Defining Equity and Debt using REA Claim Semantics

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Abstract. The Financial Industry Business Ontology (FIBO) includes a common semantic model for transaction concepts based on the REA ontology. Work to align the FIBO ontologies with REA is ongoing, with open actions in the areas of ledger accounts, transaction and payments workflow, and the use of the REA "Claim" concept. One ambition of this work has been to frame a formal definition of the concepts of equity and debt in terms of the REA concept of a "claim". FIBO itself represents the kinds of instruments which are equity and debt related, as contracts, with relationships to the accounting concepts of debt and equity grounded semantically in the commonly understood accounts equation. The formal use of the REA "claim" concept would enable FIBO to more formally ground equity and debt themselves in terms of more semantically primitive concepts. In order to achieve this, we need a greater understanding of the nature of equity and debt in terms of how they arise in practice. This requires an analysis of the legal and accounting processes around equity and debt securities issuance and around corporation formation and liquidation. This paper sets out the problem space to be explored in order to complete a semantic representation of debt and equity in terms of existing REA concepts, with reference to these processes and legal frameworks.

1 Introduction

The Financial Industry Business Ontology [1] (FIBO) is an industry led initiative to define the semantics of financial instruments, legal entities and other concepts of relevance to the financial services industry. Led by the EDM Council [2] this is a multi-year effort culminating recently in the standardization of parts of this material through the Object Management Group [3].

FIBO brings together two formal approaches: the use of the Web Ontology Language (OWL) [4] to provide the logical formalism of the models, and the application of cognitive science principles in terms of the "grounding" of meaning across the models. Concepts in the FIBO models are framed in terms of their relationships to primitive concepts which are "grounded" in some existing body of knowledge such as law or accounting.

Model content is presented to business domain experts using a business-facing formal representation of the underlying OWL model constructs, to capture business semantics in line with formal approaches to conceptual modeling (see e.g. [5]).

A necessary by-product of this approach is the need to model common archetypical concepts and the relationships which necessarily apply among them. Such concepts include contracts, commitments, legal entities, transactions and accounting concepts. To this end, a large part of the FIBO conceptual modeling effort has gone into formally adopting the concepts in the REA ontology [6] and framing these in terms of the broader abstractions of the FIBO mid-level and upper ontologies to frame a kind of foundational business conceptual ontology. Progress on this integration to date is given in a paper presented by the author at VMBO 2014 [7].

The work on integration of REA concepts into FIBO remains incomplete. In particular, there is further work to be done in ledger accounts, transaction and payments workflow, and the use of the REA "Claim" concept. One ambition of this work has been to frame a formal definition of the concepts of equity and debt in terms of the REA concept of a "claim".

1.1 Desired End Point

The desired end result is set out as follows:

> All I really need is the 3rd level, 4th level, 5th level, etc. of an ISA hierarchy that has REA claim as the root and debt and equity as the sole two nodes on the second level. Do you have a top-level classification that divides financial instruments into debt and equity? [8]

FIBO itself provides a hierarchy of kinds of financial instrument, which are defined as kinds of contract. FIBO equity and debt instruments are distinguished in terms of properties which define what is conferred on the holder. These are currently grounded in the commonly understood meanings of these terms in book keeping.

It should be possible to use the REA Claim concept to further define what equity and debt mean. This paper sets out the further research to be done in order to model equity and debt formally in terms of REA claims and in line with the existing usage of REA concepts in FIBO.

2 Equity and Debt

Equity is not symmetrical with debt. Debt represents a commitment by the borrower to make some payments of interest and to pay back the capital advanced by the lender. Equity represents no such commitment and there is only movement of funds in the event that the entity is wound up.

The nature of the claim which the equity holder has on the entity is therefore very different to that which a debt holder has, and these are realized in different time frames and under different conditions. In order to understand whether there is a common concept for equity and debt we need to look at two aspects of these:

1. The processes by which equity and debt instruments are created;
2. The processes around the creation and dissolution of legal persons.

An ideal outcome would be if, after investigating these matters, some term common to both turns out to be synonymous with REA Claim.

2.1 REA Transactions

A transaction is defined as the exchange of two sets of commitments between two parties. Many “over the counter” financial instruments may be framed in terms of two mutually agreed commitments to make cash payments, for example at different rates of interest, in different currencies or calculated with reference to market indices, the values of stocks, commodities and so on. In this way the entirely of the derivatives market can be represented using the REA concepts of “Commitment” along with transaction, agreement, REA “Event” and so on. This approach can be extended to debt.

