Accounting Basics
(Brainstorming)

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*Note that this borrows heavily from the work of **Willi Brammertz** and the work of **ACTUS** (Algorithmic Contract Types Unified Standards),* [*https://www.actusfrf.org/about*](https://www.actusfrf.org/about)

Bookkeeping vs Accounting

- **Bookkeeping** is a mechanical process of recording transactions. Bookkeeping is the **action** of accounting. *Bookkeeping is a record keeping process*.
- **Accounting** is about determining what constitutes the transactions that are recorded. Accounting is the **language** used by bookkeeping. *Accounting is a communications tool*.

- **Financial reporting** and the general purpose financial report specifically is about communicating information about the financial position (status, stock) and financial performance (performance, flow) about an economic entity using the language of accounting.

Venetian Method of Double Entry Bookkeeping

- Best practices method of double entry bookkeeping
- Single entry bookkeeping = one ledger
- Double entry bookkeeping = two synchronized ledgers
  - DEBITS = CREDITS
  - Allows for separation of duties
  - Enables detection of errors/inconsistencies
  - Enables differentiation of errors from fraud

http://xbrl.squarespace.com/journal/2021/10/23/accounting-our-first-communications-technology.html

FASB SFAC 6, *Elements of Financial Statements*

Statement of
Financial Accounting
Concepts No. 6

Elements of Financial Statements

a replacement of FASB Concepts Statement No. 3
(incorporating an amendment of
FASB Concepts Statement No. 2)

December 1985

Financial Accounting Standards Board
of the Financial Accounting Foundation
HIGH RIDGE PARK, P.O. BOX 3821, STAMFORD, CONNECTICUT 06905-0821

SFAC 6 is for US GAAP. IFRS has something similar; as does UK GAAP and other such financial reporting schemes

FASB, SFAC 6, https://www.fasb.org/pdf/con6.pdf

SFAC 6 Defines 10 “Interrelated Elements”

Note the term “**interrelated**”.

- This Statement defines 10 interrelated elements that are directly related to measuring performance and status of an entity. (Other possible elements of financial statements are not addressed.)

  — Assets are probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events.

  — Liabilities are probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.

  — Equity or net assets is the residual interest in the assets of an entity that remains after deducting its liabilities. In a business enterprise, the equity is the ownership interest. In a not-for-profit organization, which has no ownership interest in the same sense as a business enterprise, net assets is divided into three classes based on the presence or absence of donor-imposed restrictions—permanently restricted, temporarily restricted, and unrestricted net assets.

  — Investments by owners are increases in equity of a particular business enterprise resulting from transfers to it from other entities of something valuable to obtain or increase ownership interests (or equity) in it. Assets are most commonly received as investments by owners, but that which is received may also include services or satisfaction or conversion of liabilities of the enterprise.

  — Distributions to owners are decreases in equity of a particular business enterprise resulting from transferring assets, rendering services, or incurring liabilities by the enterprise to owners. Distributions to owners decrease ownership interest (or equity) in an enterprise.

  — Comprehensive income is the change in equity of a business enterprise during a period from transactions and other events and circumstances from nonowner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners.

  — Revenues are inflows or other enhancements of assets of an entity or settlements of its liabilities (or a combination of both) from delivering or producing goods, rendering services, or other activities that constitute the entity’s ongoing major or central operations.

  — Expenses are outflows or other using up of assets or incurrences of liabilities (or a combination of both) from delivering or producing goods, rendering services, or carrying out other activities that constitute the entity’s ongoing major or central operations.

  — Gains are increases in equity (net assets) from peripheral or incidental transactions of an entity and from all other transactions and other events and circumstances affecting the entity except those that result from revenues or investments by owners.

  — Losses are decreases in equity (net assets) from peripheral or incidental transactions of an entity and from all other transactions and other events and circumstances affecting the entity except those that result from expenses or distributions to owners.

Each financial reporting scheme published does something similar, see http://xbrlsite.azurewebsites.net/2020/master/ElementsOfFinancialStatements.pdf

FASB, SFAC 6, highlights, page 9, https://www.fasb.org/pdf/con6.pdf

10 Interrelated Elements

1. Assets
2. Liabilities
3. Equity
4. Comprehensive Income
5. Investments by Owners
6. Distributions to Owners
7. Revenues
8. Expenses
9. Gains
10. Losses

Articulation

21. The two types of elements are related in such a way that (a) assets, liabilities, and equity (net assets) are changed by elements of the other type and at any time are their cumulative result and (b) an increase (decrease) in an asset cannot occur without a corresponding decrease (increase) in another asset or a corresponding increase (decrease) in a liability or equity (net assets). Those relations are sometimes collectively referred to as $\boxed{\text{“articulation.”}}$ They result in financial statements that are fundamentally interrelated so that statements that show elements of the second type depend on statements that show elements of the first type and vice versa.[14]

FASB, SFAC 6, section 21, page 21, https://www.fasb.org/pdf/con6.pdf

Interrelations (Part 1)

Assets = Liabilities + Equity

(Never explicitly defined by the FASB, but no one disputes this relation; it is common knowledge.)

Common Knowledge, Wikipedia, Accounting Equation, https://en.wikipedia.org/wiki/Accounting_equation

Interrelations (Part 2)

affect an entity during intervals of time (periods). In a business enterprise, the second type includes comprehensive income and its components—revenues, expenses, gains, and losses—and investments by owners and distributions to owners. In a not-for-profit

Comprehensive Income = Revenues - Expenses + Gains - Losses

(That sentence is not as explicit as one might optimally like; but again this equation is well understood.)

