# 9. Understanding Fundamental Accounting Concepts and Report Frames

Economic entities report information in their financial reports. That information is not random. Relations exist between reported information. Some of those relations are universal to every economic entity that reports, such as the accounting equation. Other relations are universal to sets of entities that use a specific style of reporting. Whether economic entities explicitly report information or users of a financial report need to impute a fundamental accounting concept value, these universal relations are at play. These universal relations are both important to safely, reliably, and predictably using reported financial information and can be leveraged.

## 9.1. Interpreting fundamental accounting concepts

There are several moving pieces which relate to working with fundamental accounting concepts and relations between those concepts which must be understood. Not understanding these ideas can make it hard to interpret the dynamics of situations which are encountered 134.

#### 9.1.1. Understanding the notion of category or class

When something is expressed in a taxonomy it is one specific category of thing. That one thing cannot be some other category of thing, something that it is not 135. For example, *Assets* is something that is completely distinct from *Equity*.

One thing can be a sub-type of some other thing. For example, Cash and cash equivalents can be a sub-type of Current asset. By defining Cash and cash equivalents as a type of Current asset, you are implying that it is not a sub-type of Equity.

When some new thing is created, it needs to be created based on some other thing and not just placed into a taxonomy and not associated with anything at all. For example, when s public company creates an extension concept, that extension concept needs to be associated with something else for a machine-based process to understand what that extension means.

Public companies creating XBRL-based financial filings sometimes move a fundamental accounting concept to be part of some other fundamental accounting concept, "crossing categories", causing confusion when information is interpreted by users of the information. A common situation is where a public company moves the fundamental accounting concept "Interest and Debt Expense" to be included as part of the fundamental accounting concept "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 a fact with the concept "Preferred stock dividends and other adjustments", and then outside that total it provides "Preferred stock dividends", machines trying to make use of this information stumble when attempting to interpret information.

See Interpretation of Fundamental Accounting Concept Test Results,
 <a href="http://www.xbrlsite.com/2014/Reference/InterpretationOfFundamentalAccountingConceptTestResults.pdf">http://www.xbrlsite.com/2014/Reference/InterpretationOfFundamentalAccountingConceptTestResults.pdf</a>
 Some might argue that something can switch categories. If this is true, then exactly how to switch categories must be described.



Also, when an extension concept is created by a public company and no machine-readable information exists which relates an extension concept to some existing US GAAP XBRL Taxonomy concept or concept category, the machine using the information cannot possibly know the nature of the extension concept, the **extension concept is unknowable**. 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 the nature of the extension concept by reading the documention, but a machine cannot understand that the extension is an operating expense. However, if the public company created a machine-readable relation using the provided XBRL "general-special" relation, then computers attempting to make use of this information could decipher the nature of the extension concept.

While in many cases the intent of the reporting entity can be implied from perhaps roll up relations which have been expressed, in many other cases the intent cannot be interpreted. Neither the FASB nor SEC provide explicit guidance and therefore many different arbitrary interpretations could result. The best case scenario is for intent of reporting entities to be explicitly stated.

#### 9.1.2.Imputed information as compared to explicitly reported information

If a reporting entity explicitly reports the concept *Noncurrent assets*, an analyst using a financial report can always be 100% sure of the value of *Noncurrent assets*. If, however, a reporting entity does not explicitly report the concept *Noncurrent assets*; but does report explicit values for *Current assets* and *Assets* (total assets), and the relation *Assets* = *Current assets* + *Noncurrent assets* is known to always be true, then an analyst can always safely and reliably use the rules of logic and math to imply or impute the value of *Noncurrent assets* using the know relation between *Assets*, *Current assets*, and *Noncurrent assets*.

Using explicitly reported information is always safer, but using the rules of logic and math to impute a value is likewise very safe if certain relations are always known to be true. With explicitly reported information you can also check relations in numerous ways in order to be ultra-sure that you are using the correct information, somewhat like a parity check. But parity checks are not as useful if information is imputed.

