The invention of coins and Athens

- First use: money as unit of account
  - What is money?
- Invention of coins around 550 BCE
- Universal features of metallic monies (up to 1800 BCE)
- Seignorage with metallic money
- Athens: the first record of war finance
  - Thucydides: History of the Peloponesian War
- Reference: Velde, *the Origin of Specie*

Ec 365/ Feb. 2

Questions

- What is money?
- Was there money before coins?
- When where coins introduced? Where? Why?
- What types of coins?
- Seignorage: government revenues by money creation
  - How does it work with coins?

What is money?

- Barter
- Problem of the double coincidence of wants
  - Reduced profitability of production
- Local trading is possible (examples, see notes)
  - Memory as a substitute for money (Kocherlakota)
  - Keep track of the transactions
  - In modern economy, cash (coins and bills) play a smaller role
  - Some people call for the elimination of cash
- For large transactions or long-distance trade, precious metal can be used for exchange (traded by weight)

Unit of account in Egypt

- Three purposes of money: ?
- Inscription near the sphinx (Khafre, ~ 2500 BCE):

    I have purchased this house from the scribe Tjenti. I gave him 10 shats for it; one piece of cloth with four thread (?), 3 shats; one bed, 4 shats; one piece of cloth with two threads (?), 3 shats.

- Money: unit of account
  - Not a store of value
  - Not much precious metal for money
    - Some copper rings ?
  - No trade for money
- This transaction was instant.
  - Not across different times

Mesopotamia

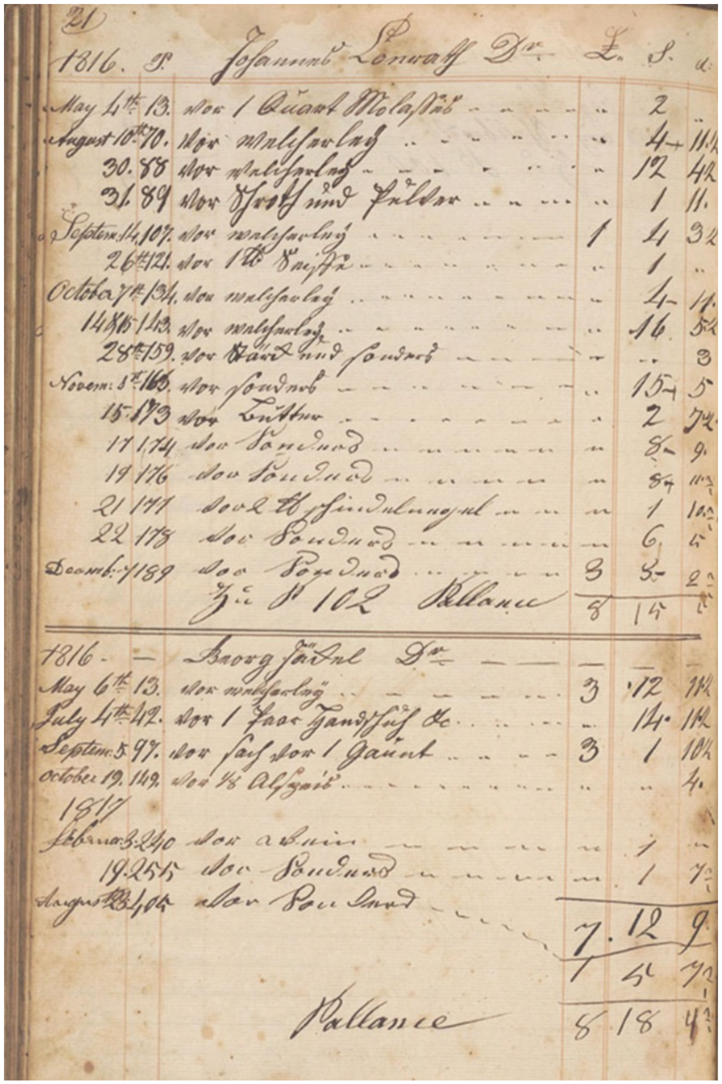
One shekel = 8.4 gr (~ 40 days of work). 1 talent=60 minas=360 shekels

- ~ 2300 BC Sini-Ishtar has bought a slave, Ea-tappi by name, from Ilu-elatti, and Akhia, his son, and has paid **ten shekels of Silver, the price agreed**. Ilu-elatti, and Akhia, his son, will not set up a future claim on the slave. In the presence of Ilu-iqisha, son of Likua; in the presence of Ilu-iqisha, son of Immeru; in the presence of Likulubishtum, son of Appa, the scribe, who sealed it with the seal of the witnesses. The tenth of Kisilimu, the year when Rim-Sin, the king, overcame the hostile enemies.

