Interpretation of Fundamental Accounting Concept Test Results

Overview

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Abstract: The purpose of this document is to help the reader set the proper perspective for creating and using digital financial reports such as SEC XBRL financial filings.

The fundamental accounting concepts[1] are a foundation upon which a financial report is built. They act somewhat like a conformance test. At the pinnacle of the fundamental accounting concepts is the accounting equation: Assets = Liabilities and Equity. Every financial report explicitly or implicitly reports these concepts, the relations between these concepts do not change unless a reporting entity explicitly changes them usually because of some specific and allowable reporting option or industry activity[2], and this premise is proven by the SEC XBRL-based financial filings themselves. Each one of the fundamental accounting concept relationships is followed by between 83% (IS2 and IS3) and 95% or higher (all other tests). The fundamental idea is that financial reports are not random.

There are exactly three possible reasons why a relation between the high-level fundamental accounting concepts expressed within SEC XBRL financial filings do not conform to these relations:

1. **Filing error**: The public company SEC XBRL-based financial report which reports some fact or facts does so incorrectly; a fact is wrong or a relation between facts is wrong or is interpreted differently than was anticipated for some reason
2. **Base taxonomy error**: The US GAAP XBRL Taxonomy expresses a concept which is used to report a fact does so incorrectly which is an error or does so ambiguously so that there are different interpretations by those using the taxonomy or some important or common concept is missing altogether
3. **Other metadata or algorithm error**: The metadata used by the software algorithm to compute or otherwise interpret the fundamental accounting concepts or the relations between those concepts is in error or are interpreted differently by different software creators

Filer error example:

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[1] Fundamental accounting concepts, http://fundamentalaccountingconcepts.wikispaces.com/
[2] Report frames, http://www.xbrlsite.com/2014/Prototype/ReportingFrameUsed/ReportingFrameUsed.html

A filer create the extension concept "my:TotalAssets". The documentation reads, "Total assets." Is the filer justified in creating this extension concept? Another filer error example, a filer provides "us-gaap:Assets" with a value of 100 and a value for the concept "us-gaap:LiabilitiesAndStockholdersEquity" of 101. Is that an error? Or, is this just an allowed rounding tolerance?

Base taxonomy error example:

A public company creating an SEC XBRL financial filing created the extension concept *xom:TotalRevenuesAndOtherIncome* which includes revenues and income (loss) from equity method investments. Approximately 20 other filers likewise report income (loss) from equity method investments within revenues, but do not create an extension concept. Both approaches cannot be correct, particularly for this high level concept. Either (a) a new concept should be added to the US GAAP XBRL Taxonomy to express this information or (b) the company should use the approach of the other filers who do not create an extension concept. Why would two ways of doing the same thing be necessary?

Mapping metadata[3] example:

This is the mapping metadata for the fundamental accounting concept "Equity". It is used by software reading a financial report:

Fundamental Concept Name	Taxonomy Concept Name
fac:Equity	us-gaap:StockholdersEquityIncludingPortionAttributableToNoncontrollingInterest
fac:Equity	us-gaap:StockholdersEquity
fac:Equity	us-gaap:PartnersCapitalIncludingPortionAttributableToNoncontrollingInterest
fac:Equity	us-gaap:PartnersCapital
fac:Equity	us-gaap:CommonStockholdersEquity
fac:Equity	us-gaap:MembersEquity

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[3] Mappings: This is the complete set of mappings in human readable form, http://www.xbrlsite.com/2014/Reference/Mapping.pdf

Are all of these concepts allowed to be used to report the fundamental concept equity? Are all of these concepts necessary to report equity? Is "Partners' capital" and "Stockholders' equity" (a) different concepts are (b) the same concept with different labels?