FASB, SFAC 6, section 20, page 21, https://www.fasb.org/pdf/con6.pdf

Interrelations (Part 3)

The equation above defines the relationship between comprehensive income and its components. The equation below defines the relations between the other concepts and uses the term "Comprehensive Income" as defined above.

$$0 = (Equity^{T0} + Revenue^{P1} - Expenses^{P1} + Gains^{P1} - Losses^{P1} + InvestmentsByOwners^{P1} - DistributionsToOwners^{P1}) + Liabilities^{T1} - Assets^{T1}$$

And so, using both equations, the relations between each of the concepts is crystal clear as long as you understand the balance type (debit, credit) of each of the core elements. FASB, SFAC 6, page 21 and 22, paragraph 21.

$$Equity^{T1} = Equity^{T0} + Revenue^{P1} - Expenses^{P1} + Gains^{P1} - Losses^{P1} + InvestmentsByOwners^{P1} - DistributionsToOwners^{P1}$$

Simplified:

$$\mathbf{Equity^{T1} = Equity^{T0} + Comprehensive\ Income^{P1} + InvestmentsByOwners^{P1} - DistributionsToOwners^{P1}}$$

FASB, SFAC 6, section 20, page 21, https://www.fasb.org/pdf/con6.pdf

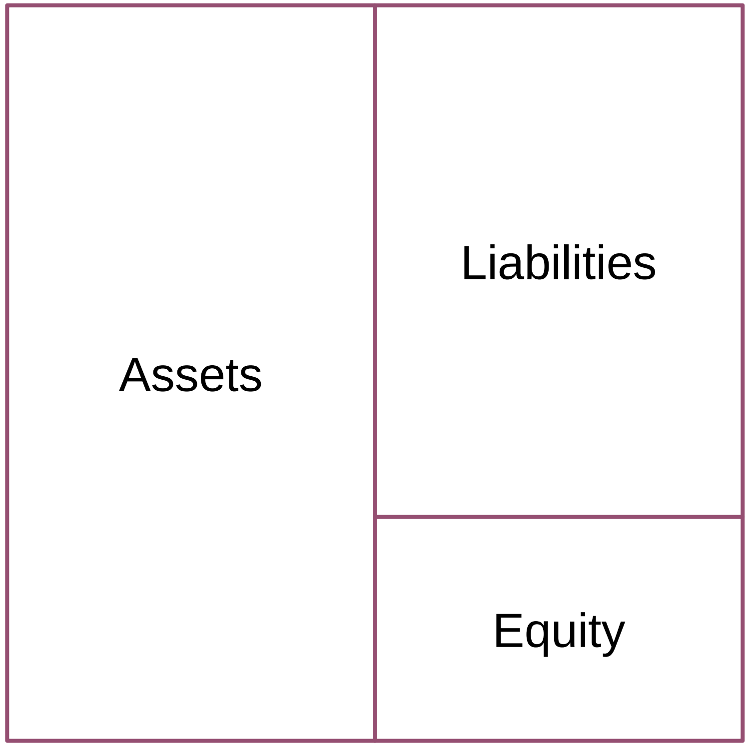
Undisputed Basic Equations

$\text{Assets}^{\text{T}n} = \text{Liabilities}^{\text{T}n} + \text{Equity}^{\text{T}n}$

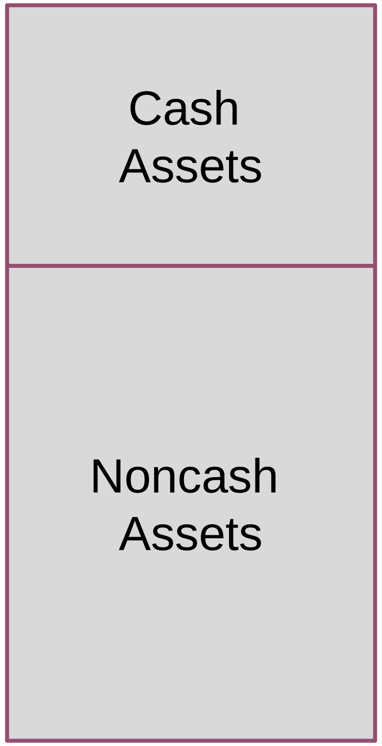
$\text{Comprehensive Income}^{\text{P}n} = \text{Revenues}^{\text{P}n} - \text{Expenses}^{\text{P}n} + \text{Gains}^{\text{P}n} - \text{Losses}^{\text{P}n}$

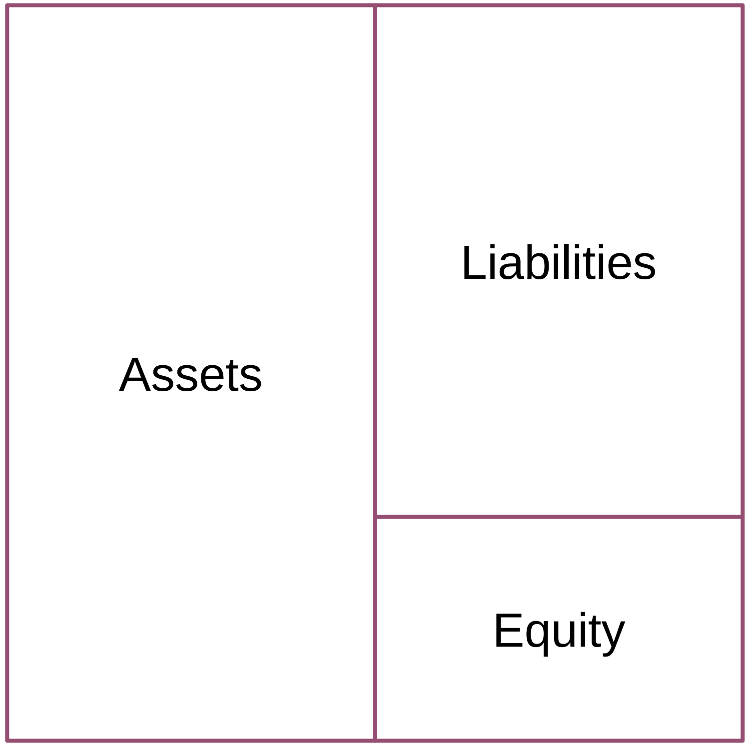
$\text{Equity}^{\text{T}n+1} = \text{Equity}^{\text{T}n} + \text{Comprehensive Income}^{\text{P}n+1} + \text{Investments by Owners}^{\text{P}n+1} - \text{Distributions to Owners}^{\text{P}n+1}$