- ~ 2000 BC Sini-Ishtar, the son of Ilu-eribu, and Apil-Ili, his brother, have bought one third Shar of land with a house constructed, next the house of Sini-Ishtar, and next the house of Minani; one third Shar of arable land next the house of Sini-Ishtar, which fronts on the street; the property of Minani, the son of Migrat-Sin, from Minani, the son of Migrat-Sin. **They have paid four and a half shekels of silver, the price agreed**. Never shall further claim be made, on account of the house of Minani.

Informal money: the General Stores

- Lack of small change



1816. Johannes Conway. debtor

Date	Ref	Description	Amount
May 4	13	1 Quire Molasses	2
Aug 10	70	one molasses jug	4-11.5
Aug 30	58	one molasses jug	12-4.5
Aug 31	89	one Yard mus & Ribbon	1-11
Sep 14	101	one molasses jug	1-4-3.25
Sep 26	412	one 1/8 sugar	1
Oct 14	134	one molasses jug	4-14.5
Oct 14	485	one molasses jug	16-5.5
Oct 25	159	Hand Gin & Powder	8
Nov 5	163	Powder	15-5
Nov 15	173	whisky	2-7.5
Nov 17	174	Powder	8-9
Nov 19	176	Powder	8-11.5
Nov 21	177	of John McConnell	1-10.5
Nov 22	178	Powder	6-6
Dec 1	189	Powder	3-5-2.5

Sardex

Edward Posnett, reporting for the FT, writes: "When the financial crisis hit Sardinia, a group of local friends decided that the best way to help the island was to set up a currency from scratch".

- Financial crisis of 2008.
- Lack of credit
- mutual credit system
- resembles early ledger-based system

• L. Sartori & P. Dini, "From Complementary Currency to Institution: A Micro-Macro Study of the Sardex Mutual Credit System" (2016).
https://www.jstor.org/stable/26814200?utm_source=chatgpt.com

- *International Journal of Community Currency Research*, "The remarkable growth of Sardex …" (2017).
  https://ijccr.net/wp-content/uploads/2017/02/littera-et-al.pdf?utm
- Article on Sardex's origins and founders (2019 report).
  https://antidotecounteragent.wordpress.com/2019/10/19/a-local-currency-makes-sardinias-economy-more-resilient-to-future-financial-crises/?utm
- P. Dini & A. Kioupkiolis, "The_alter-politics of complementary currencies The case of Sardex

Introduction of coins

- Herodotes (450BCE):

  "Now the Lydians have very nearly the same customs as the Hellenes… and they were the first of men, so far as we know, who struck and used coin so far as we know , who struck and used coin of gold or silver…" *(Herodotus, Histories 1.94.1)*

- First coins **found**: temple in Ephesus 560 BCE. (Could be older coins)
  - Other recent finds at the same place, (1997): 630-615 BCE
- First coins
  - Mix between gold and silver: **electrum**
  - Found in a natural state, especially in a river near the capital of **Lydia: Sardis**
- Next stage: standardization under Croesus, king of Lydia (c. 585 – c. 546 BC)

Coins traded by weight or by tale

- What defines the trade value of a coin?
  - Metallic content
    - Coins traded **by weight**
  - Face value
    - Coins traded **by tale**
  - A coin can *circulate* (is traded) only if
    - The value of the metallic content is smaller than the face value
  - Otherwise, the “good money” is hoarded
  - Gresham’s law:

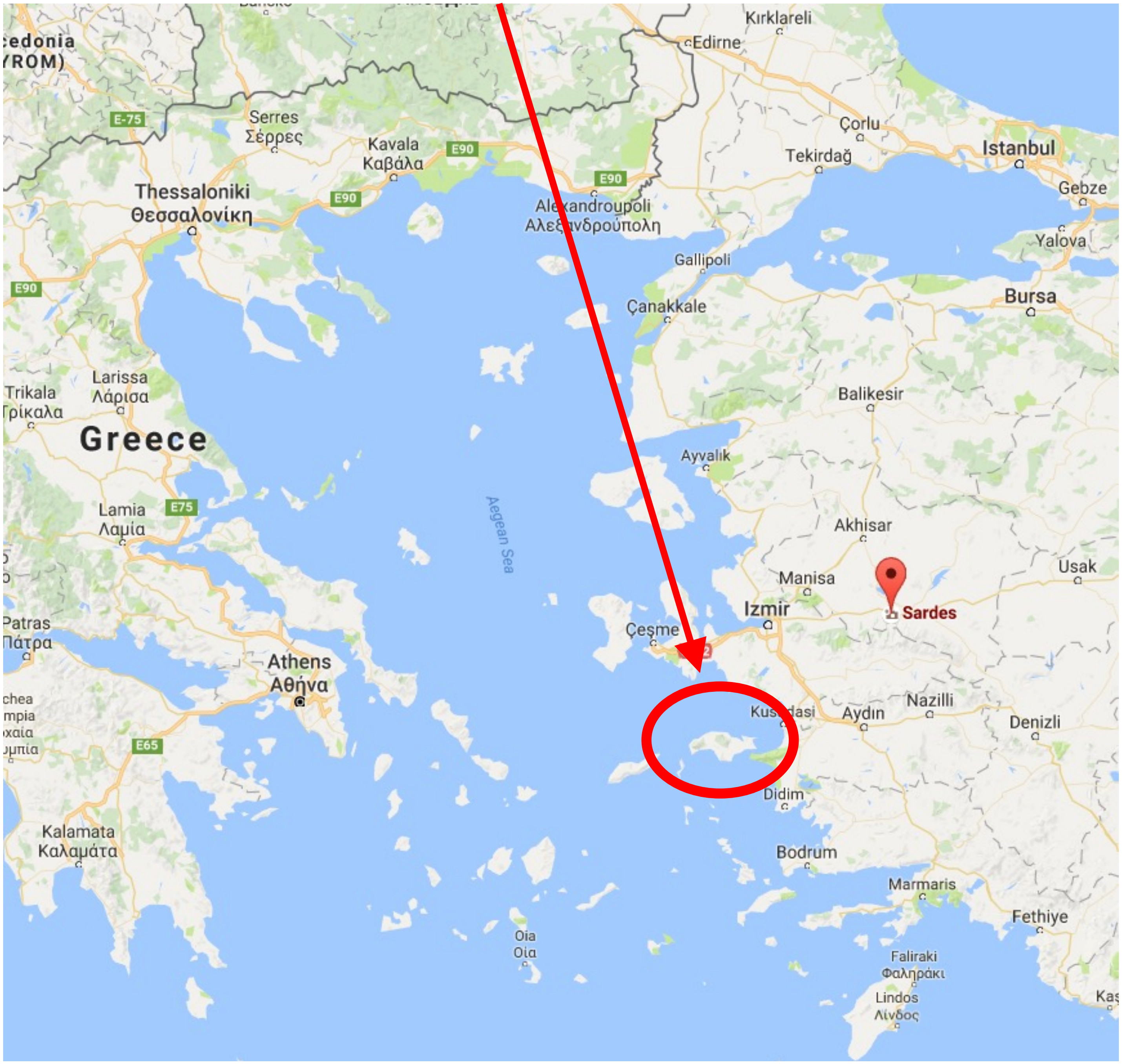
    the bad money chases the good money away.

The gift of nature: gold and silver

- Why are coins in precious metal?
- The purchasing power of largest coin was very large, but smallest coin was equivalent to a few days' wages
- Gold and silver were easy to separate from other metals, and easy to mix with each other, but harder to separate from each other:

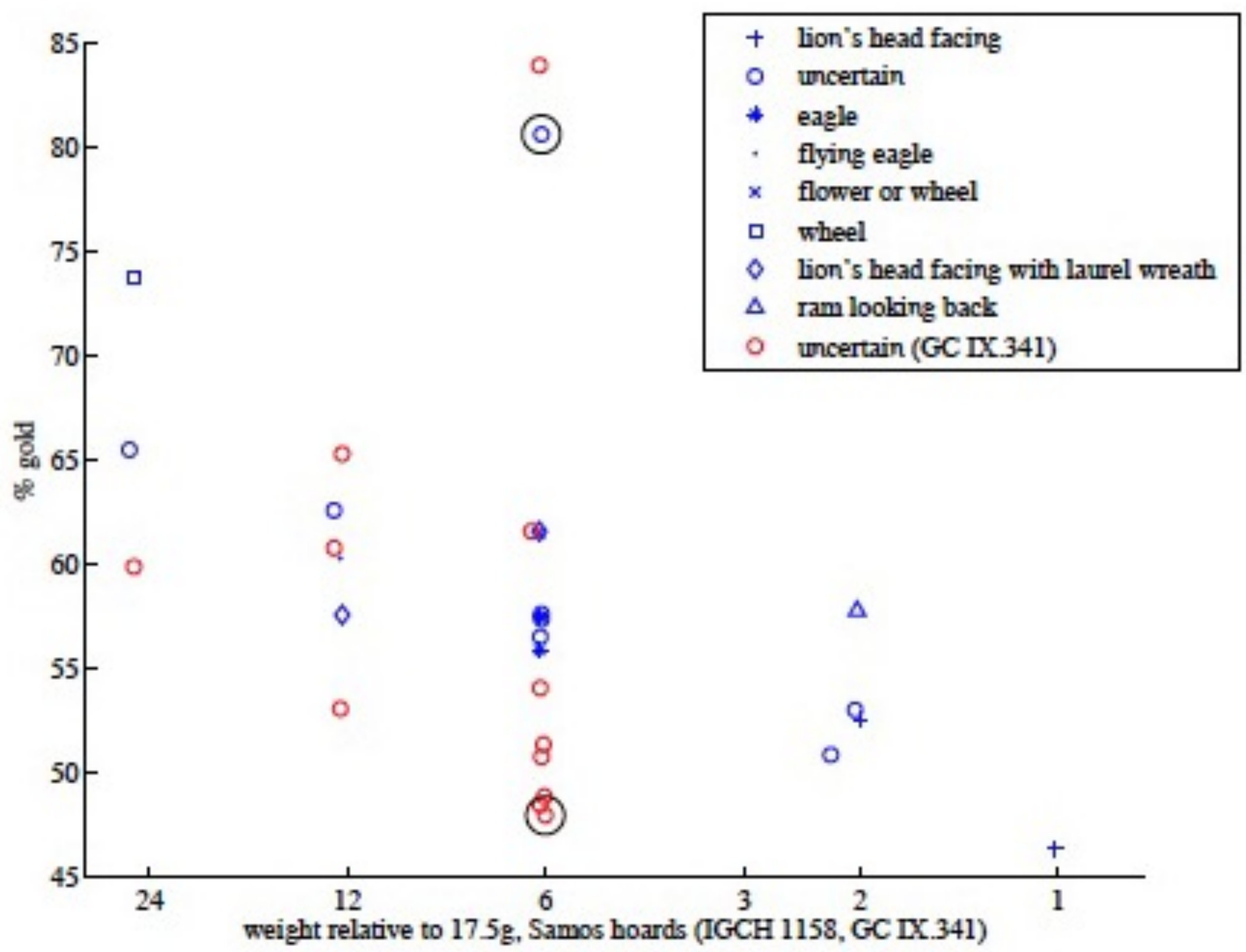
Metal	Density	Value	Melting point (C^o)
Gold	19.32	1,200	1,063
Silver	10.49	100	900-961*
Copper	8.96	0.6	1,085

Coin minting in Samos



Type of first coins: Samos (~ 560 BCE)

- Material: electrum
  - Mix of gold and silver
- How are these coins traded?



The universal metallic standard

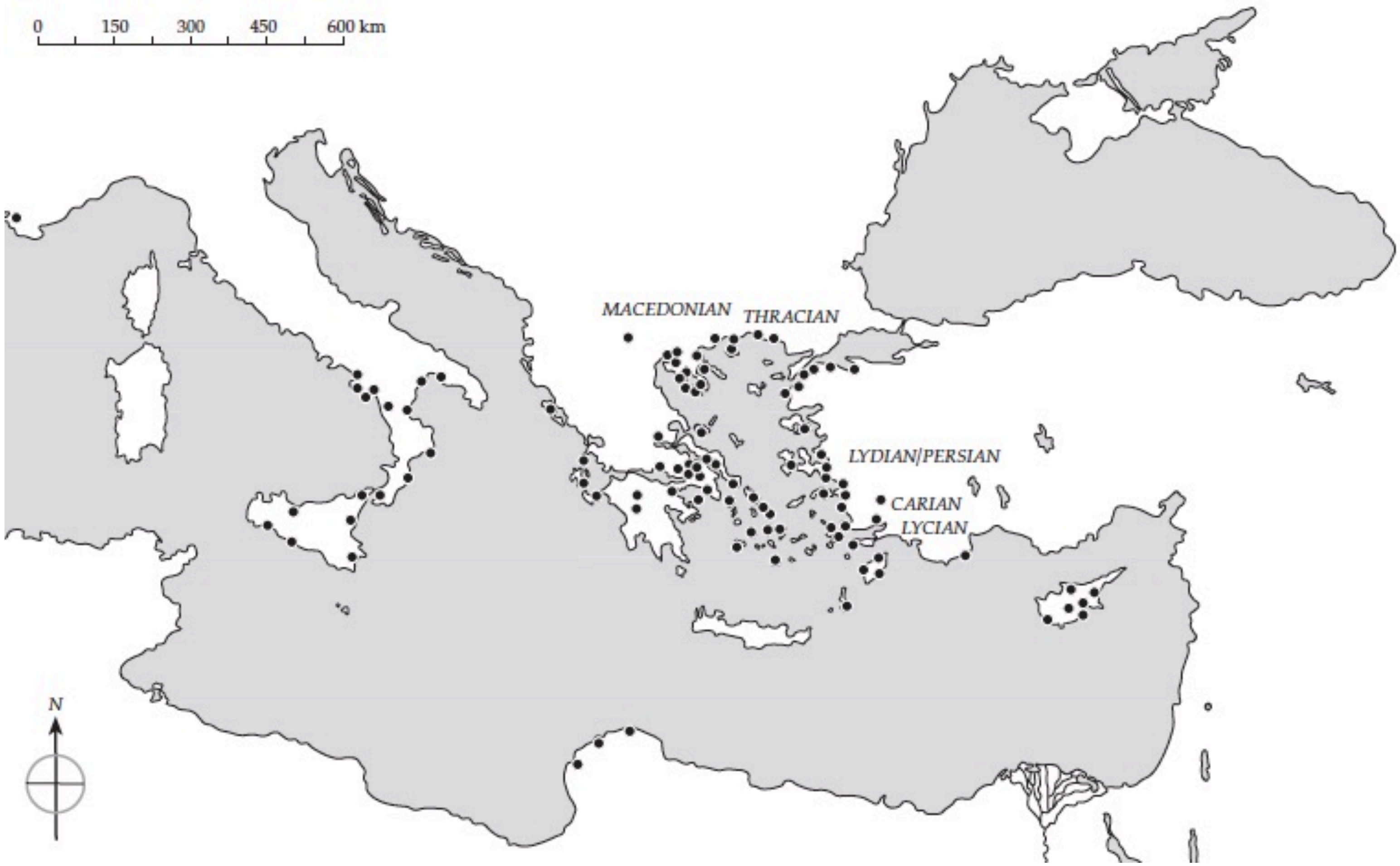
- Any metallic system is constrained by the physical properties of the metals, density and scarcity.
  - Price ratio gold/silver: antiquity, 12;
  - Silver (1 gr.): $ 3.6 ; gold: $ 160.