Impute rules[4] example:

```
'BS-Impute-07:
If Equity = 0 and EquityAttributableToNoncontrollingInterest = 0 and EquityAttributableToParent <> 0 Then
    Equity = EquityAttributableToParent
End If
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Does this impute rules give the correct results? Are additional impute rules necessary? If certain concepts are required to be reported, what impute rules could be eliminated and would that make things harder or easier for machines trying to read the reported information?

Adjusting either (a) the SEC XBRL financial filing, (b) the base US GAAP XBRL Taxonomy, or (c) the mapping and impute metadata will bring the system into balance or equilibrium. What should be changed? That is determined by logic, common sense, and US GAAP as interpreted by professional accountants.

Purpose of digital financial reports

The desired system state is one of balance or equilibrium. After all, what is the purpose of SEC XBRL financial filings[5]? Is the purpose for each individual to dig their heels into the ground and insist that there is only one reality, their arbitrary reality? Or is the purpose to create a shared, commonly accepted, standard, useful view of reality to achieve a specific purpose: so that reality does appear to be objective and stable enough yet nuanced enough to be useful so that information can be used safely, reliably, predictably, repeatedly by automated machine-based processes. After all, there should be some purpose if reporting entities are spending millions of dollars to articulate this information using the structured form of XBRL.

Establish a foundation or base

If there is any issue encountered by software applications in the high-level fundamental accounting concept relations, it becomes impossible to then safely use that information without a human getting involved to determine the reason why the anomaly has occurred. Encountering relations one would expect inspires confidence. Encountering an error where one would not expect an error inspires doubt. Further, these high-level fundamental accounting concept relations serve as a base upon which other

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[4] Impute rules: This is the complete set of impute rules in human readable form,
http://www.xbrlsite.com/2014/Reference/ImputeRules.pdf
[5] *Data and Reality: What is the purpose of SEC XBRL Financial Filings?*
http://xbrl.squarespace.com/journal/2014/7/28/data-and-reality-what-is-the-purpose-of-sec-xbrl-financial-f.html

relations are then built. For example, if the accounting equation is known to be true which is "Assets = Liabilities and Equity", then next obvious question is, "Does assets foot and does liabilities and equity foot?"

Prudence dictates that using financial information from XBRL-based public company financial filings should not be a guessing game. Software vendors must be able to write algorithms and create metadata which enables them to make use of machine readable financial information. If untangling and otherwise deciphering this information is too complicated, then it increases the probability that different software vendors will create different metadata and software algorithms, and therefore different software applications will give different answers to exactly the same question. This is not a desired result.

Therefore, the safe, reliable, predictable, repeatable use of the facts reported within a machine readable digital financial report demands that the high-level fundamental accounting concept relations to be 100% satisfied. The sound relations at this high level are somewhat of a parity check of reported information. Or said another way, deriving some set of high-level concepts so that facts reported within a machine readable digital financial report can then be safely, reliably, predictably, and repeatedly be sent to automated downstream processes is essential to using any information in that machine readable report.

Machine-readable information

The above reasoning assumes the premise that public companies want information reported within their XBRL-based financial reports which they submit to the SEC to be interpreted correctly by machine-based processes as well as humans.

Two things are known and are provable based on analysis of the complete set of SEC XBRL-based financial filings: (1) how the set of all SEC XBRL financial filings act against each of these fundamental accounting concept relation tests, (2) what situations contribute to not satisfying these tests.

The following is a summary of situations which contribute to not satisfying these tests thus causing automated machine-based processes to stumble in their attempt to interpret information:

- **Missing totals/subtotals**: Missing fundamental accounting concept totals/subtotals. For example, most SEC filers do report key totals such as "Assets", "Equity", "Revenues", "Net Income (Loss)" and so forth. However, if filers don't report such totals/subtotals, it can cause problems for machines trying to interpret this information. While some totals can be imputed based on other reported information, if the totals do exist there is an added benefit of an ability to cross check information against other information for accuracy.
