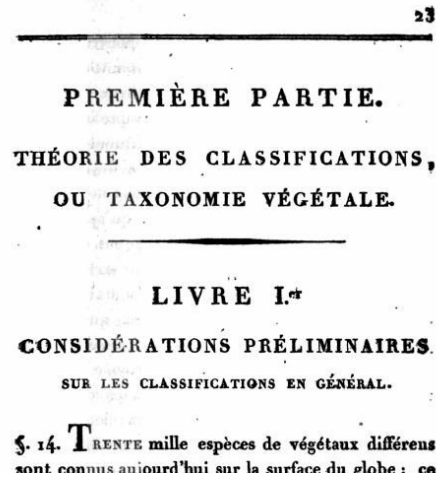


The Taxonomy of Fixed Income Securities:

A CNO Approach

“Finance theory cannot identify the true boundary between debt and equity... There is nothing more complex than trying to draw a line which does not exist”. Anthony P. Polito, 1998.

- ❑ **Taxonomy ?** Science of classification first defined by Augustin Pyrame de Candolle (1778-1841) in its Elementary Theory of Botany published in 1813



- ❑ **Fixed Income Securities ?** International regulators generally use the following terminology:
 - « Debt securities including fixed-income securities » and « shares and other variable-yield securities ». And they precise: “Securities bearing interest rates that vary in accordance with specific factors, for example the interest rate on the inter-bank market or on the Euromarket, shall also be regarded as debt securities including fixed-income securities”. This traditional distinction between fixed income securities and floating ones is often confusing for those not familiar with such regulations.
 - The word « security » attached to these definitions clearly differentiates between fixed-income securities used as an investment vehicle and interest rate derivatives that do not constitute an investment vehicle.

- ❑ CNO's objectives
- ❑ Fixed income securities shall bear a minimum repayment price
- ❑ Fixed income securities' coupons incorporate two components
- ❑ Tentative definition of leveraged coupons
- ❑ CNO definition of Fixed Income Securities
- ❑ Proposed taxonomy of hybrid securities
- ❑ Non exhaustive list of Fixed Income Securities
- ❑ Grey category
- ❑ Appendix



Benjamin Rabier Pictures

- ❑ The increased issuance of financial product mixing debt and equity features is causing confusion.
 - In 2006, the Bond Market Association stressed that over the last 7 years, the qualification of a 8.15% Dresdner Hybrid Capital issue had been changed three times by the NAIC, the US insurance Companies regulator. Initially, classified as “preferred equity”, this issue was later considered as “debt” and in 2006, the NAIC “reclassified it as common equity”.
 - Such a classification can be extremely costly for institutional investors, since they have to set aside more capital against equity holdings.

- ❑ The CNO, aims to clarify, simplify and harmonise fixed income markets’ calculation methodology. But, up to now, it had not given a proper definition of “fixed income markets”.

- ❑ The CNO takes this opportunity to remind that:
 - New bond structured issues, even the most innovative ones, should abide by market conventions in order to facilitate their market acceptance and to avoid potential disputes at their settlement.
 - In addition the CNO stresses that fixed-rate securities should bear an explicit fixed or minimum redemption price and that, in any circumstances, bond holders are entitled to the original value of their bonds, in the event of liquidation of the issuer, irrespective of whether or not their nominal value had been previously reduced as a result of a loss absorption clause.

- **The principal amount of a fixed income security shall bear a minimum repayment price** insuring that its ex-ante yield to maturity cannot be negative.
 - **The general case of nominal bonds:**
 - **As long as the issuer is solvent**, the yield to maturity is always calculated using the bond market price and the contractual repayment price. It expresses the remuneration that the investor will get, if the issuer repays the bond at maturity.
A fixed income security with a repayment price indexed on a predetermined formula must bear a minimum repayment price. If the contractual repayment price is not indexed, its value cannot increase: Bond investors have no voting rights and no interest in the residual assets of the issuer.
 - **In the case of the issuer bankruptcy, the investor can claim 100% of the fixed issue contractual repayment price.**
 - **The specific case of inflation linked bonds :**
 - Most sovereign I/L bonds bear an explicit par guarantee if, at maturity, the CPI index is lower than its prevailing value at the launch of the issue.
 - But Canadian, Japanese or British I/L bonds do not bear such a guarantee. The Fisher equation states that inflation and real rates are the two components of nominal rates. Since (i) I/L bonds only pay these two components and (ii) before indexation, they have a fixed contractual redemption price, the CNO treats I/L bonds as fixed-income securities even if they do not include a par guaranteed redemption price. Indeed, whatever the evolution of the CPI, these bonds have maintained their purchasing power.