Metal	Density	Value	Melting point (C^o)
Gold	19.32	1,200	1,063
Silver	10.49	100	900-961*
Copper	8.96	0.6	1,085
Lead	11.35	0.05	327.5
Tin	7.28	3.9	232
Iron	7.85	0.2	1150
Bronze	7.4-8.9	1.0	

- At equal value, a gold coin has a volume about 1/25 of a silver coin; with equal thickness, the coin is 5 times smaller
- Gold coins have more value (for a given size): international transactions

Mints around 480 BC

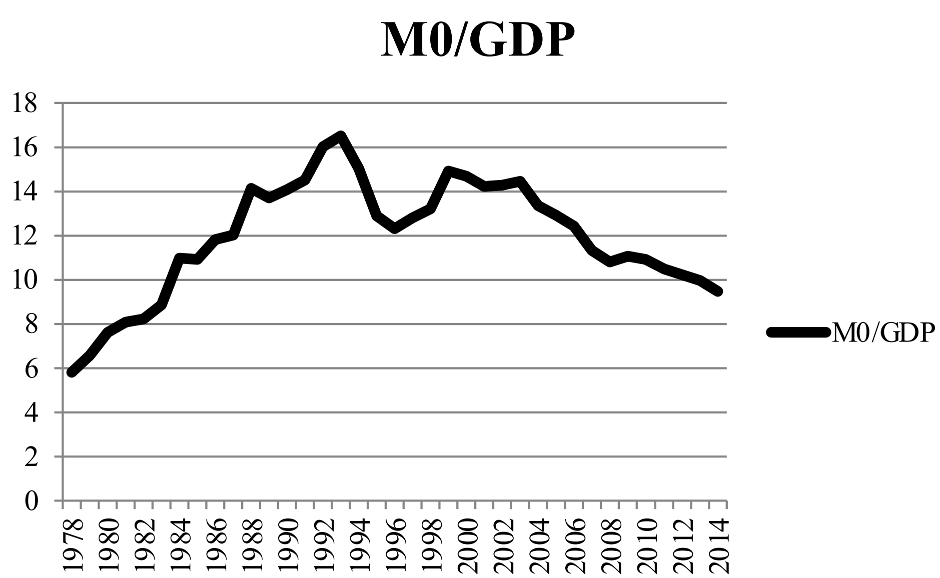
Money is like a language:
it's useful when others use it