#### 9.1.3. Mapping reported concepts

Sometimes, creators of a financial report have several different concepts which they might use to report what amounts to the same fact. For example, consider the concept *Equity*. The US GAAP XBRL Taxonomy provides numerous concept which could be used to report the fundamental accounting concept *Equity*:

Fundamental Concept Name	US GAAP XBRL 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



Part of the reason multiple concepts exist has to do with inconsistencies in the US GAAP XBRL Taxonomy. One type of inconsistency is interpreting what is an entirely different concept and what is really only different labeling of what amounts to the same concept. For example, stockholders equity, partner capital, and member equity are all really one concept Equity with three different preferred labels for the concept.

Another reason different concepts are used is differences in interpretation of the meaning of certain line items. For example, if an economic entity reports *Equity attributable to parent*, *Equity attributable to noncontrolling interest*, and *Equity* (total equity); it is easy to sort out which concept is being used to report *Equity*. However, many times a reporting entity with report the line item labeled *Equity* and imply the meaning *Equity attributable to parent*; or report the line item labeled *Equity* and imply the meaning *Equity* (total equity). This can take some sorting out. As long as completely incorrect concepts are used, this can be sorted out by machines such as computers.

#### 9.1.4. Coordination and cooperation important

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

- Reporting error: The XBRL-based public company financial report to the SEC 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. Basically, there is some inconsistency between the description of the information and what is reported.
- **Base taxonomy error**: The US GAAP XBRL Taxonomy expresses a concept which would be used to report a fact is unclear, inconsistent, logically inconsistent, or otherwise ambiguous and therefore there are different possible interpretations by those using that taxonomy or some important or common concept is missing altogether. Basically, there is some inconsistency between how reporting entities interpret the information description.
- **Software 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. Basically, software used to make use of fundamental accounting concept information is not consistent with the description provided by the US GAAP XBRL Taxonomy.

Coordination and cooperation in arriving at the description of concepts and relations between concepts is crucial. Idiosyncrasies in interpretations cause the system to not work as anticipated. Fundamental accounting concepts and relations between concepts is a control mechanism to help coordinate consistent understanding.

# 9.2. Overview of fundamental accounting concepts and report frames

In a financial report information is reported. For example, concepts such as *assets* and *liabilities and equity* are reported, among many others. There are relations



between reported concepts. For example, one of the most important relations is the accounting equation  $^{136}$ : assets = liabilities and equity.

While the accounting equation and some other relations are true for all entities creating a financial report, other relations are unique to the industry accounting practices of specific industries and the economic entities in those industries. Other relations are applicable only if entities choose to use a specific alternative, for example reporting using a multi-step income statement as opposed to a single-step income statement.

### 9.3. Notion of fundamental accounting concepts

While not all financial reports have all facts in common, and different industries can have more or less in common, there are some core components which all accounting entities have. These facts can be thought of as "key stones" or "corner stones" which hold a financial report together or provide somewhat of a "skeleton" for a financial report. Note that this is not to say that all accounting entities report these accounting concepts; if a concept is not reported it can be logically imputed leveraging such known relations.

For example, these are fundamental accounting concepts which are common to most commercial and industrial reporting entities in all industries and relations which exist between these concepts which can never change:

- Assets = Liabilities and Equity
- Assets = Current Assets + Noncurrent Assets (classified balance sheet)
- Equity = Equity Attributable to Parent + Equity Attributable to Noncontrolling Interest
- Liabilities = Current Liabilities + Noncurrent Liabilities (classified balance sheet)
- Liabilities and Equity = Liabilities + Commitments and Contingencies + Temporary Equity + Equity
- Assets = Liabilities + Commitments and Contingencies + Temporary Equity + Equity
- Liabilities = Liabilities and Equity (Commitments and Contingencies + Temporary Equity + Equity)
- Current Assets = Assets Noncurrent Assets (classified balance sheet)
- Current Liabilities = Liabilities Noncurrent Liabilities (classified balance sheet)
- Noncurrent Assets = Assets Current Assets (classified balance sheet)
- Noncurrent Liabilities = Liabilities Current Liabilities (classified balance sheet)
- Gross Profit = Revenues Cost Of Revenue (Multi-step approach)
- Operating Income (Loss) = Gross Profit Operating Expenses + Other Operating Income (Multi-step approach)

The accounting equation, <a href="http://en.wikipedia.org/wiki/Accounting">http://en.wikipedia.org/wiki/Accounting</a> equation; this rap song also helps you understand the accounting equation, <a href="https://www.youtube.com/watch?v=j71Kmxv7smk">https://www.youtube.com/watch?v=j71Kmxv7smk</a>