Balance Sheet

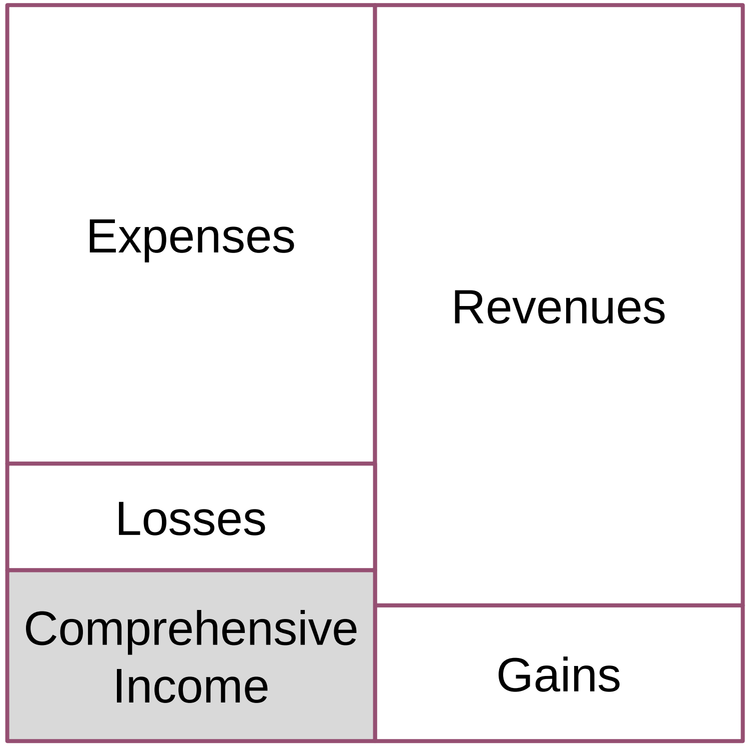


Balance Sheet





Income Statement

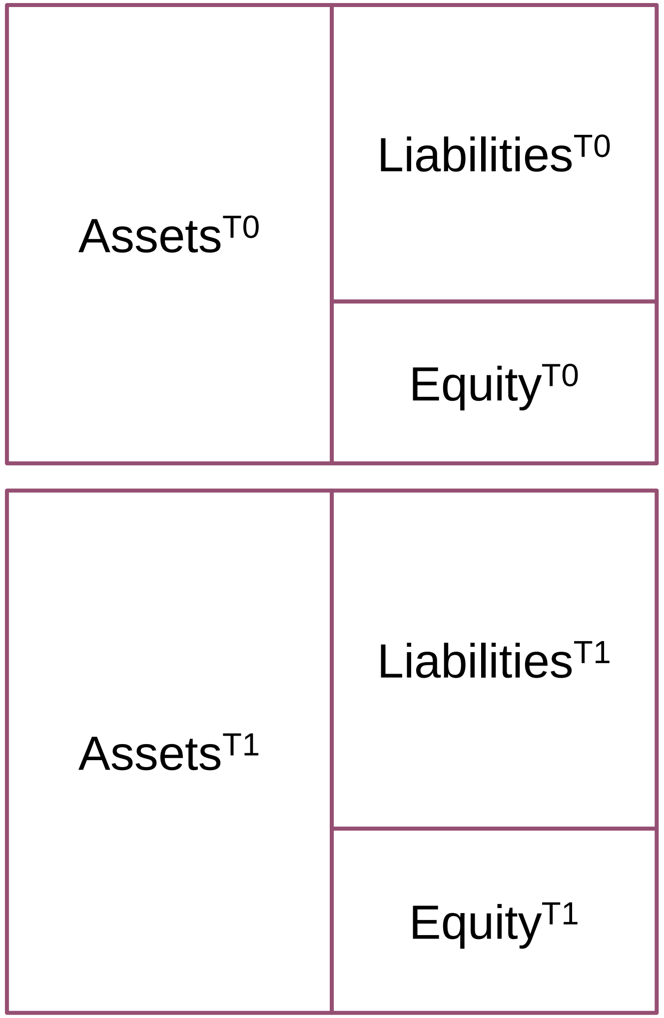


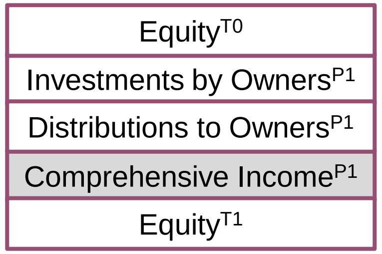
Knowledge of Accounting

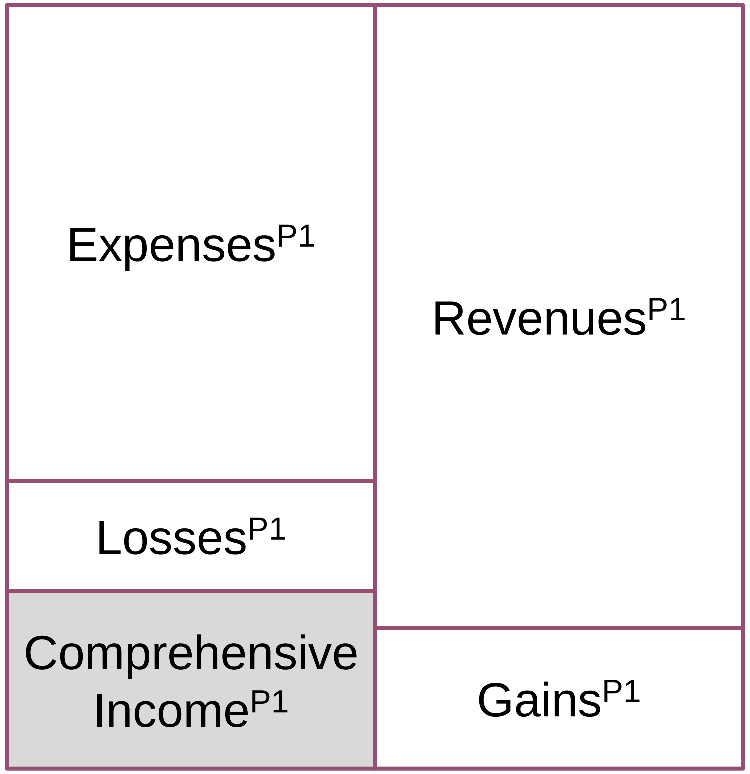
$\text{Assets}^{Tn} = \text{Liabilities}^{Tn} + \text{Equity}^{Tn}$

$\text{Comprehensive Income}^{Pn} = \text{Revenues}^{Pn} - \text{Expenses} + \text{Gains}^{Pn} - \text{Losses}^{Pn}$

$\text{Equity}^{Tn} = \text{Equity}^{Tn\text{-}1} + \text{Comprehensive Income}^{Pn} + \text{Investments by Owners}^{Pn} - \text{Distributions to Owners}^{Pn}$







Basic Undisputed Interconnected Equations

$$\text{Equity}^{T1} \equiv \text{Assets}^{T1} - \text{Liabilities}^{T1}$$

