

Lecture 11 - Accounting and some Finance

News

1. First ETF based on Bitcoin.
2. Bitcoin passes \$57000 a coin.
3. Unhackable BlockChain? <https://www.technologyreview.com/s/612974/once-hailed-as-unhackable-blockchains-are-now-getting-hacked/>
4. MasterCard, a crypto backed card: <https://www.reuters.com/article/us-crypto-currency-mastercard/mastercard-to-open-up-network-to-select-cryptocurrencies-idUSKBN2AA2WF?il=0>

In the year 720

You don't often get Compute Science Lectures that start in the year 720!

Al-Khwarizmi's book, 720, introduced al-jabr meaning "restoration" is at the *root* of accounting. His work lead to three fundamental accounting principals:

- Debits = Credits: algebraic manipulations on the left-hand and right-hand size of an equal sign had to "balance" or they were in error. This is the algebraic equivalent of double-entries "bookkeeping equation" for error control.
- Real accounts: These included assets for tracking wealth, weighed against liabilities from the claims of others against that wealth, and the difference which is the owner's net wealth, or owner's equity. This was al-Khwarizmi's "basic accounting equation".
- Nominal accounts: These tracked activity that affected wealth, and the "restoration" into the real accounts reflected accounting's closing process and the calculation of the owner's increment in wealth -- net income.

Later in 1500's Venice this would be converted into the basic concept of Debits and Credits in accounting.

Luca Pacioli, a Franciscan friar in Medieval Venice, wrote the "Summa de Arithmetica, Geometria, Proportioni et Proportionalità" in 1494. Pacioli detailed a system of financial record keeping in which every debit (Latin for "he owes") was matched to a credit ("he trusts"). I think that the biggest confusion is due to the terms. Let's just think of Debit as the "D" column and credit as the "C" column. In double entry bookkeeping the total of the D's must equal the total of the C's. A big part of the reason for doing it this way was that negative numbers had not been accepted. So it all works on positives.

Al-Khwarizmi's concept of 0 plays a critical role in this. There is substantial historical evidence that acceptance of 0 as a valid result is really the start of this revolution in accounting.

Pacioli's warning is that a person should not go to sleep at night before the debits matched his credits. He did not invent this system. It was in use by a number of merchant families in Venice by the time he formalized it and wrote it down.

In this system there are asset, liability, capital, income, and expense accounts. This is the basis of double-entry accounting - over 500 years ago. The "magic" in this system is it becomes much more difficult to "cheat" and much easier to value the assets that a person or business has. Like any "model" it is not the "real" world. In some ways it is Micky Mouse.

- Micky Mouse
- Cows and Risk

The European translation of al-jabar is Algebra. The Process of applying a complex set of steps in al-jabar (Algebra) is referred to today as an algorithm.

Some credit Generally Applied Accounting Principals, GAAP with the rise of American business after WWII. The purpose of GAAP is to create a uniform standard for financial reporting. When financial information is made available to investors, it should serve the purpose of helping these people make accurate and informed decisions as to where to put their money. This makes for more efficient financial markets. Similarly, it should enable lenders to properly assess the financial condition of companies and allow for accurate rates of risk in lending.

Blockchain is the first real "technological" advancement in accounting in 500 years.

- Accounting Fraud
- Paul Manafort

Other inaccuracies in accounting - The case of Game Stop and Dole Foods.

Stocks, ICOs, Bonds, etc...

Terms with explanation:

1. Cash - this is what you buy your pizza with. The world's most expensive pizza was paid for with 16 bitcoins.
2. What is a P&L - financial statement of income and expenses that shows if the company is making or losing money.
3. What is Inflation?
4. What is a Derivative

5. Dividends - Payment of profit to investors as “income” or a reward for owning the stock.
6. What is the “Yield”
7. ICOs (Initial Coin Offering)
8. Cost of “going public”
9. Price to Earnings Ratio - a P/E ratio is the cost of share of the company divided by Earnings of that particular share of a company.
10. High speed trading
11. What is a basis point (BPS), Example 50 BSP = 0.5%
12. Stock Buy Back
13. Index Fund
14. Insider Trading
15. “Consumer Token Sale”
16. Junk Bonds - non investment grade bond. Bonds are rated for default risk.
17. Mutual Fund
18. Asset Allocation
19. Expense Ratio for a Mutual Fund
20. Prospectus
21. Pro-Forma
22. KYI - Know Your Investor (See SEC 506(d))
23. KYC - Know your customer
24. Certified Investor
25. Going public - Make a public offering. Cost etc.
26. Money Laundering - Oleg Deripaska