

Abstract

This publication will take the reader on a Darwinian journey of discovery; we will examine the principles of designing classification schemes with particular emphasis on the idiosyncrasies of the financial sector. Classifications, taxonomies and typologies in general use (including the likes of ISO 10962, Bank of International Settlements OTC classification, ISITC Settlements and reconciliation classification) and those proposed or under development (e.g. ISDA Taxonomies) are explored. An investigation is undertaken as to the appropriate mechanisms for representing classifications and how they can be deployed. The potential impact on product design in the light of the new regulatory frameworks (Dodd-Frank and EMIR in particular) is investigated.

The reader should bear in mind that, “All regulatory roads lead to data” and this publication is the Killer App for grappling with the minefield of financial instrument and product classification - the latest must have Sat Nav.

Online classification repository

A repository of supporting material has been provided, comprising a comprehensive set of samples and electronic representations of the classifications, discussed in this publication.

Go to www.londonmarketsystems.com/classifications and the reader will be able to browse, subscribe to updates and download material for use in development and production environments.

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Chapter 12

Bank of International Settlements Derivative instruments classification



12. Bank of International Settlements - Derivative instruments classification

The objective of the Bank of International Settlements (BIS) classification is to support the creation of the triennial and semi-annual surveys on positions in global over-the-counter (OTC) derivatives markets.

This classification is used to provide information on the size and structure of the global derivatives markets and to obtain an assessment of the risk being traded/transferred in these markets. In addition, to market risk (based on asset class and product type groupings), statistics are broken down by:

- By geo-political regions (North America, Japan, Europe, Latin America, other Asia) for CDS and Equity linked derivatives, as part of the Triennial survey only.
- For all derivatives, by the type of counterparty and sector (Reporting dealers, Central counterparties, Non-financial customers, other financial institutions, etc...).
- For foreign exchange and interest rate contracts, by the major currency pairs⁷, as part of the Triennial survey.
- For equity contracts, by geo-political regions.
- For the Semi-annual survey, by time to maturity of foreign exchange, interest rate and equity contracts (under one year, over one and up to five years and over 5 years).
- For the Triennial survey, statistics are broken down by actual maturity.

⁷ Major currencies are USD, EUR, JPY, GBP, CHF, CAD, SKR.

The two tier hierarchy breaks down transactions by asset class and product type.

Asset Class
Foreign exchange transactions (and gold contracts)
Single-currency interest rate derivatives
Equity and stock index derivatives
Commodity derivatives (excluding gold contracts)
Credit and other derivatives

Product Type
Swap
Forward
Future
Option

Where non-plain vanilla products exist, the guidelines recommend that they are separated into their vanilla components and classified accordingly.

Given that this scheme was designed in the late 90's, it has been found to be very robust and able to keep pace with change in the derivatives space.