|||

$$\text{Equity}^{T1} \equiv \text{Equity}^{T0} + \text{Investments by Owners}^{P1} - \text{Distributions to Owners}^{P1} + \text{Comprehensive Income}^{P1}$$

|||

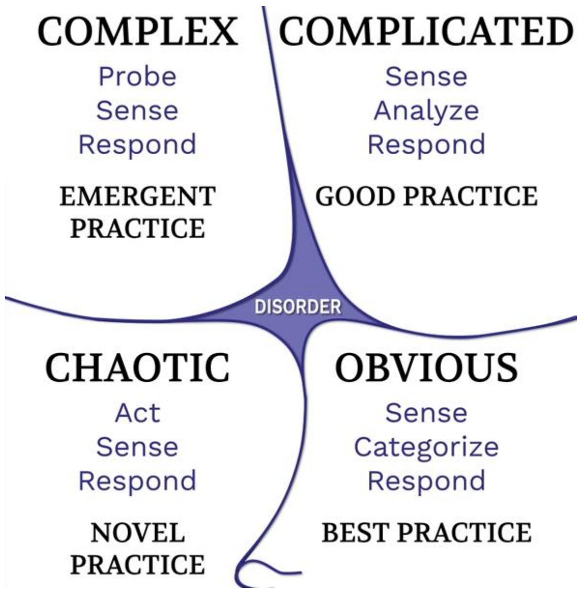
$$\text{Comprehensive Income}^{P1} = \text{Revenues}^{P1} - \text{Expenses}^{P1} + \text{Gains}^{P1} - \text{Losses}^{P1}$$

Distilled down to ONE Equation using Algebra

$$I^{(\beta)}(t_i, t_{i+1}) = NI(t_i, t_{i+1}) + \Delta P/D^{(\beta)}(t_i, t_{i+1}).$$

I am still trying to get my head around this. This relates to algebra and calculus. As I understand it, this equation is a combination of the three equations on the prior slide.