- **Crossing categories**: SEC filers moving a fundamental accounting concept to be part of some other fundamental accounting concept causes confusion when information is interpreted. A common situation is where an SEC filer moves the concept "Interest and Debt Expense" to be included as part of "Nonoperating Income (Expenses)". Another common error is to report both a total and then a component of the total as siblings. For example, if a financial report provides

the fact "Preferred stock dividends and other adjustments", and then outside that total it provides "Preferred stock dividends", machines stumble when attempting to interpret information.

- **Extension category unknowable**: No machine readable information which relates an extension concept to some existing US GAAP XBRL Taxonomy concept or concept category is required to be provided by SEC filers. For example, if a filer reports the concept *my:SomeTypeOfOperatingExpense* and they intended that to be an operating expense, while a human can figure out that the concept is an operating expense, a computer cannot. These machine-based processes will then not be able to properly categorize this information without the help of a human to make an interpretation. While in many cases the intent of the economic entity can be implied from roll up relations which have been expressed, in many other cases the intent cannot be implied. The best case scenario is for intent to be explicitly stated.
- **Missing US GAAP XBRL Taxonomy concept**: If a high-level concept is missing from the US GAAP XBRL Taxonomy, it can cause the filing to not be decipherable by automated processes. For example, if "Revenues" cannot be determined, automated processing will be halted and more expensive human-based processes must take over. This is not to say that both the necessary nuances cannot be expressed. Providing two concepts "Revenues" and "Revenues Including Excise Taxes" could serve the goals of the system as a whole.

Machine-readable information is not disallowed by US GAAP

While it is the case that current reporting rules under US GAAP do not require that those creating financial report do certain and specific things in order to ensure that machine-based processes can properly make use of reported information; it is likewise true that US GAAP does not preclude public companies creating financial reports in a manner that makes them safely, reliably, predictably, and repeatedly readable by such machine-based processes.

It is likewise true that today in can be a bit of a challenge to understand the precise cause of an anomaly in reading reported financial information. Is the filing at fault? Is the US GAAP XBRL Taxonomy at fault? Or is it the metadata, impute rules, or software algorithms of the computer trying to read the information which is at fault? However while it can be true that determining what is responsible for the fault which caused information to not be machine readable, the fact that information is not machine readable is easy to determine, even trivial to determine. And given so many publically available SEC XBRL-based financial filings to compare and contrast against, examining those financial filings can yield extremely useful insights into understanding how to create safe and reliable information which can predictably and repeatedly be used by automated machine based computer processes successfully. While it is not always true that the majority is right, it is very strong evidence when 9,679 take one approach to reporting a specific situation and 15 take another approach. The evidence is even stronger when you change the 15, prove that everything else works, and that 100% of the system works if one consistent approach is employed.

To be clear, let it be said that there is no need to reduce the power and utility of US GAAP to articulate the important nuances and subtleties which public companies have had in the past, and should continue

to have in the future, with respect to communicating their financial position and financial condition of their economic entity. There is no reason for US GAAP based financial reports to be reduced to one uniform "form" which public companies complete in order for machines to make use of reported information. One of the primary reasons stated by the SEC in their process of evaluating XBRL as a means for collecting reported information was XBRL's ability to overcome this obstacle. So, XBRL's extensibility and public companies ability to create extension concepts need not be taken away nor should it be taken away simply for the expediency of some who believe that it is the only way to have comparable financial information. Removing the richness of US GAAP based financial reporting in order to achieve information use and comparability is simply not necessary.

At the same time public companies creating such financial information do need to recognize the difference between representation of information and presentation of information. A representation is a statement of fact made by an economic entity about the financial position or financial condition by an economic entity. Presentation of information relates to somewhat arbitrary choices those creating such financial information make as to where in the report they would like to show that information. Presentation of information tends to follow individual discretion and even personal whim. Which note should a disclosure go in, how exactly do you want to show specific line items?