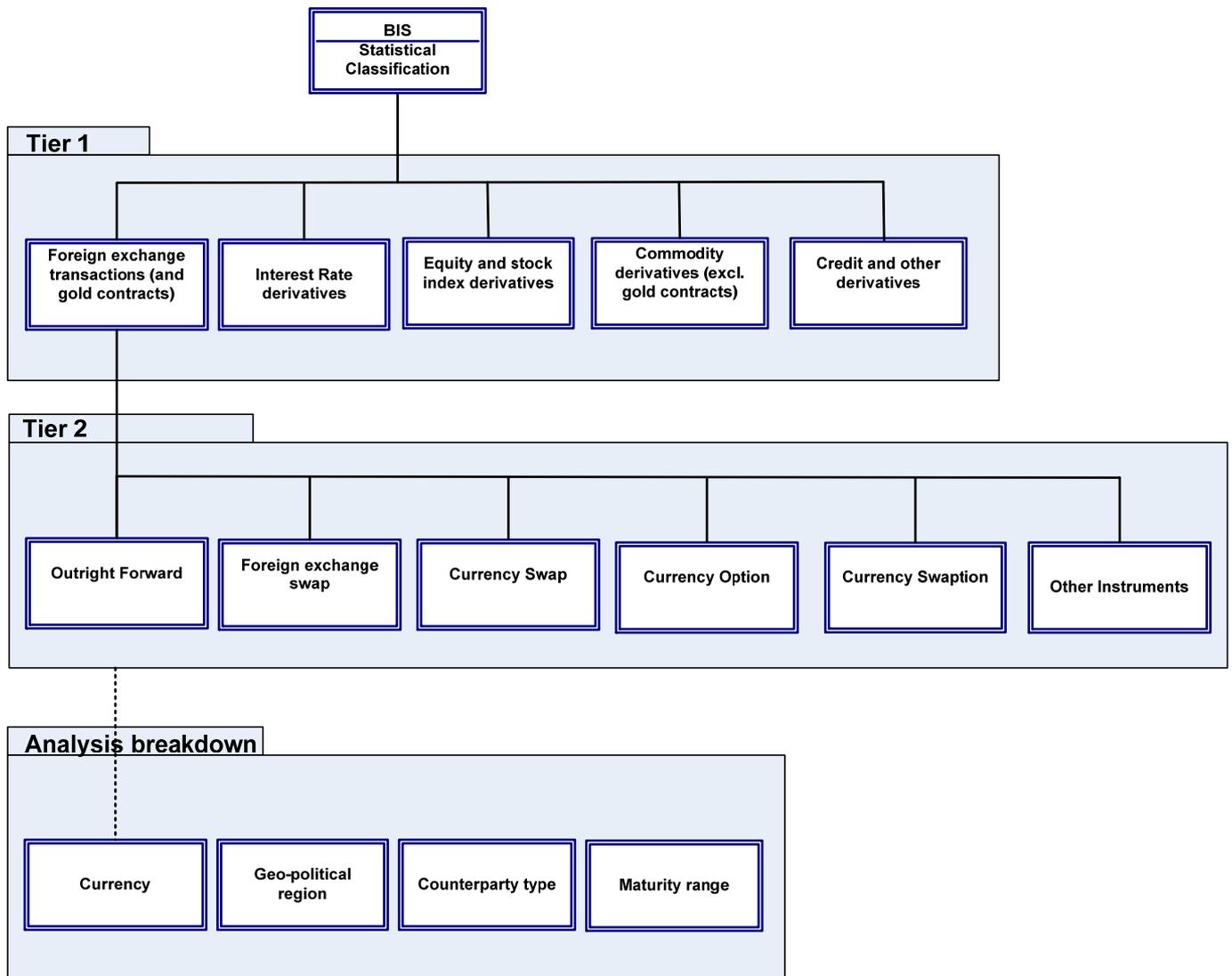


Figure 21. Snippet of the BIS - Derivative instruments classification scheme

Table 22B: Amounts outstanding of OTC equity-linked derivatives										
By instrument and market										
In billions of US dollars										
Instrument / market	Notional amounts outstanding					Gross market values				
	Jun 2009	Dec 2009	Jun 2010	Dec 2010	Jun 2011	Jun 2009	Dec 2009	Jun 2010	Dec 2010	Jun 2011
Total contracts	6,584	5,937	6,260	5,635	6,841	879	708	706	648	708
US equities	1,512	1,749	1,732	1,565	1,739	202	192	195	191	202
European equities	3,883	3,167	3,227	2,793	3,414	478	373	352	311	342
Japanese equities	627	494	602	595	712	93	80	91	77	79
Other Asian equities	173	180	258	252	346	56	27	25	24	24
Latin American equities	125	38	105	58	77	8	5	6	5	7
Other equities	264	309	336	372	554	43	32	38	39	55
Forwards and swaps	1,678	1,652	1,754	1,828	2,029	225	176	189	167	176
US equities	520	528	571	544	551	55	46	63	51	48
European equities	915	877	899	941	1,016	130	105	99	91	92
Japanese equities	69	63	84	79	101	12	8	9	7	7
Other Asian equities	34	29	29	52	62	6	4	3	4	5
Latin American equities	34	20	17	20	42	5	3	3	2	4
Other equities	107	136	154	192	257	18	11	12	13	20
Options	4,906	4,285	4,506	3,807	4,813	654	532	518	480	532
US equities	992	1,221	1,161	1,022	1,188	147	146	132	140	155
European equities	2,968	2,290	2,328	1,852	2,398	348	268	253	220	249
Japanese equities	559	431	518	516	611	81	72	82	71	72
Other Asian equities	139	151	230	200	284	50	23	22	20	18
Latin American equities	90	19	88	37	35	3	2	3	3	3
Other equities	158	173	181	180	296	25	21	26	27	34

Figure 22. BIS – Triennial report of OTC equity-linked derivatives

Business context

The objective of this classification is to support the creation of the semi-annual derivatives markets statistics reports and the triennial central bank survey of foreign exchange and OTC derivatives market activity.