Accounting is a Closed System



YouTube.com, CognitiveEdge, *Cynefin Framework*, https://youtu.be/N7oz366X0-8

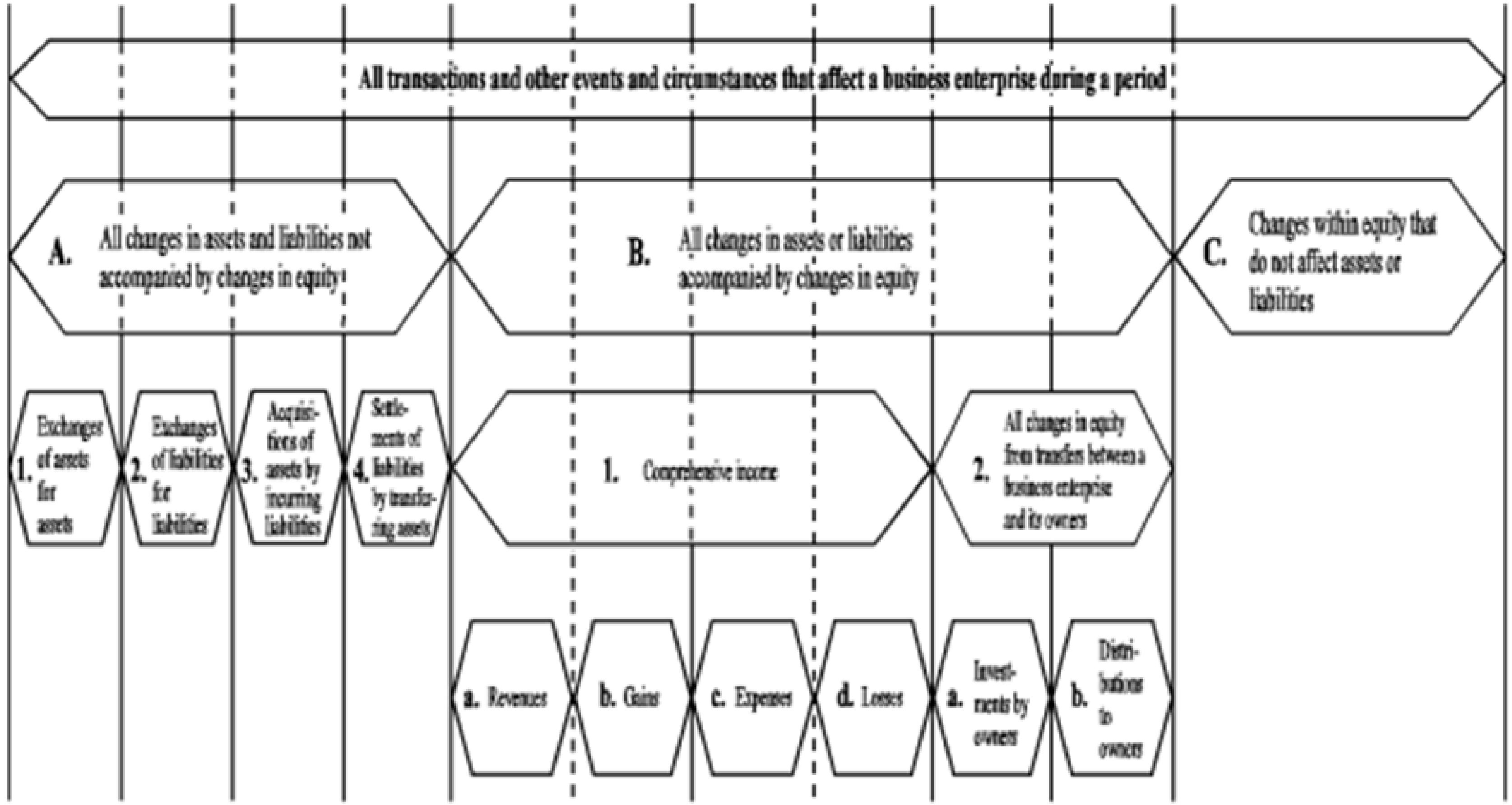
- **Obvious in a world of**:
  - All values are nominal values
  - All values are a single currency
  - Single reporting style
  - Simple business events
  - Single economic entity
  - No other real world complexities
- **Complicated (but still a closed system) in a world of**:
  - Nominal value, fair value, amortized cost, etc.
  - Multiple currencies
  - Many different reporting styles
  - Complex business events
  - Consolidated economic entities
  - Other real world complexities

Any inequality, inconsistency, or contradiction means some sort of error has occurred within the system.

Venetian Method of Double Entry Bookkeeping

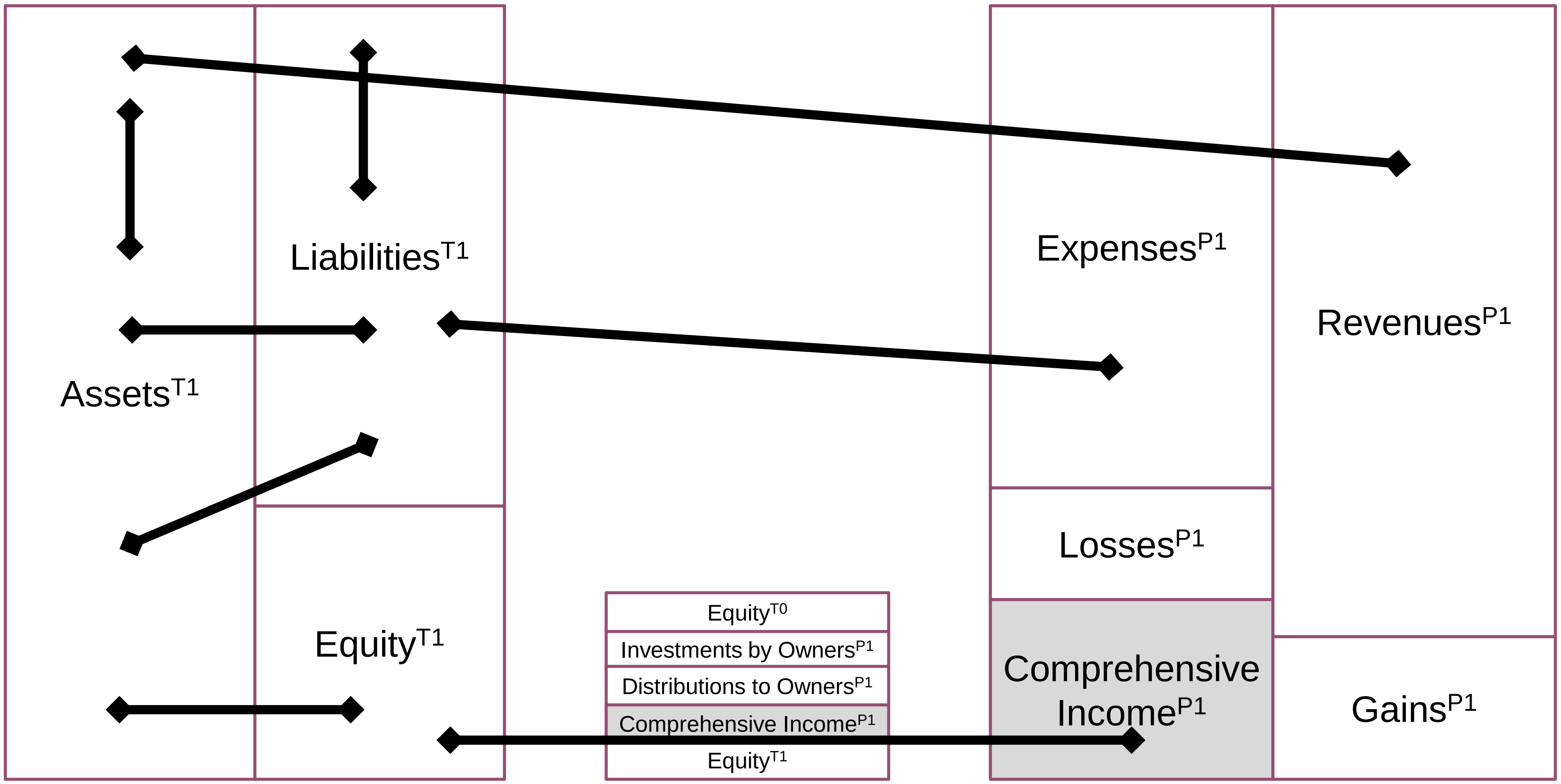
- DEBITS = CREDITS
- **Any inequality, inconsistency, contradiction means some sort of error has occurred within the system**
  - Unintentional error (mistake)
  - Intentional error (fraud)
- Ability to distinguish a mistake from fraud