Logic and common sense, not philosophical arguments or theoretical discussions

Representation of facts tends to be far more standard and even governed by logic, the rules of math, and common sense and has less to do with individual discretion or personal whim. But representations do not eliminate the need for professional judgment where professional judgment is needed.

This does not mean that there is a conflict between the need to represent facts in a standard way and the ability of an external financial reporting manager to exercise their professional judgment to communicate an important nuance or subtlety which most nonprofessionals would even take notice of. There is no conflict when one reduces the situation down to its essential elements.

Consider the following three examples.

First, consider the accounting equation[6]: Assets = Liabilities and equity. External financial reporting managers have zero discretion and zero ability to exercise professional judgment in this situation. The accounting equation is a law of accounting. Are there other laws of accounting? What about the equation: Assets = Current assets + Noncurrent assets. Is that a law?

What if I were to tell you that of 6,674 economic entities examined that 6,645 (99.6% of the entities) followed the accounting equation and for the 29 (.4% of the entities) that did not; an accountant could examine their financial statement and clearly see the error which contributed to this law not being followed. Of the 29 reporting entities, 10 could conceivably be considered "rounding errors" which were not removed from the balance sheet. The primary point here is that the vast majority of economic entities follows the same rule and for those that do not, the reason the rules were not followed can be

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[6] The accounting equation, http://en.wikipedia.org/wiki/Accounting_equation

determined with investigation. The system can determine if a 1 dollar rounding error should be tolerated, those tolerances can then be factored into software applications which could ignore such situations. Or, the system can determine that 1 dollar rounding errors should never exist in the system. Either approach would work.

As a second example, consider the following fragments of an income statement:

Fragment #1:

Net income (loss)	1,000,000
Net income (loss) attributable to noncontrolling interest	200,000
Net income (loss) attributable to parent	800,000

Fragment #2:

Net income (loss)	1,000,000
Less: Net income (loss) attributable to noncontrolling interest	200,000
Net income (loss) attributable to parent	800,000

Fragment #3:

Net income (loss)	1,000,000
Net income (loss) attributable to noncontrolling interest	(200,000)
Net income (loss) attributable to parent	800,000

Fragment #4:

Net income (loss) attributable to parent	800,000
Net income (loss) attributable to noncontrolling interest	200,000
Net income (loss)	1,000,000

If someone was interpreting those four different fragments above, what is the difference in interpretation would you expect? Most likely none. Clearly, each of the fragments communicates the same facts. While the presentation of the information in each fragment is different, the meaning or representation of the facts articulated is identical. Imagine having to write an explanation which a software developer would use to get a computer application to correctly interpret each of these four fragments. Imagine that someone came up with a fifth approach for articulating this information. The point here is that while the way this information can be presented is arbitrary, the information itself is standard. A standard is defined as "used or accepted as normal or average; something established by authority, custom, or general consent as a model or example." One standard makes machine interpretation trivial.

Finally, consider this example of the product warranty liability disclosure of five economic entities. As you look at each of the disclosures, notice that:

- each is a roll forward,
- each has a beginning and ending balance,
- each has one or more line items
- each roll forward foots
- each ending balance is the beginning balance of the subsequent period roll forward

The following table summarizes product warranty activity recorded during the years ended December 31, 2013 and 2012.

	2013	2012
Beginning balance – January 1	$1,572	$1,046
Additions for current year deliveries	595	678
Reductions for payments made	(419)	(315)
Changes in estimates	(178)	163
Ending balance - December 31	$1,570	$1,572

(Millions of dollars)	2013	2012	2011
Warranty liability, January 1	$ 1,477	$ 1,308	$ 1,035
Reduction in liability (payments)	(938)	(920)	(926)
Increase in liability (new warranties)	828	1,089	1,199
Warranty liability, December 31	$ 1,367	$ 1,477	$ 1,308

The following table summarizes the activity related to product warranty liability during fiscal 2013 and 2012 (in millions):

	July 27, 2013	July 28, 2012	July 30, 2011
Balance at beginning of fiscal year	$ 415	$ 342	$ 360
Provision for warranties issued	664	661	456
Payments	(648)	(588)	(474)
Balance at end of fiscal year	$ 431	$ 415	$ 342

(In millions)	2013	2012	2011
Balance at January 1	$ 1,383	$ 1,507	$ 1,405
Current-year provisions	745	611	866
Expenditures	(814)	(723)	(881)
Other changes	10	(12)	117
Balance at December 31	$ 1,324	$ 1,383	$ 1,507