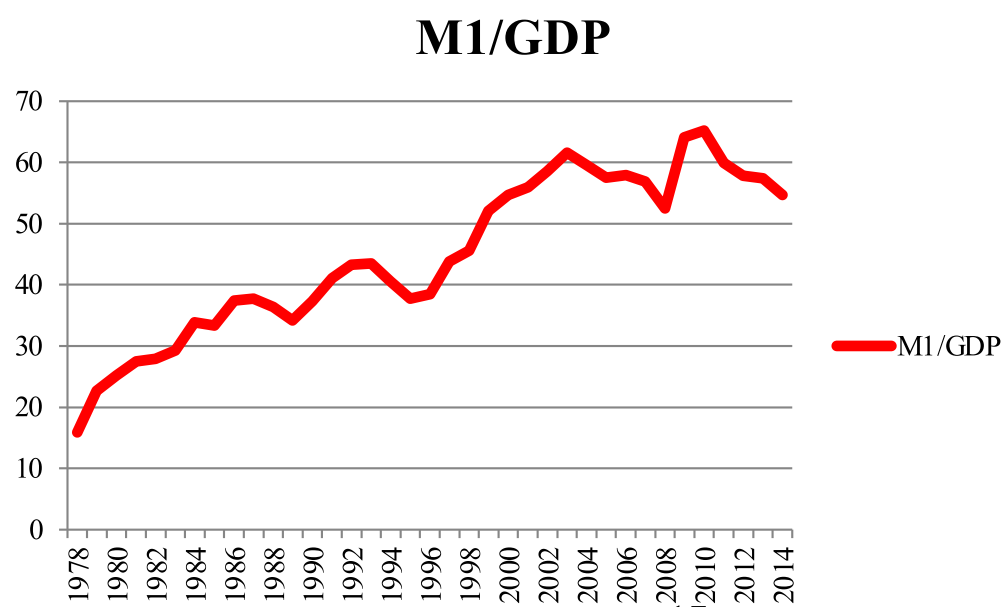


Date benchmark: Battle of Marathon: 490

Later..

- England (before February 15, 1971)
  - 1 pound=20 shillings=240 pennies
- France (before 1789)
  - Livre= 20 sols = 240 deniers
- Dinar in Algeria, Tunisia; Dirham in Marocco
- Money in China after 1978





Seignorage

- Definition of seignorage: government revenue through creation of money
- Today: the printing press
- With coins: reduction of the precious metal
- Distinction between
  - Face value (what is written on the coin): exchange value of the coin
  - Intrinsic value (value of the metal inside)
- The intrinsic value cannot be greater than the face value
  - Gresham Law: bad money chases away good money.
  - Description in Aristophanes (*The Frogs*, 405 BC)
- The face (exchange) value can be higher than the intrinsic value because of its purchasing power

Coin debasement (1)

- Money is used for ***transactions***.
  - We have paper money with no intrinsic value. The value of money is essentially the transaction value. We hold it because we can buy real goods with it. The seller of these goods accepts the paper because he can buy real goods. Etc…. Chain of transactions. If no one at the end, the chain unravels.
- Thought experiment:
  - The emperor buys all the coins and replaces them with paper money
  - What is the impact on the price level?

Coin debasement (2)

Metal	Density	Value	Melting point (C^o)
Gold	19.32	1,200	1,063
Silver	10.49	100	900-961*
Copper	8.96	0.6	1,085
Lead	11.35	0.05	327.5
Tin	7.28	3.9	232
Iron	7.85	0.2	1150
Bronze	7.4-8.9	1.0	

- Gold and silver have very different densities, hard to cheat. Large (long distance) transactions
- Silver and copper haver similar density. Rulers have used this to reduce the silver in coins.
- But **Archimedes!**

Coin debasement and inflation

- Debasing the currency while keeping the quantity of money constant has NO impact on the price level
- Governments issue more coins with lower silver: the quantity of money increases and THIS creates inflation.
- Inflation is always a monetary process
- The causality is money creates inflation, NOT the reverse.
- The initial cause is the need for government revenue
- SOME exceptions: the inflow of silver from the Americas to Europe in the 16^{th} century. Prices were multiplied by 4 in a century, but there was NO seignorage.