Business Events Drive Accounting Transactions Per SFAC 6



FASB, SFAC 6, section 64, page 40, https://www.fasb.org/pdf/con6.pdf

Business Events (accounting patterns)

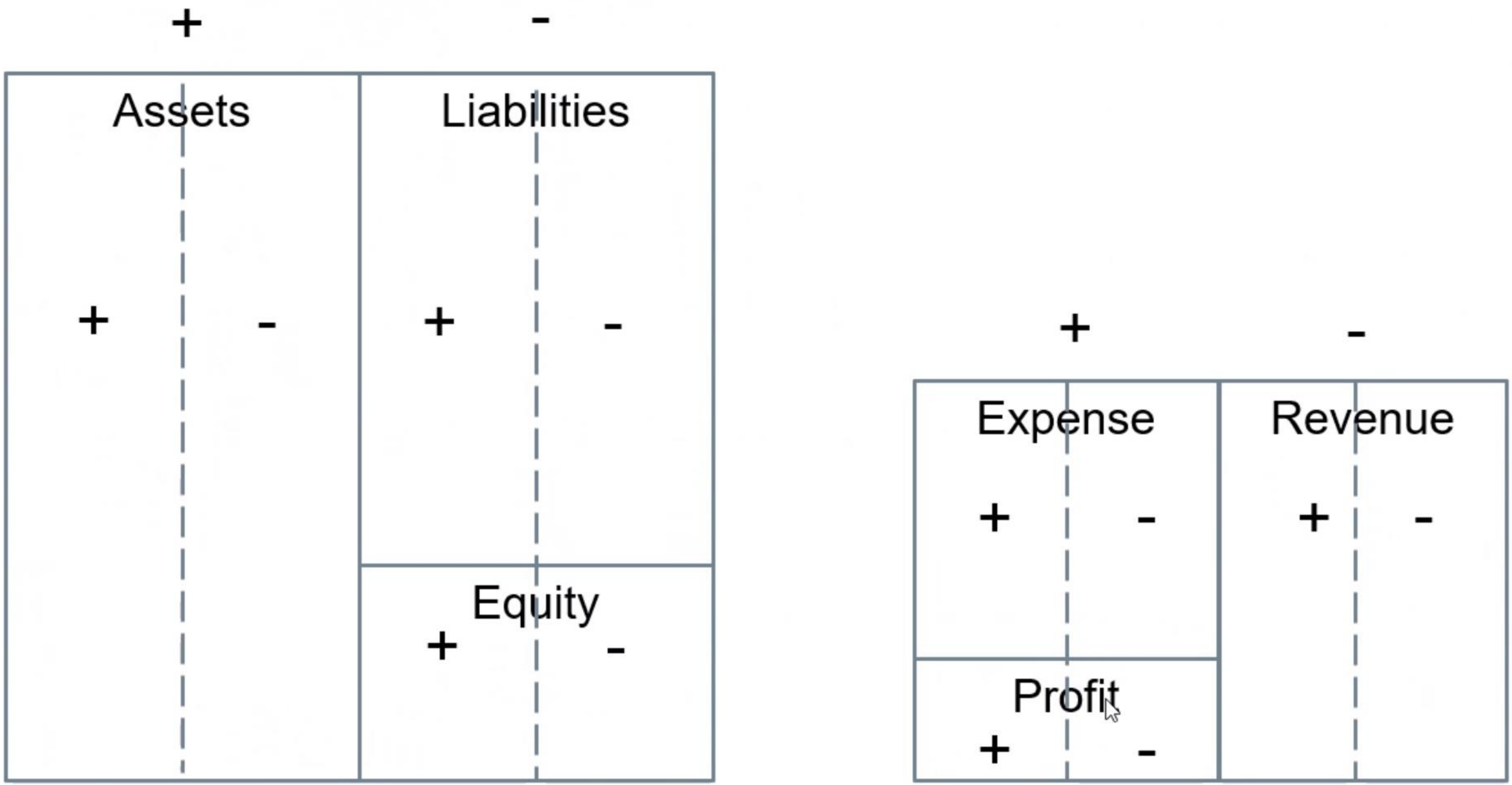


Dynamic Balance Sheet

- Transactions is not what drives accounting.
- Contractual monetary business events that drive accounting, they are turned into accounting transactions.
- Cash flows is the basis for everything.
  - Balance sheet is derived from result of cash flows (actual cash flows, promised cash flows a.k.a. accruals)
  - Income statement is derived from balance sheet changes
  - Cash flow statement is derived from balance sheet changes

"Never go to sleep until the balance sheet balances."