Online references

The majority of the material within this section has been extrapolated from BIS publications, including:

- Reporting guidelines for the turnover part of the triennial central bank survey of foreign exchange and OTC derivatives market activity in April 2010:
www.bis.org/statistics/triennialrep/triennial_turnover_rd_repguid.pdf
- Guide to the international financial statistics:
www.bis.org/statistics/intfinstatsguide.pdf
- For output based on classification, please refer to: www.bis.org/statistics/derstats.htm

Chapter 18

Accountancy Standards



18. Accountancy Standards

All of the accountancy standards (IAS 32, IAS 39, IFRS 7, and IFRS 9) are principles based and neither the International Accounting Standards (IAS) nor the International Financial Reporting Standards (IFRS) publish a classification scheme per se. Nonetheless there is common approach to ledger entries and groupings of entries, and not surprisingly the ledger codes are grouped by asset class and then by product type.

The primary reason for classifying financial products in this domain is to be able to recognise and measure financial assets and liabilities.

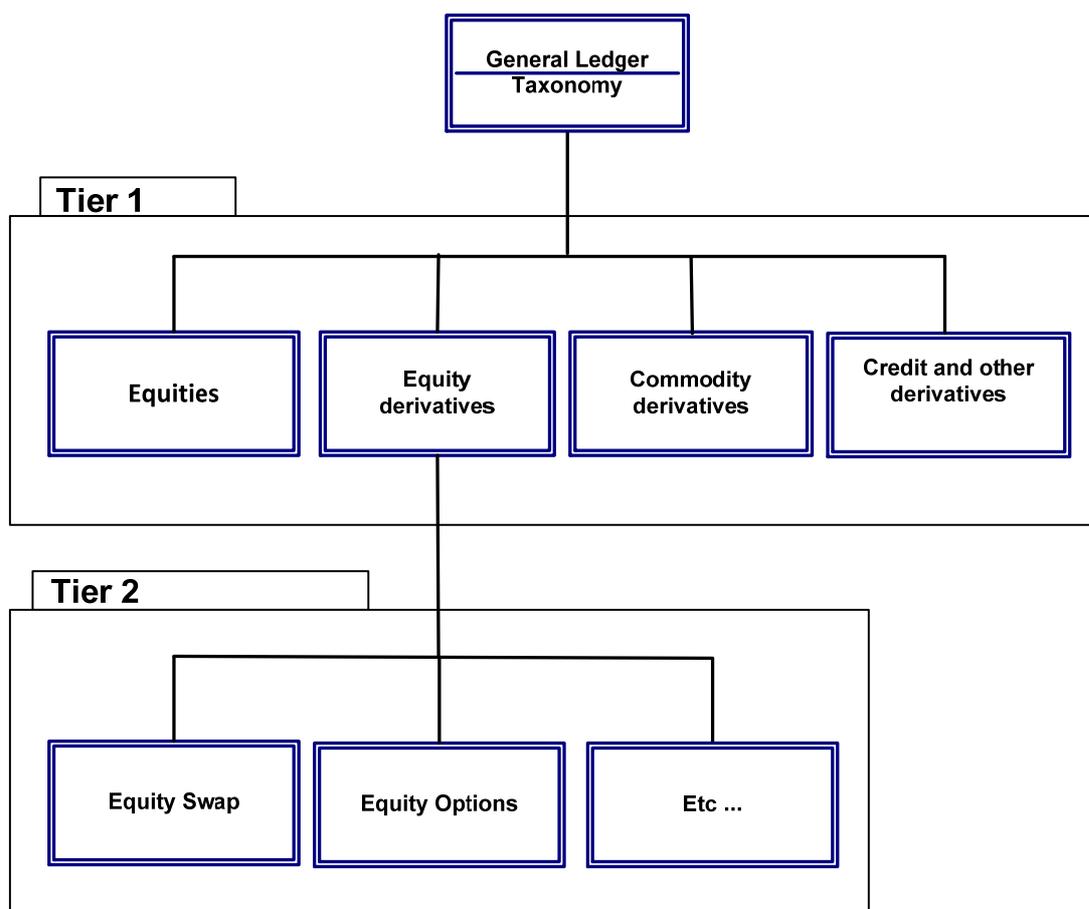


Figure 26. General Ledger classification

This can also take the form of a Dewey decimal classification scheme, as provided in “Chapter 2. How are classifications constructed?”, please refer to Figure 4 for an example of this.

Business context

To summarise each standard:

IAS 32 — Financial Instruments covers the presenting financial information,

IAS 39 and its replacement IFRS 9 defines the requirements for recognition and measurement (financial assets and liabilities) of financial products, and

IFRS 7 Financial Instruments: Disclosures.