Fixed income securities' coupons incorporate two components

❑ The bond's benchmark reference:

- This reference can be either:
 - A fixed bond or swap reference corresponding to the maturity of the issue
 - Or a floating money market, bond or swap reference :
- Up to their repayment, fixed income securities' current income is either fixed or strongly correlated with their reference rate, in the case of floating rate bonds:
- The yield paid by issuers bearing a similar rating is often highly correlated,
- And it cannot in principle be negative, when calculated ex-ante:
 - In economic theory, nominal interest rates cannot be negative. In practice, some countries have experienced negative interest rates.
 - Real rates can be negative, but they only represent a fraction of fixed income securities' yield.
 - Inflation can also be negative, but it only represents a fraction of fixed income securities' yield.
 - A fixed-income security cannot bear a negative coupon

❑ The margin paid by the issuer is comprised of various (positive or negative) components:

- The issuer's credit margin,
- Liquidity or illiquidity margins,
- FRNs' margin can be additive, e.g. TEC – 1%, or multiplicative, e.g. CMS x 85%. A multiplicative margin cannot generate a negative coupon, if the value of the reference is not itself negative.

Tentative definition of leveraged coupons

- ❑ **The CNO considers that a bond bearing a coupon that could be reduced to zero, prior to the exercise of a protection (e.g. a 0% floor), as a result of the application to its reference of a multiplicative ratio, does not constitute a fixed-income security.** The remuneration of this bond can differ markedly from the prevailing rates for bond with the same maturity or with the maturity of its reference.
N.B. This principle has been acted by the CNO. However, its formulation could be reviewed, if it appeared that it were not accurate enough.

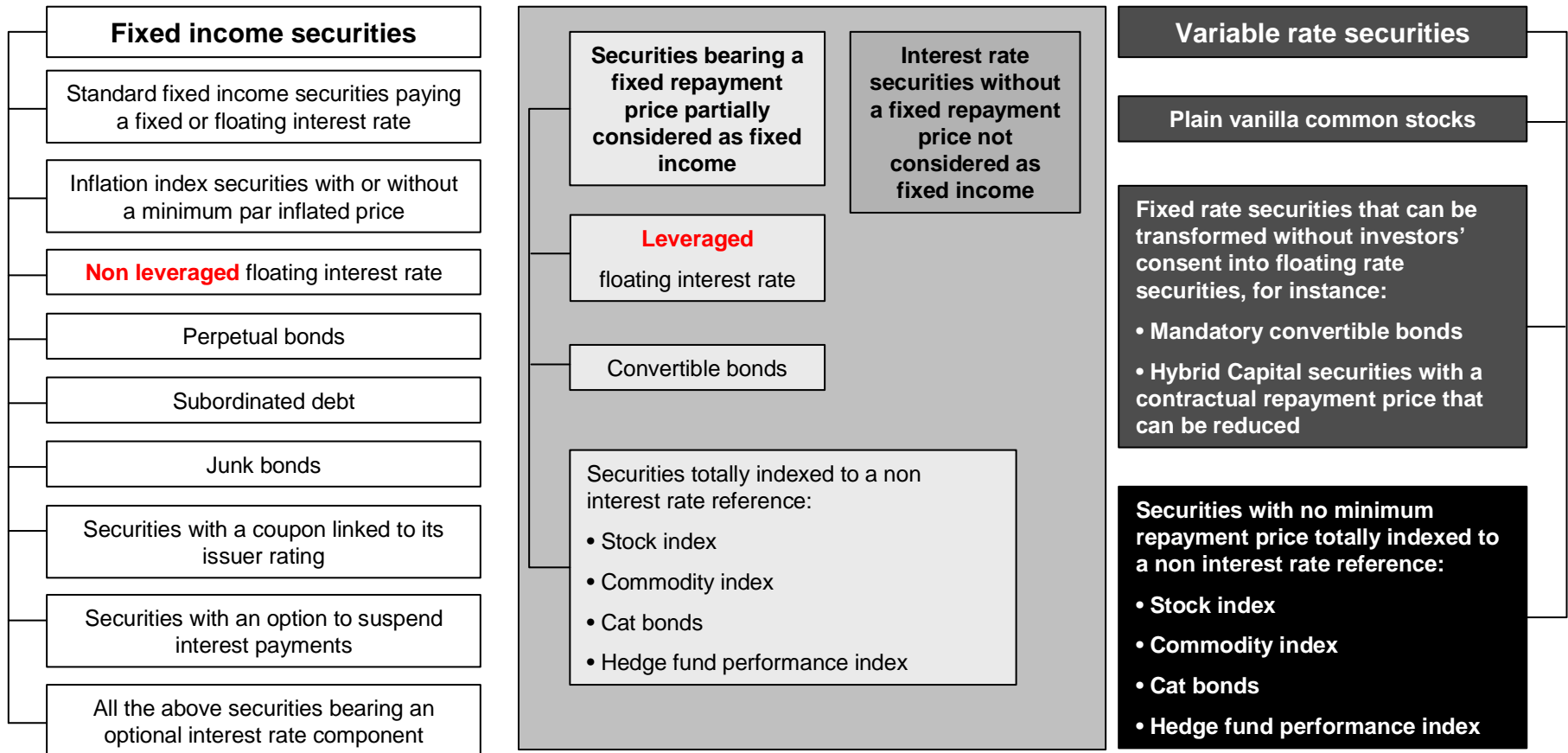
- ❑ This CNO definition is a tentative response to IFRS rules derived from the US GAAP that state:
 - "The embedded derivative meets both of the following conditions:
 - (1) There is a possible future interest rate scenario (even though it may be remote) under which the embedded derivative would at least double the investor's initial rate of return on the host contract.
 - 2) For each of the possible interest rate scenarios under which the investor's initial rate of return on the host contract would be doubled (as discussed under paragraph 13(b)(1)), the embedded derivative would at the same time result in a rate of return that is at least twice what otherwise would be the then-current market return (under each of those future interest rate scenarios) for a contract that has the same terms as the host contract and that involves a debtor with a credit quality similar to the issuer's credit quality at inception."