2.2 Debt and Debt Securities Issuance

Debt can be framed in terms of the REA terms already represented in FIBO. The lender commits to making an immediate payment of some capital amount, and the borrower commits to a series of payments of interest along with the repayment of that capital amount at some future time, or in increments leading up to that time. This is true of all debt whether it takes the form of a loan or of a debt instrument.

In the securities markets for debt, there are two kinds of transaction, both of which can be framed using REA concepts. The primary market refers to the initial debt transaction in which some borrower (the issuer) agrees to take on the commitments to pay interest and to repay the capital amount, while some other party takes on the role of the lender.

The secondary market is where debt securities, being negotiable financial instruments, are freely bought and sold by interested parties. The transactions by which a debt security is bought and sold may also be described using REA terms, but in this case the “Economic Resource” is the holding of the lender’s side of the primary market transaction.

2.2 Equity and Equity Securities Issuance

Equity securities are traded in the secondary market in a similar way to debt securities. In both cases the security is itself seen as an economic resource because of the value it represents. However equity is not one side of a primary market transaction and so there is no REA-described transaction underlying the share. Equity does not represent a claim against an entity, but an ownership interest in that entity.

Equity is created when a legal person is brought into existence by the operation of some statute. The legal person continues to exist by virtue of the existence of that equity until it is wound up. When an incorporated entity is wound up, the holders of equity have some claim on the entity. These claims typically have a lesser precedence than the claims of debtors, including trading debtors and the holders of debt including that which was issued as debt securities.

3 Finding a Common Concept

Is there a common concept which is ancestral to equity and debt? Equity and debt are both things which a negotiable security bundles up into an Economic Resource, but their meaning is not related the issuance process itself.

3.1 Legal Terms: “Chose in Possession” and “Chose in Action”

The Law Dictionary is an on line resource based on Black's Law Dictionary 2nd Edition [9]. This resource provides definitions for two related terms: “Chose in Possession” and “Chose in Action”. These are defined as follows (ellipses replace references to legal sources):

Chose in Possession: “A thing in possession, as distinguished from a thing in action. … Taxes and customs, if paid, are a chose in possession; if unpaid, a chose in action. …” [10]

Chose in Action: “A right to personal things of which the owner has not the possession, but merely a right of action for their possession. … A right to receive or recover a debt, demand, or damages on a cause of action ex contractu, or for a tort connected with contract, but which cannot be made available without recourse to an action. … Personalty to which the owner has a right of possession in future, or a right of immediate possession, wrongfully withheld, is termed by the law a ‘chose in action.’ …”

Chose in Possession clearly defines something which is possessed at the present time and therefore does not represent any kind of claim. It is not clear whether chose in possession would include equity held in an entity.

The definition for Chose in Action comprises two separate sentences, each of which seems to define a different kind of chose in action. These appear to correspond to the kind of thing of which debt is a type, and possibly the kind of thing of which equity is a type. Equity is a right of possession in the future (in the event of the liquidation of the company in which the shareholder holds some equity).

4 Questions and Further Research

The legal definitions for chose in action make a good starting point for further research into how debt and equity may specifically be framed. The definition for Chose in Action suggests two sub classes of “Thing”, one of which includes debt and the other of which includes equity.

In order to frame these in terms of the FIBO abstractions, the first step is to determine when to model something as an independent thing and when to model it as a relative thing. In the previous work on FIBO and REA integration in [7], the term “Commitment” was framed as an “independent thing”. Two “Aspects” of this were defined relative to the perspective from which it was viewed namely Obligation and Right. Similarly the term "Chose in Action" can be defined semantically as an independent thing having two related parties, one of which is the party from whose perspective the rights in the legal definitions are framed, and the other of which is the obligor to those rights.

It should be possible to define a taxonomic hierarchy of kinds of "Chose in Action". Below this would sit several classes, possibly divided into two kinds for which there is not as yet a label, based on the two sentences in the legal definition for Chose in Action. Below one of these would sit debt and other debt-like claims (trading debts, rights which exist by virtue of tort and so on), and below the other would sit equity, possibly alone.

We can then consider how this relates to "Claim". We would also need to consider how the existing concept of "Commitment" fits into the broader taxonomy of Claims, Chose in Action and Debt. For this we would need to take guidance from existing REA applications and guidelines.

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