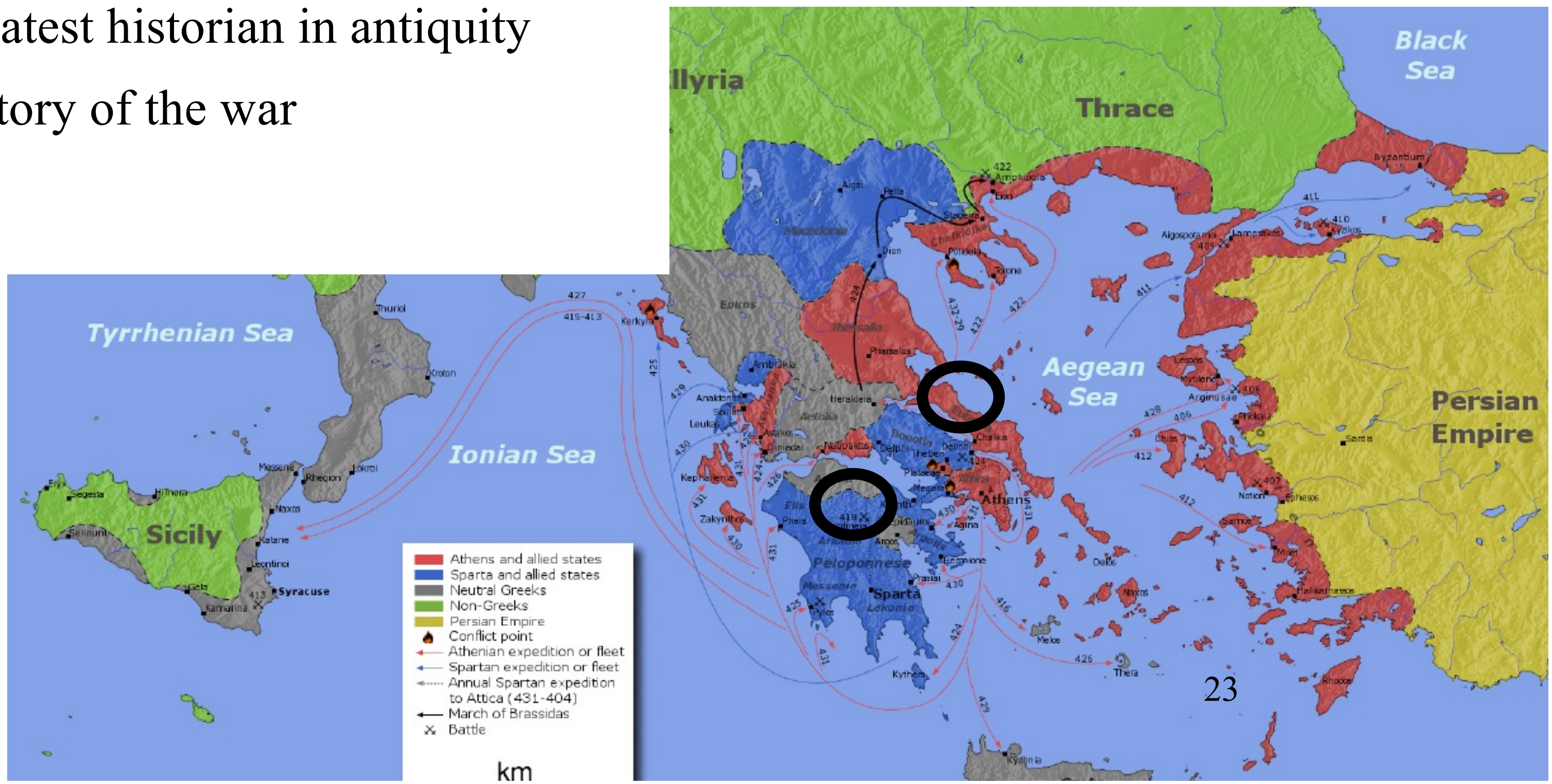
War financing in Athens

- Since the Middle-Ages in Europe, debt financing of wars,
  - Spend, pay later.
- In antiquity, no market for the public debt.
  - Accumulate first, then spend.
- The war between Athens and Sparta
  - Peloponnesian war: 431-404 BCE
- Thucydides (460-400): *History of the Peloponnesian war*.
  - First real historian
    - Almost contemporary
    - Checking the facts
    - Discuss the causalities

Athens: the Peloponnesian War (431-404 BCE)

(02/02)

- War between Athens and Sparta
- Cause of the war
  - Fear of the ascendency of the other
- “Thucydides trap” (Graham Allison)
- Thucydides (460-400)
  - Greatest historian in antiquity
  - History of the war