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- Income (Loss) from Continuing Operations Before Equity Method Investments
   Operating Income (Loss) + Nonoperating Income (Loss) Interest And Debt Expense
- Income (Loss) from Continuing Operations Before Tax = Income (Loss) from Continuing Operations Before Equity Method Investments + Income (Loss) from Equity Method Investments
- Income (Loss) from Continuing Operations after Tax = Income (Loss) from Continuing Operations Before Tax Income Tax Expense (Benefit)
- Net Income (Loss) = Income (Loss) from Continuing Operations After Tax +
  Income (Loss) from Discontinued Operations, Net of Tax + Extraordinary
  Items, Gain (Loss)
- Net Income (Loss) = Net Income (Loss) Attributable to Parent + Net Income (Loss) Attributable to Noncontrolling Interest
- Net Income (Loss) Available to Common Stockholders, Basic = Net Income (Loss) Attributable to Parent - Preferred Stock Dividends and Other Adjustments
- Comprehensive Income (Loss) = Comprehensive Income (Loss) Attributable to Parent + Comprehensive Income (Loss) Attributable to Noncontrolling Interest
- Comprehensive Income (Loss) = Net Income (Loss) + Other Comprehensive Income (Loss)
- Operating Income (Loss) = Revenues Costs And Expenses + Other Operating Income (Single-step approach)
- Costs And Expenses = Cost Of Revenue + Operating Expenses (Single-step approach)
- Net Cash Flow = Net Cash Flows, Operating + Net Cash Flows, Investing + Net Cash Flows, Financing + Exchange Gains (Losses)
- Net Cash Flows, Continuing = Net Cash Flows, Operating, Continuing + Net Cash Flows, Investing, Continuing + Net Cash Flows, Financing, Continuing
- Net Cash Flows, Discontinued = Net Cash Flows, Operating, Discontinued + Net Cash Flows, Investing, Discontinued + Net Cash Flows, Financing, Discontinued
- Net Cash Flows, Operating = Net Cash Flows, Operating, Continuing + Net Cash Flows, Operating, Discontinued
- Net Cash Flows, Investing = Net Cash Flows, Investing, Continuing + Net Cash Flows, Investing, Discontinued
- Net Cash Flows, Financing = Net Cash Flows, Financing, Continuing + Net Cash Flows, Financing, Discontinued

However, there is variability in how a handful of these fundamental accounting concepts are reported by economic entities. This brings us to the notion of report frames.



# 9.4. Notion of reporting pallets or report frames

Economic entities report using different reporting pallets or report frames. For example, consider the variability in where public companies report the line item *Income (Loss) from Equity Method Investments*<sup>137</sup>:

- 624 entities (60%) reported the line item before tax directly as part of income (loss) from continuing operations before tax
- 110 entities (10%) reported the line item after tax
- 128 entities (12%) reported the line item as part of nonoperating income (expense)
- 20 entities (2%) reported the line item as part of revenues
- 22 entities (2%) reported the line item between income (loss) from continuing operations before and after tax
- 10 entities (less than 1%) reported the line item as part of costs and expenses
- 8 entities (less than 1%) reported the line item as part of operating expenses
- 60 entities (6%) created an extension concept and the line item rolls up to that extension concept
- 66 entities (5%) did something else which was not directly analyzed so exact placement is unknown

Comprehensive testing of all SEC XBRL financial filings at this very high level revealed a very limited amount of variability most of which occurs on the income statement. This variability is not random. Most variability relates to the reporting practices of different industries which account for different activities. The following is a summary of and a complete inventory of this variability 138 at this high-level of a financial report:

- Entities report using some accounting industry or activity
  - o Commercial and industrial (standard approach)
  - Interest based revenues
  - Insurance based revenues
  - Securities based revenues
  - REIT (real estate investment trust)
  - Utility
- Balance sheets can be
  - o Classified and report current and noncurrent assets and liabilities

This Excel spreadsheet is helpful in understanding reporting variability, <a href="http://xbrl.squarespace.com/journal/2014/9/15/wonderful-things-xbrl-based-structured-information-enables.html">http://xbrl.squarespace.com/journal/2014/9/15/wonderful-things-xbrl-based-structured-information-enables.html</a>