Luca Pacioli


+
-
Assets
Liabilities
+
-
+
-
Equity
+
-
+
-
Expense
Revenue
+
-
+
-
Profit
+
-

Main Categories of Accounting Entries

- Exchange of assets
- Exchange of liabilities
- Asset for liability
- Liability for asset
- Asset for revenue (gain)
- Liability for expense (loss)
- Move comprehensive income to equity
- Asset to equity
- Liability to equity

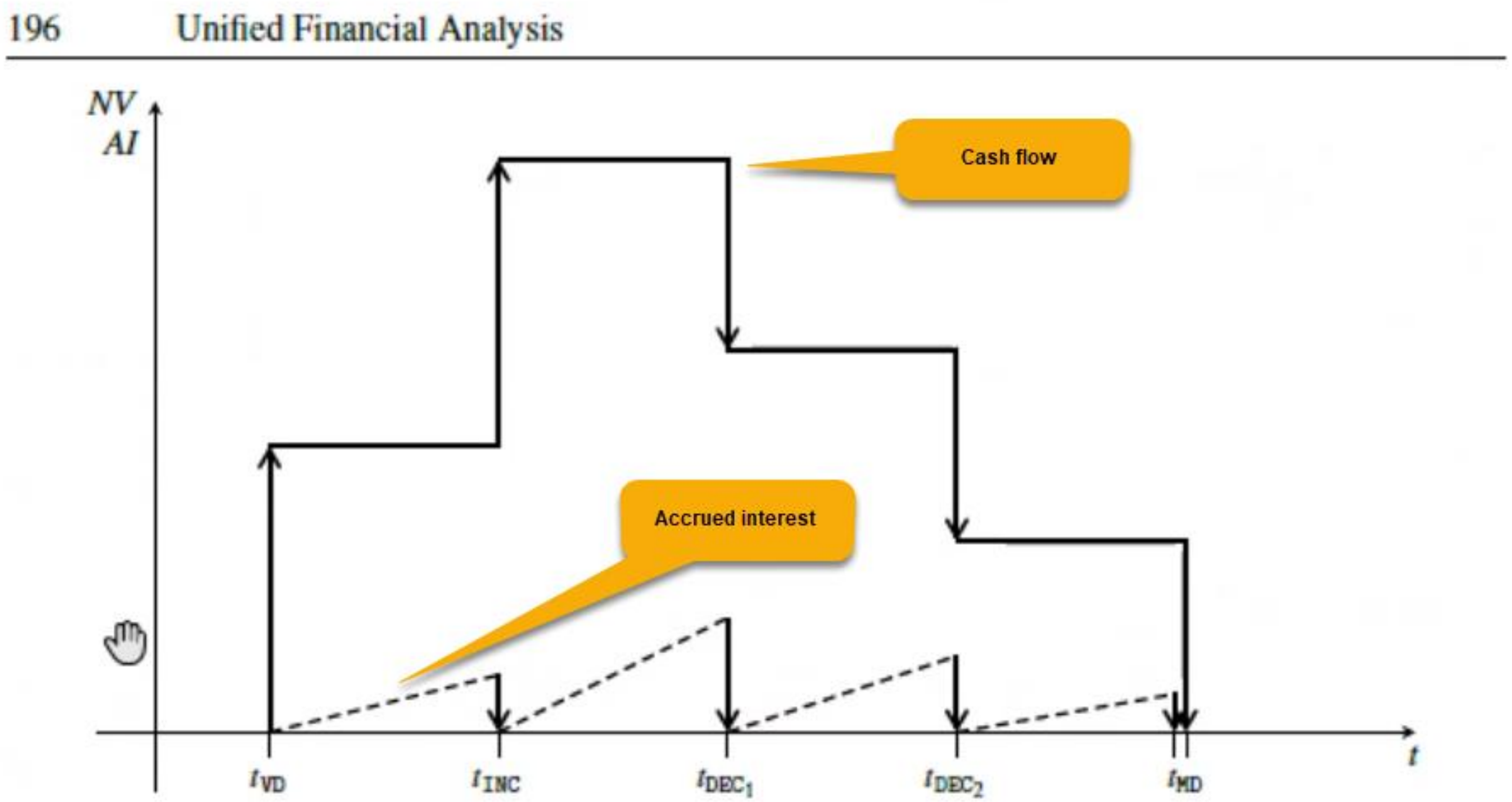
Additional Important Details

- Revenues
  - Operating revenues
  - Incidental or peripheral revenues
- Expenses
  - Operating expenses
  - Incidental or peripheral expenses
- Receivables
- Payables
- Accruals
- Investments
- Reserves
- Debt
- Operations
  - Continuing
  - Discontinued
- Equity
  - Controlling interests (parent)
  - Noncontrolling interests
- Taxes
  - Current
  - Deferred
- Current
  - Assets
  - Liabilities
- Noncurrent
  - Assets
  - Liabilities
- Gross profit
- Income attributable to equity investments
- Income from operations
  - Continuing
  - Discontinued
- Prepayments
- Deferrals