Fixed Income Definition

- ❑ **Fixed income securities cash flows are either fixed or determinable, in the case of floating interest rate:**
 - Fixed income securities must either bear a fixed repayment price or a minimum repayment price ensuring that their nominal returns calculated *ex ante* cannot be negative;
 - These securities offer to their investors, up to the repayment by the issuer, a current income either fixed or strongly correlated with the fixing of their reference rate, in the case of floating rate bonds:
 - The current return of floating rate bonds is exclusively determined by the reference (interest rate, money market, bond or swap rates) and by the margin paid by the issuer;
 - Floating-rate coupons of fixed-income securities cannot be reduced to zero, by the application of a multiplicative ratio to their reference, even if a provision states that these coupons can not fall below a contractually-defined minimum (the “floor”), (wording to be validated).
 - The detailed features of fixed income securities must not change until their redemption.

Fixed income securities price volatility

- ❑ The market price of fixed income securities changes only with the variation of their yield to maturity. Depending on the credit quality of the issuer and on the security’s maturity, the market price volatility of a fixed income security issued by a specific issuer can be higher than the market price volatility of the common stock of another issuer.



- ❑ **FRN securities paying a coupon that cannot be reduced to zero**, with the application of a multiplicative ratio to their reference, independently of the possible inclusion of a minimum contractual remuneration, floor. This category includes securities bearing an additive margin, even if their coupon can in theory be reduced to zero, if their reference is fixed at a very low level.
- ❑ **Perpetual securities:** According to IFRS accounting standards, these securities can, under certain conditions, be treated as equity. However, they are usually classified as fixed income securities by regulators. Most of these securities are callable and their effective repayment date is not fixed. But, in the case of an earlier repayment if they are called or of a default of the issuer, the investor can claim 100% of the issue contractual repayment price. Consequently, their repayment price is fixed.
- ❑ **Subordinated securities:** The principal and interest subordination clauses do not prevent investors from claiming 100% of the issue contractual repayment price.
- ❑ **Junk bonds:** The above argument also applies to junk bonds.
- ❑ **Securities bearing a coupon varying with a change in the issuer's rating:** This clause does not fundamentally alter the nature of these securities. The price of a bond without a similar clause would also vary with a change of rating, reflecting a change in its underlying yield.
- ❑ **Hybrid capital securities that can suspend interest payments:** The amount of coupon paid does not depend on the issuer's results. In a binary way, either the coupon is paid or it is not, due to a change in the credit quality of the issuer. The "suspension of payment" option is exercised in the case of a credit event which would also influence the credit spread paid by the issuer on its senior issues.

- ❑ Among this category, we find securities mixing some fixed-income features, like a minimum repayment price or a minimum coupon, with others ones.
- ❑ The CNO proposes that instead of assigning in a binary way each security to a category (fixed or floating categories), a “mixed” security be split and considered as the combination of (i) a fixed income security (corresponding to the its minimum repayment price plus eventually its minimum periodic coupons) and (ii) a floating-rate security.
- ❑ The pricing of the fixed-income component of “mixed” securities bearing a minimum repayment price is usually simple, as, in most instances, it amounts to pricing fixed-rate cash flows. With a flat curve at around 4.5%, the net present value of the zero-coupon corresponding to the minimum par repayment constitutes an important share of the security price:

NPV of the par guaranteed repayment price of a security discounted at 4.5%			
5 yr	7 yr	10 yr	15 yr
80%	73%	64%	52%

- ❑ We compare the market price volatility of a same issuer's securities, common stocks, Hybrid Capital securities and senior debt.
- ❑ Hybrid Capital securities bear some features that are quite different from that of the senior debt:
 - They are either very long dated or perpetual securities and usually bear a call and a step up if not called.
 - They are deeply subordinated, being only senior to the issuer's common stock and their rating is usually 2 or 3 notches inferior to that of their senior debt.
 - Their issuer has the option to suspend, under certain conditions, the payment of interests and in some cases, unpaid interest is definitively lost by the investor.
- ❑ However, Hybrid Capital Securities market price behave more like senior debt securities.

