Introduction

If you are going to work with bankers, traders, or investment managers, it is important for you to understand the language and concepts of accounting, finance, and investment performance measurement.

I encourage you to consider taking relevant electives at the Carlson School of Business.
Outline

Introduction

Financial Accounting
   Double-Entry Bookkeeping
   Financial Statements

Investment Accounting
   Performance Measurement
   Active Return

Securities
   Conventions

Trading
   Terminology

Cases
Financial accounting is contrasted with managerial accounting in that it is directed at outsiders. Consequently, its terms and concepts are highly standardized and its application is usually subject to audit.

Advanced Topics

- income recognition (cash vs. accrual basis)
- capitalized expenses
- depreciation, amortization, and impairment
- qualified off-balance sheet hedges
- entity consolidation
**Double-Entry Bookkeeping**

entity concept  autonomy with rights and obligations

going concern concept  assume that the entity will persist

balance sheet  financial condition at a point in time

income statement  financial activity over a period in time

account elements  asset, expense; liability, revenue, capital

journal entry  amount, debit account, and credit account

closing the books  periodic adjustment of the balance sheet

accounting identity  assets = liabilities + capital

N.B.: An entity’s assets may include shares of other entities’ debt and equity.
# Financial Statements

**Wells Fargo & Company**

**Income statement 2009 ($ billions)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>interest income</td>
<td>56</td>
</tr>
<tr>
<td>commissions/fees</td>
<td>37</td>
</tr>
<tr>
<td>other income</td>
<td>6</td>
</tr>
<tr>
<td>interest expense</td>
<td>10</td>
</tr>
<tr>
<td>loan provisions</td>
<td>22</td>
</tr>
<tr>
<td>other expense</td>
<td>50</td>
</tr>
<tr>
<td>income taxes</td>
<td>5</td>
</tr>
<tr>
<td>dividends</td>
<td>6</td>
</tr>
<tr>
<td>retained earnings</td>
<td>6</td>
</tr>
<tr>
<td><strong>total revenue</strong></td>
<td>99</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td>99</td>
</tr>
</tbody>
</table>

**Balance sheet 12/31/2009 ($ billions)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>cash</td>
<td>68</td>
</tr>
<tr>
<td>investments</td>
<td>261</td>
</tr>
<tr>
<td>loans</td>
<td>783</td>
</tr>
<tr>
<td>loan reserves</td>
<td>-25</td>
</tr>
<tr>
<td>other assets</td>
<td>157</td>
</tr>
<tr>
<td>deposits</td>
<td>824</td>
</tr>
<tr>
<td>short-term debt</td>
<td>142</td>
</tr>
<tr>
<td>long-term debt</td>
<td>164</td>
</tr>
<tr>
<td>capital</td>
<td>114</td>
</tr>
<tr>
<td><strong>total assets</strong></td>
<td>1,244</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td>1,244</td>
</tr>
</tbody>
</table>
Investment Accounting

Investment accounting generally uses single-entry bookkeeping on a mark-to-market basis with a daily close.

In place of the dual aspect accounting identity, we have

\[
\text{net assets} = \text{net cash} + \sum_{i \in \text{holdings}} \text{price}_i \cdot \text{quantity}_i
\]

Note the liquidity assumption: Unlike in normal microeconomics, price here does not depend on quantity.

- cash enters and leaves the portfolio through subscriptions and redemptions or dividends
- cash also changes through transactions which create or modify holdings
- net cash is adjusted for unsettled trades, taxes payable, and accrued interest and fees
Performance Measurement

- daily return is measured as

\[ 1 + \text{daily return}_t = \frac{\text{net assets}_t - \text{subscriptions}_t + \text{redemptions}_t + \text{dividends}_t}{\text{net assets}_{t-1}} \]

- this may be interpreted as a weighted average

\[ \text{daily return}_t = \sum_i \text{weight}_{i,t} \cdot \text{daily return}_{i,t} \]

where the (beginning) weights satisfy

\[ \sum_i \text{weight}_{i,t} = 1 - \frac{\text{net cash}_{t-1}}{\text{net assets}_{t-1}} \]

- return over longer periods is measured “geometrically”

\[ \prod_{t \in \text{period}} (1 + \text{daily return}_t) - 1 \]
Active Return

It may be important to assess the “added value” of an investment manager. Two approaches to this are:

- relative to a benchmark
  - an index can be interpreted as a portfolio
  - the relative return can therefore be expressed as the sum of the contributions for the each relative overweight and underweight
    \[ r - r' = \sum_i (w_i - w'_i) \cdot r_i \]
  - to which one can apply various statistical measures, such as the information ratio
- relative to static weights
  - this is a newer concept appropriate for hedge funds
  - the manager should increase (decrease) weights in holdings that subsequently outperform (underperform)
    \[ E[r] = \sum_i E[w_i] \cdot E[r_i] + \sum_i \text{cov}[w_i, r_i] \]
Securities

A security is a claim on future cashflows from its **issuer**
- U. S. Treasury
  - (nominal, indexed) bond
- bank
  - interbank loan/deposit, commercial paper, repo
  - swap, over-the-counter derivative, currency contract
- corporation
  - (common, preferred) equity
  - (secured, senior, subordinated, convertible) bond
  - (short-term) commercial paper
- municipality
  - (revenue, general obligation) bond
- derivatives clearinghouse
  - futures, option
- collective investments
  - (open-ended, closed-ended, exchange-traded) funds and unit trusts

Also: real estate, private equity, bank loans, etc.
Securities Conventions

- equity trades shares and **lots** of 100 shares, and pays **dividends** to registered holders as of the **ex date**
  - prices are quoted per share; trades settle in about three business days
  - the **broker** may be able to provide financing or locate shares to borrow for **shorting**
- bonds trade in increments of $1,000 **par amount** and pay periodic (annual or semi-annual) **coupons**
  - prices are quoted per $100 notional and exclude **accrued interest** for the current coupon
  - settlement is typically two business days
- futures settle daily through a **margin account** according to the **tick size** and the **settlement price**
- the **underlying** for equity options is typically 100 shares; options covert to ordinary trades upon **exercise**
- public open-ended funds trade at the end-of-day **net asset value** per share; ETF’s trade like equities
Financial Markets

Institutions use the financial markets for at least three reasons:

▶ to raise funds
▶ to make investments
▶ to manage risks

Participants

Common participants

▶ commercial banker
▶ investment banker
▶ trader or dealer
▶ broker
▶ salesperson
▶ investor

Other participants

▶ clearing house
▶ custodian
▶ market regulator
▶ exchange authority
▶ industry authority
▶ tax authority
Trading Terminology

**Broker terminology**
In the role of market maker, the broker provides indicative bid and ask price quotations at which he is willing to buy or sell some small quantity of a security.

**Client terminology**

types of orders include

- market order
- limit order
- special instructions, such as conditional orders or non-standard settlement

On futures exchanges, special language is sometimes used

- “pay (price or market) for (quantity)”
- “sell (quantity) at (price or market)”

and the handle on the price is implicit
Cases

1. futures
2. equities
3. bonds

Choose a case to work from – 
http://math.umn.edu/~dodso013/cases/

Correct answers will be eligible to enter a drawing for a prize!