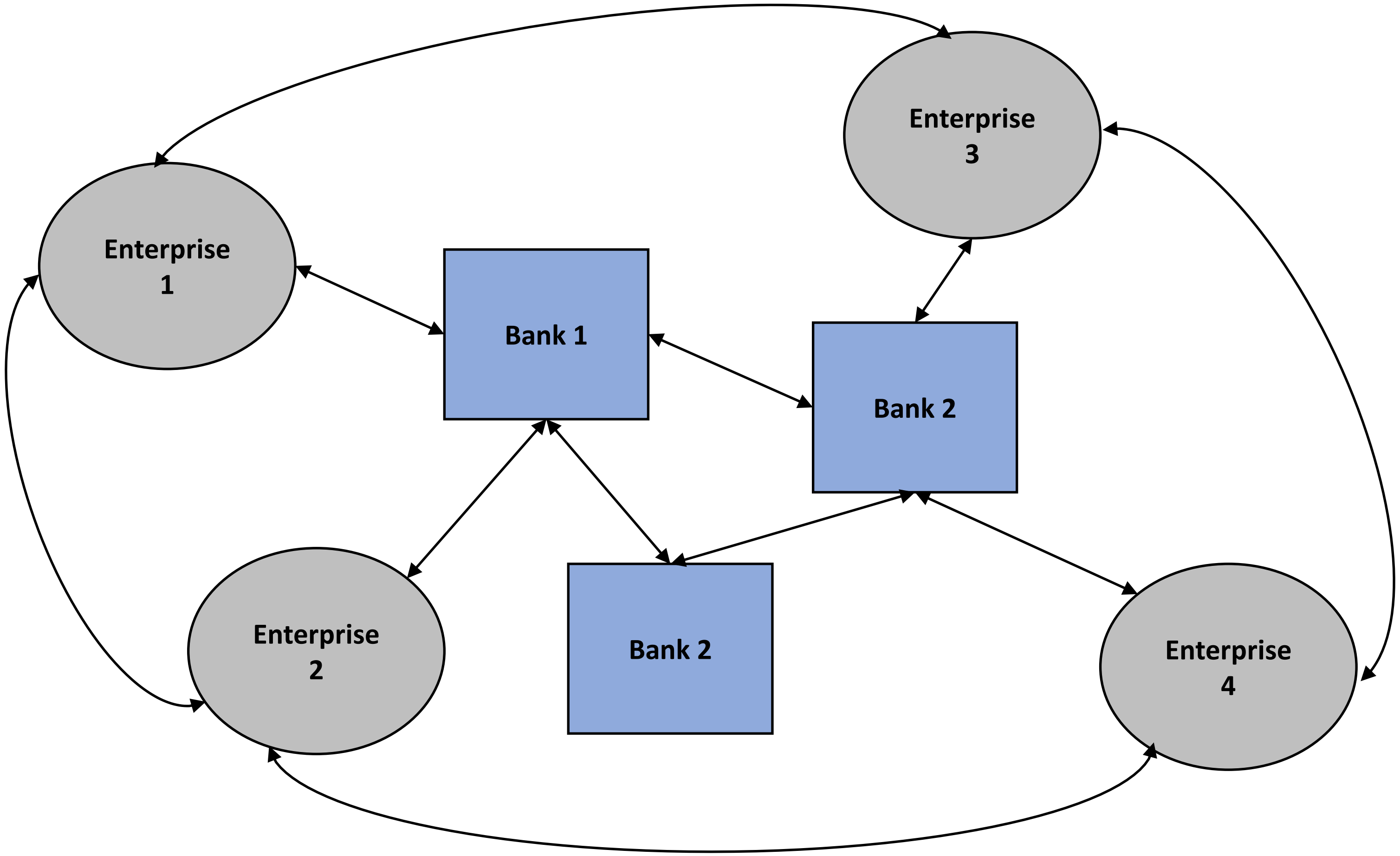
Contractual Algorithm Patterns (Business Events)

- Purchase inventory on account
- Sell inventory on account
- Collect on account
- Pay on account
- Borrow
- Repay on borrowings
- Investment by owner
- Distribution to owner
- Write off uncollectable receivable
- Purchase capital assets
- Lease capital asset
- Issue common stock
- Issue preferred stock
- Acquire insurance
- Purchase an economic entity
- Pay federal taxes
- Invest in stocks
- Equity investment in company
- Pay deposit on contract
- Write off obsolete inventory

Visual of One Contractual Algorithm Pattern (Borrowing and repayment of debt principle and interest)

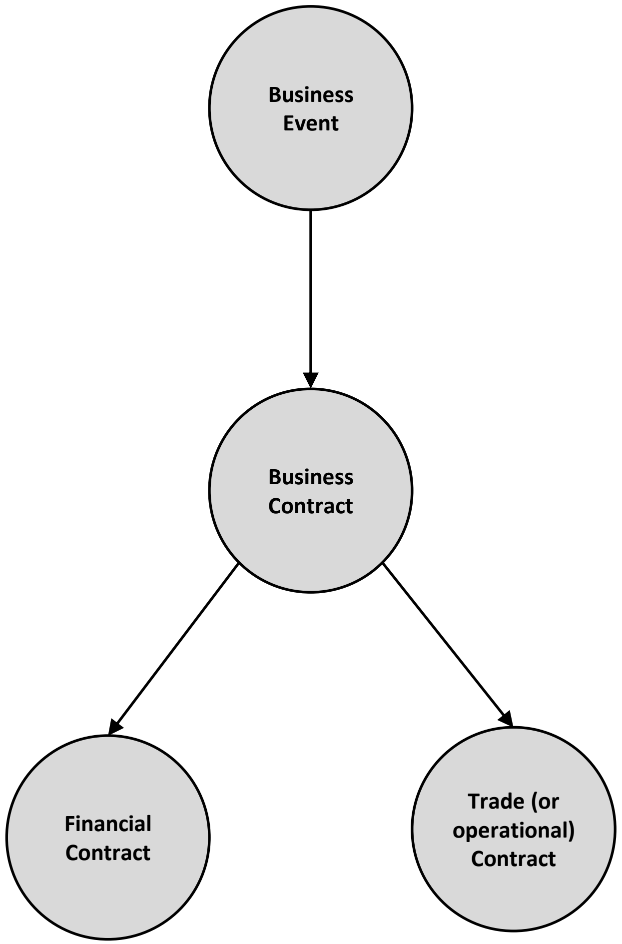


Financial Contracts and Trade (Operational) Contracts



Business Events

- **Business events** - events that happen in the real world. Business events generate:
- **Business contracts** - machine readable representations of the logic of the things that happened in the real world expressed in some standard physical syntax. There are TWO TYPES of business contracts:
  - **Financial contracts** always involve CASH on BOTH SIDES of the contract/event.
  - **Trade (operational) contracts** involve "goods and services" on at least one side of the contract and CASH on perhaps ONE SIDE of the contract.



https://www.actusfrf.org/taxonomy#:~:text=The%20figure%20below%20shows%20the,pattern%20is%20able%20to%20express