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<sup>&</sup>lt;sup>137</sup> See a detailed analysis of this topic here, <a href="http://xbrl.squarespace.com/journal/2014/10/14/options-for-dealing-with-line-items-that-bounce-around-incom.html">http://xbrl.squarespace.com/journal/2014/10/14/options-for-dealing-with-line-items-that-bounce-around-incom.html</a>

- Unclassified
- Report using liquidity based reporting
- Income statements can be
  - Multi-step and report gross profit
  - Single-step and do not report gross profit
- Income statements can
  - Report operating income (loss)
  - Do not report operating income (loss)
- Income (loss) from equity method investments can be reported on the income statement
  - As part of revenues
  - As part of nonoperating income (loss)
  - Before taxes as a separate line item
  - o After taxes as a separate line item
  - Between income (loss) from continuing operations before and after taxes
- Cash flow statements can report net cash flow as
  - Including exchange gains (losses)
  - Not including exchange gains (losses)

This is a comprehensive and complete inventory of the high level variability in public company financial filings. This information is not a statistical analysis or speculation. This is observable empirical evidence provided by the XBRL-based public company financial filings submitted to the SEC.

A coding scheme was developed to articulate this information in both human readable and machine readable form. Below is a brief description of that coding scheme. Each code has six parts: "COMID-BSC-CF1-ISS-IEMIB-OILY". This explains each part and the codes used for each part and shows the number of entities which have that characteristic (note that the totals add up to 6,943 and not 6,947; this relates to an issue with CIK numbers):

- Part 1: Industry codes: (Total 6,943)
  - COMID=Commercial and Industrial (5,985)
  - INTBX=Interest based revenues (632)
  - INSBX=Insurance based revenues (50)
  - SECBX=Securities based revenues (93)
  - REITX=Real estate investment trust (158)
  - UTILX=Utility (25)
- Part 2: Balance sheet form codes: (Total 6,943)



- BSC=Classified balance sheet (5,527)
- BSU=Unclassified balance sheet (1,412)
- BSL=Liquidity based balance sheet (4)
- Part 3: Cash flow statement exchange gains codes: (Total 6,943)
  - CF1=Exchange gains (losses) part of net cash flow or does not report line item (6,845)
  - CF2=Exchange gains (losses) part of cash roll forward (98)
- Part 4: Income statement form codes: (Total 6,943)
  - ISS=Single step income statement (4,255)
  - o ISM=Multi step income statement (2,688)
- Part 5: Income (loss) from equity method investments location codes: (Total 6,943)
  - IEMIX=Income (loss) from equity method investments not reported (5,290)
  - IEMIB=Income (loss) from equity method investments reported BEFORE tax (1,402)
  - IEBIA=Income (loss) from equity method investments reported AFTER tax (113)
  - IEMIN=Income (loss) from equity method investments reported within nonoperating income (loss) (122)
  - IEMIR=Income (loss) from equity method investments reported within revenues (16)
  - IEMIT=Income (loss) from equity method investments reported between income (loss) from continuing operations before and after taxes (0, not working yet)
- Part 6: Operating income (loss) codes: (Total 6,943)
  - OILY=Operating income (loss) reported (5,120)
  - OILN=Operating income (loss) not reported (1,823)

While the complete set of codes and report frames cannot be known until the process of breaking public company filings into these sets and testing each filing and set as to their conformance to the fundamental accounting concepts and relations within the set and the success of this process is verified by 100% conformance by each reporting entity to 100% of the fundamental accounting concepts and relations between those concepts within each set; this is achievable.

In fact, testing shows that this objective has already been achieved for 98.7% of relations and 60.0% of all public company financial reports submitted to the SEC using the XBRL format. Further, which reporting entities do not conform to these concepts and relations and why they do not conform is easy to observe.

Another possibility which exists in order to manage this process is simply to remove sets of reporting entities from scope. For example, I have already removed entities



which are funds and trusts from scope because I personally have no interest in such entities. Also, there are five entities which I classify as "hybrids" because they report using significantly more complex reporting schemes. Basically, certain report frames can be simply removed from scope.