Chapter 21

Modelling Classifications



21. Modelling Classifications

There are various ways of representing classifications. It is possible to present a classification scheme in a tabular form, such as a spreadsheet, assuming that one is dealing with a strict hierarchical structure with only a small number of features to capture and one or two similar use cases. Beyond this however, the limitations of a spreadsheet become apparent.

Each business process/application may wish to classify in a different way depending on the components that make up the product and the business context. The common example used is the classification of a convertible instrument which is traded as an Equity product but has debt components. For P&L calculations and default scenarios relating to the issuer the debt components override the Equity product type. A spreadsheet is definitely not appropriate, so what is?

Of course, XML can provide the framework to represent a classification and likewise, Unified Modelling Language (UML) can also use a semantic Metadata approach using one of the two principal syntaxes, RDFS or OWL. Classifications can also be creating directly using ontology editing tools assuming an appropriate modelling methodology can be identified.

Modelling considerations using XML

XML does lend itself to modelling financial data, though it is primarily used for messaging. It has the capability to support enumerated code lists as well as “and”, “or” and “exclusive or” relationships. It is important to ensure that the existing data architecture policies are taken into consideration

when developing a classification scheme.

OASIS Genericode – Structured code list variant

I have used the OASIS Genericode standard to support ISO 10962 and other hierarchical structured code lists. The mechanism I deployed was to use a parent reference (*parentElement* in the column definitions) on each entry to support the hierarchical relationships and I also added a column to support versioning, vendor/user variants or if one wants multiple views (RE: *scheme*), as seen in the Figure below:



	Id	Use	ShortName
1	code	required	CFI Code
2	description	required	CFI Description
3	scheme	optional	ISO 10962:2001
4	parentElement	optional	Parent reference

Figure 28. OASIS Genericode “Structured code list variant column definitions

Nonetheless, Anthony Coates, who defined the OASIS standard, would stress that Genericode was not designed to support structured code lists but merely simple code lists, though the user may wish to embed intelligence within the entries.

Semantic Metadata approach

The financial industry has been crying out for a standardised set of the building blocks, terms and definitions for master file and reference data for many years. Semantic modelling provides the ability to achieve this and the EDM Council has put substantial resources into developing a Semantic Repository and the Financial Industry Business Ontology (FIBO).

The first step in the development of the FIBO is the Wells Fargo's OTC Derivative products operational model Proof of Concept ("OTC PoC"). This work has resulted in the creation of a number of ontologies including ones for representing OTC Interest Rate contracts, Legal Entity Identification and other common financial terms.

The tool used by for OTC PoC is Protégé, a free, open-source ontology editor.

nodes, in Figure 33 specific product (or contract) types and Asset class in Figure 34 Asset classes.

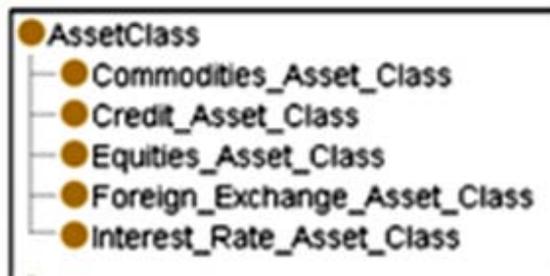


Figure 34. Asset Class

When, however one is dealing with the multidimensional nature of financial products, one ends up with a cumbersome poly hierarchical model, that comprises multiple ontologies that intersect at various points. This results in the same specific end node being assessable via multiple paths. This is difficult to implement into a production environment.

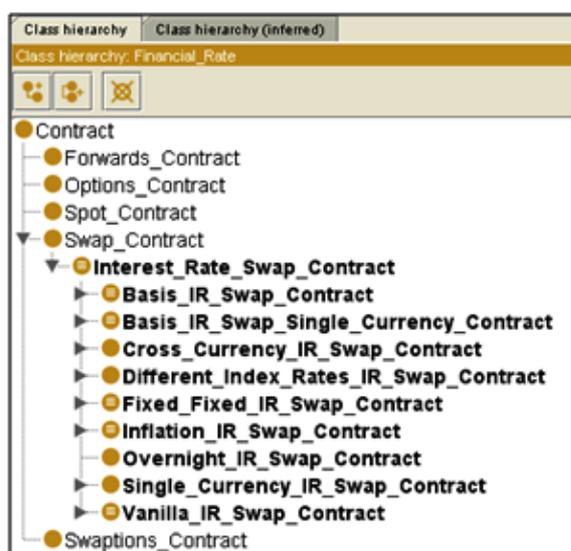


Figure 33. Product (contract) Hierarchy¹⁴

This semantic initiative has resulted in taxonomies able to identify specific end

¹⁴ Screenshot using the Protégé ontology editor