non-current Liabilities Due Within One Year	120	1.0	68.0	.567	.4976	.248	-.272	.221	-1.959	.438
Other Current Liabilities	120	1.0	39.0	.325	.4703	.221	.757	.221	-1.452	.438
Total Current Liabilities	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Long-term Borrowings	120	1.0	77.0	.642	.4815	.232	-.598	.221	-1.670	.438
Bonds Payable	120	1.0	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Long-term Payables	120	1.0	50.0	.417	.4951	.245	.342	.221	-1.915	.438
Special Payables	120	1.0	32.0	.267	.4441	.197	1.069	.221	-.873	.438
Estimated Liabilities	120	1.0	23.0	.192	.3953	.156	1.587	.221	.526	.438
Deferred Income Tax Liabilities	120	1.0	62.0	.517	.5018	.252	-.068	.221	-2.030	.438
Other Non-current Liabilities	120	1.0	79.0	.658	.4763	.227	-.676	.221	-1.569	.438
Other Liabilities	120	.0	.0	.000	.0000	.000	.	.	.	.
Total Liabilities	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Paid-up Capital or Equity	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Capital Reserve	120	1.0	119.0	.992	.0913	.008	-10.954	.221	120.000	.438
Special Reserves	120	.0	.0	.000	.0000	.000	.	.	.	.
Treasury Shares	120	1.0	3.0	.025	.1568	.025	6.162	.221	36.582	.438
Surplus	120	1.0	117.0	.975	.1568	.025	-6.162	.221	36.582	.438
Undistributed Profit	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Total Equity	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Total Liabilities and Shareholders' Equity	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Effective N (Listing Status)	120									

Table 2 : Descriptive Statistics of Disclosed Elements in Notes_Inventories

	N	Full Distance	Summary	Mean	Standard Deviation	Variance		Skewness	
	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics		Statistics	standard error
Products	120	61.0	.508	.5020	.252	-.034	.221	-2.033	.438
Inventory of Goods	120	109.0	.908	.2898	.084	-2.866	.221	6.320	.438
Goods in Transit	120	16.0	.133	.3414	.117	2.185	.221	2.820	.438
Raw Materials	120	107.0	.892	.3121	.097	-2.552	.221	4.591	.438
Consumables	120	65.0	.542	.5004	.250	-.169	.221	-2.005	.438
Entrust Goods	120	3.0	.025	.1568	.025	6.162	.221	36.582	.438
Reusable Materials	120	18.0	.150	.3586	.129	1.985	.221	1.974	.438
Processing Materials	120	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Cost of Production	120	45.0	.375	.4862	.236	.523	.221	-1.756	.438
Goods Ship-out	120	19.0	.158	.3666	.134	1.896	.221	1.620	.438
Other Inventories	120	12.0	.100	.3280	.108	3.401	.221	11.898	.438
Effective N (Listing Status)	120								
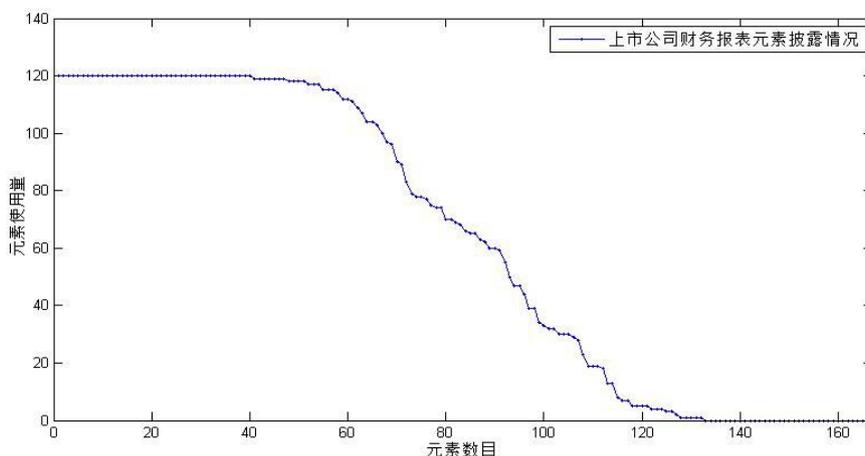
Picture 1 : The Utilization of XBRL Taxonomy Elements

(The data come from Chinese listed companies. The horizontal axis means the number of the elements, and the vertical axis means the utilization of XBRL taxonomy elements)
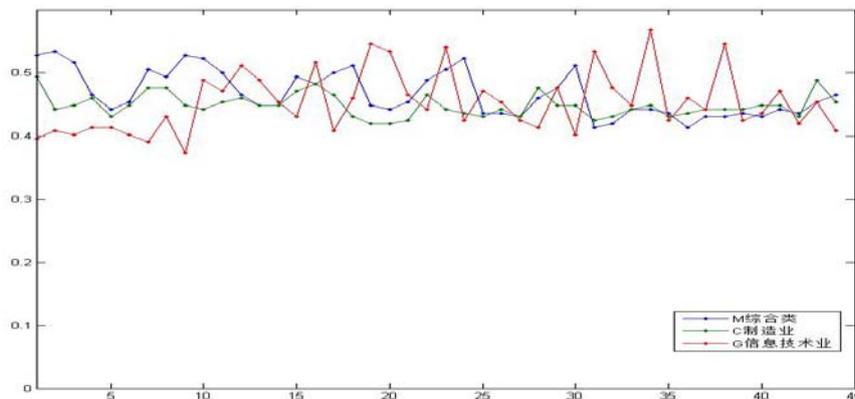
Picture 2 : The Interoperability of XBRL Taxonomy Elements

(The photo is the interoperability of Chinese listed companies of comprehensive industry, manufacturing industry an IT industry

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