CHARTA LEARNING · LESSON NOTES

Fixed-income markets: repo, funding, governments, indexes

CFA Level I · Fixed Income

You will learn: Work out the cash, interest and repurchase price of a repo, compare short-term funding for companies and banks, tell the government issuer families apart, and explain how the bond market is cut into segments and how an index is weighted.

Running example: Worked examples follow a made-up Calder Group, which owns a dealer, a food maker (Calder Foods) and a bank. Every figure is an example.

1. Repurchase agreements (repo)

- A repo sells bonds today and promises to buy them back on a fixed later date at a higher price. Legally a sale and repurchase; in substance a loan with the bonds as collateral. The seller keeps the price risk. The yearly rate on the difference is the repo rate.
- The haircut is the share the lender holds back, its cushion if the bonds fall. Cash lent = value × (1 − haircut). Interest uses actual days ÷ 360. Riskier or harder-to-sell collateral means a bigger haircut and higher repo rate; collateral in special demand borrows cheaply.
- The party that borrows cash does a repo; the party that lends cash does a reverse repo. Uses: dealers fund inventory, investors earn a safe return, traders borrow bonds for short sales, central banks add or drain cash.
- The lender loses only if the dealer fails and the bonds have fallen by more than the cushion. A dealer funding overnight renews daily and must find the haircut from its own pocket.

Repurchase price = V × (1 − h) × (1 + r × t ÷ 360)

BONDS WORTH $10M, 30 DAYS, HAIRCUT 2%, REPO RATE 3.6%

Cash lent	10m × (1 − 0.02)	**$9,800,000**
Interest	9.8m × 3.6% × 30/360	**$29,400**
Repurchase price	9,800,000 + 29,400	**$9,829,400**
Dealer fails, bonds fall 5% to $9.5m: lender's loss	9,829,400 − 9,500,000	**$329,400**
Overnight: bonds $50m, haircut 4%, rate 3%: cash lent; interest	50m × 0.96; 48m × 3% ÷ 360	**$48,000,000; $4,000**

Watch out: Using 365 instead of 360; adding the haircut to the cash instead of holding it back.

2. Short-term funding for companies and banks

- Short-term funding trades cost against certainty: the cheapest sources are the least certain. A company's menu: credit lines, secured loans, commercial paper. A bank's menu: deposits, wholesale funding (interbank loans, certificates of deposit, repo), central bank facilities.
- An uncommitted line is cheap but can vanish. A committed line is a promise, for a fee usually on the unused part; a revolving credit agreement is one over several years. A secured loan is backed by receivables or inventory, usually for a share of their value.
- Commercial paper is short-term, unsecured and open only to strong credits, who usually back it with a committed line. Its weakness is rollover risk.
- A certificate of deposit (CD) is a deposit at a fixed term and rate. A negotiable CD can be sold before maturity; a non-negotiable one cannot. Deposits are cheaper and stay put; wholesale funding is flexible but quick to leave when worried.

CALDER FOODS BORROWS $100M FOR A YEAR; CALDER BANK FUNDS $1,000M

Bank loan at 5.0%; commercial paper at 4.0%	5.0% × 100; 4.0% × 100	**5.00; 4.00**
Paper with backup line fee 0.15%	4.00 + 0.15	**4.15 (saves 0.85)**
Bank cost: 800 at 1% + 200 at 3%	8 + 6 = 14 ÷ 1,000	**1.4%**
Depositors leave 100: 700 at 1% + 300 at 3%	7 + 9 = 16 ÷ 1,000	**1.6%**

Watch out: Thinking committed means free; calling paper's weakness default alone, when it is rollover risk.

3. Government and government-backed issuers

- Governments borrow by selling bonds. Four families: sovereign (national government, backed by the power to tax and, in its own currency, to create money); supranational (owned by several countries, backed by their capital); quasi-government (an agency doing public policy, guarantee explicit or assumed); non-sovereign (a state or city).
- A sovereign sells bills (up to a year), notes (a few years) and bonds (longer) by auction on a set calendar. Dealers and investors bid and the bids set price and yield. Being regular and large, sovereign bonds are the most liquid and form the benchmark curve.
- Non-sovereign: a general obligation (GO) bond is backed by full taxing power; a revenue bond is repaid only from one project's income, so it usually pays a higher yield. Check coverage = project income ÷ debt service; below one is a warning.
- Local currency debt can be paid from taxes or newly created money. Dollar debt can only be paid from export earnings or reserves.