Standard Warranty Liability

($ in millions)

	2013	2012
Balance at January 1	$ 394	$ 407
Current period accruals	346	394
Accrual adjustments to reflect experience	22	(15)
Changes incurred	(387)	(392)
Balance at December 31	$ 376	$ 394

So what is the point here? How many product liability warranty disclosures would you expect to encounter which are not a roll forward, but rather a roll up instead? None. A roll forward is a roll forward (beginning balance + additions – subtractions = ending balance) and a roll up is a roll up (a + b + c + d = total). How many would you expect to NOT have a beginning balance? How about an ending balance? How many roll forwards would you expect not to actually foot?

Whether an economic entity discloses a product liability warranty roll forward entails judgment. Where an economic entity puts the roll forward in the notes is an arbitrary choice or a personal whim. But if an economic entity reports a product liability warranty, you would expect that roll forward to have a beginning and ending balance, you would expect that roll forward to foot, and you would have other expectations of that product liability warranty roll forward.

If, for example, an economic entity wanted to be more nuanced and provide additional detail or break out a commonly disclosed line item (and therefore a concept exists in the US GAAP XBRL Taxonomy), they can do so quite easily for the product liability warranty disclosure, any other disclosure, any other financial statement line item. However, the roll forward will still have a beginning balance and ending balance, the roll forward will still foot, etc.

A reporting entity may have an internal policy to put the product liability warranty disclosure in the commitments and contingencies note, in the accrued liabilities note, combined it with some other note, report it in some other note, or make some other arbitrary choice based on their internal policy. But their internal policy cannot contradict any financial disclosure requirement and it may not contradict the rules of common sense that roll forwards foot and have beginning and ending balances.

Fundamental accounting concepts are both a base and a path

The fundamental accounting concept rules or tests are two things. First, they are clear examples of relations which must exist within a financial report. Examination of SEC XBRL-based financial filings, and in fact examination of every SEC XBRL-based financial filing, provides strong evidence that these fundamental accounting concept relations exist and in most cases do not change. If they do change, where they change can be observed and demonstrated by the filings themselves.

For each fundamental accounting concept rule, a document has been created which summarizes pertinent information about how the set of SEC XBRL-based financial filings satisfy that rule or common reasons why a financial report provided by an economic entity does not satisfy that rule. Please refer to the document of the rule for any test which is not satisfied by an SEC XBRL-based financial filing for help understanding the test.

Observation can determine if the SEC filing needs to be adjusted, the US GAAP XBRL Taxonomy needs to be adjusted, or the metadata and impute rules used by software algorithms needs to be adjusted to rectify any and all situations where tests of relations fail. When 100% of SEC XBRL-based financial filings satisfy all rules, then reported information can be safely, reliably, predictably and repeatedly be used by automated machine-based processes. To the extent of those rules which test information, the information can be deemed reliable.

Second, there are many, many, many other relations between and among facts reported in a financial report. So while the fundamental accounting concept testing relates to the current balance sheet data and year-to-date income statement information of the root economic entity creating the report; it also applies to:

- Other periods, such as prior periods provided for comparison purposes
- Other sub components of the root economic entity such as business segments or geographic areas
- Line items on the balance sheet or income statement which tie to a disclosure

There are thousands and thousands of relationships. By some estimates there are between 40,000 and 60,000 relationships or business rules which are specified by US GAAP which exist and must be complied with. Machine-based automated processes need machine-readable business rules to enforce these relations. It is through these business rules that digital financial reports can be created correctly by their creators, consumed correctly by analysts, and there is a consistent understanding of reported facts between creators and consumers. The reality is that there are endless opportunities to express rules. That is the nature of software. For example, proper spelling is important.

The opportunities are endless.

Prudence dictates that using financial information from XBRL-based public company financial filings should not be a guessing game. If making use of this information is not a guessing game, substantial benefits can be derived from the nature of the structured information in both the creation and analysis of XBRL-based digital financial reports. Until making use of this information is not a guessing game, beginning to realize this opportunity cannot start.