DEBT IN TWO CURRENCIES; TOLL ROAD; AGENCY SPREAD

Local debt 100; dollar debt 10 at 4 per dollar	100 + 10 × 4	**140**
Currency weakens to 5 per dollar	100 + 10 × 5	**150 (+10, all from dollar debt)**
Toll road coverage: net revenue 60, debt service 40	60 ÷ 40	**1.50**
Revenue down 30%; down 40%	42 ÷ 40; 36 ÷ 40	**1.05; 0.90**
Agency 3.3% vs sovereign 3.0%: spread; extra a year on $500m	3.3% − 3.0%; 500m × 0.30%	**30bp; $1.5m**

4. Segments of the bond market

- The market is cut by issuer type (six: sovereign, non-sovereign, quasi-government, supranational, corporate, securitised), credit quality, maturity and geography. Each cut decides who may buy the bond and which index it joins.
- Investment grade is BBB− or higher at S&P and Fitch (Baa3 at Moody's); below is high yield. Many pension funds and insurers may hold only investment grade. The money market covers paper up to one year; the capital market covers longer bonds. Bonds are developed market or emerging market.
- New bonds are sold in the primary market; afterwards they trade in the secondary market, mostly over the counter through dealers, so many bonds trade rarely. Investors include banks, funds, insurers, pension funds and central banks.

CALDER FOODS: NEW 7-YEAR EURO BOND RATED BBB−

Issuer type	not a government	**Corporate**
Credit quality	lowest investment grade rung	**Investment grade**
Maturity; geography	7 years is over 1 year; developed market	**Capital market; Developed**
If cut to BB+	below BBB−	**High yield (drops out of the IG index)**

5. Bond indexes

- A bond index is a basket of bonds with a weighting rule, used to judge how the market or a segment is doing. It can be a broad aggregate or narrow (high yield, government bonds, one currency). Index funds and managers are measured against them.
- Most indexes weight by market value, so the weights add to 100%. The weight depends on how much an issuer has borrowed, not how good it is: an investor tracking the index lends most to whoever borrows most.
- Buying every bond is rarely practical (thousands of issues, constant maturities and new issues). Stratified sampling splits the index into cells (maturity, sector, credit), works out each cell's share, and buys a few representative bonds in each in the same proportions.

> **Weight = Issuer's market value ÷ Whole index market value**

INDEX OF X, Y, Z WITH DEBT 500, 300, 200 ($ BILLIONS)

Before: weights	500, 300, 200 of 1,000	**50/30/20**
X borrows 500 more: total	X: 500 → 1,000	**1,500**
After: X; Y; Z	1,000 ÷ 1,500; 300 ÷ 1,500; 200 ÷ 1,500	**66.7%; 20.0%; 13.3%**

Watch out: Reading a big index weight as a view on credit quality.

Key takeaways

- A repo is a secured loan: cash lent = V × (1 − h); interest on actual ÷ 360; the seller keeps the price risk.
- Riskier collateral means a bigger haircut and a higher repo rate.
- Cheap funding is the least certain: commercial paper needs a committed backup line against rollover risk.
- Four government families: sovereign, non-sovereign, quasi-government, supranational; the backer sets risk and yield.
- Cut the market by issuer, credit (BBB− line), maturity and geography; one notch can change a bond's segment.
- Market-value indexes give the biggest weights to the biggest borrowers.

Quick check

1. Repo: $20m bonds, 60 days, haircut 5%, rate 4.8%. Repurchase price?
   Answer: Lent 19,000,000; interest 152,000; repay $19,152,000.
2. Paper cannot be rolled over when the market closes. Which risk? Protection?
   Answer: Rollover risk; a committed backup line.
3. Index debt 800, issuer A 200. Weight? After A borrows 200 more?
   Answer: 25%, then 400 ÷ 1,000 = 40%.

Summary notes for the Charta whiteboard lesson. Examples use made-up figures. Watch the full lesson at charta-learning.com.