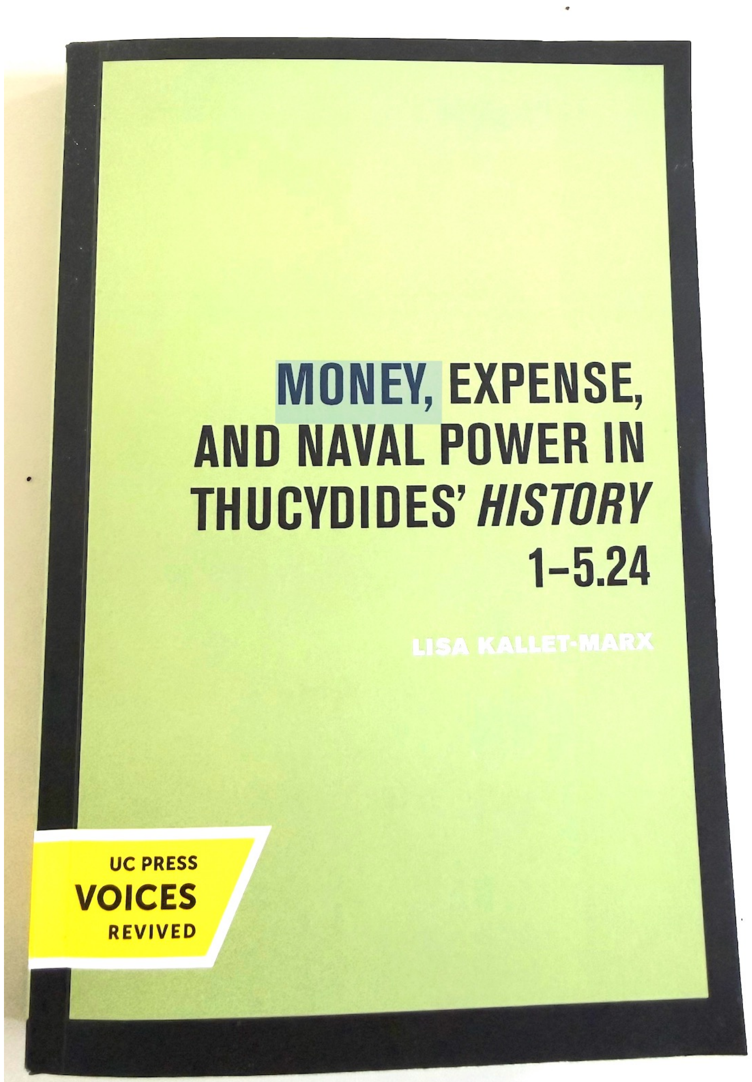


War and money

- Units
  - Crew: 1 drachma per day (4gr silver)
    - Galley: 200 men
    - The boat was financed by donations
    - Crew financed by the state
  - Talent is 6000 drachmas
- Silver mines near Athens:
  - Saving for the naval battle of Salamina (483 BC)

" war is not so much war of arms as war of money by means whereof arms are useful,."

Early in the spring of the following summer the Athenian envoys arrived from Sicily, and the Egestaeans with them, bringing sixty talents of uncoined silver, as a month's pay for sixty ships, which they were to ask to have sent them."


MONEY, EXPENSE,
AND NAVAL POWER IN
THUCYDIDES' HISTORY
1–5.24
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Speech of Perikles at the beginning of the war

- Style of Thucydides
  - Testimonies, but speeches also represent what could have been said or a presentation of the situation
  - First example of "great oration"
  - Here, the speech about resources for war at the start.
  - After the first year of the war, the funeral oration
  - Inspiration for Edward Everett (1794-1865)
    - Classicist, politician, president of Harvard
    - Speech of two hours at Gettysburg (11/19/1863)
    - Gettysburg address by Lincoln, two minutes
      - "**The world will hardly remember what we will have said, but it will never forget what they did**."
      - Reference: Gary Wills (2006): *Lincoln at Gettysburg: The Words that Remade America.*

(Museum in Rome)

The expedition to Sicily
Book 6, ch. 7

- Such were the motives of the Athenians for the expedition. The greater part of them desired either to see a strange country or to enrich themselves, and were confident that they should suffer no harm. The elder men were tempted by the enlargement of their empire; the younger men by the hope of gain and adventure; and even those who stayed at home thought that the city would be maintained by the pay of those who went.
- In short, all classes were alike eager for the expedition, although they differed in their motives; and they had come to regard the war with Sparta as of secondary importance, and were bent upon the conquest of Sicily.
- **Nicias**, one of the generals, seeing that the Athenians were carried away by an ill-considered enthusiasm, and wishing either to deter them from the expedition or at least to make them consider the magnitude of the enterprise, now came forward and addressed them as follows.

Main points of the address

- Exhortation
- Financial resources
- Army resources
- Strategy to retreat within the walls of the city (wich include the harbor)

> and guard it, and get ready their fleet, in which their real strength lay. They were also to keep a tight rein on their allie, the strength of Athens being derived from the money brought in by their payments, and success in war depending principally on planning and money reserves.

Financial resources

1200
6000
500
480
8180

[3] Here they had no reason to despair. Apart from other sources of income, the tribute of the allies brought in an average of $\boxed{\text{six hundred talents}}$ of silver, and there were still $\boxed{\text{six thousand talents of minted silver in the Acropolis}}$, out of the nine thousand seven hundred that had once been there, from which the money had been taken for the portico of the Acropolis, for the other public buildings, and for Potidaea.

[4] This did not include the uncoined gold and silver in public and private offerings, the sacred vessels for the processions and games, the Median spoils, and similar resources to the amount of $\boxed{\text{five hundred talents.}}$

[5] He added the treasures of the other temples to this. These were not insignificant, and could be used. In fact, if necessary, they could even take the gold ornaments of Athena herself. The statue contained forty talents of pure gold, and it was all removable. This could be used for self-preservation, and every penny of it must be restored.

Gold and silver coins in the Roman Empire

- Bi-metallic system (theoretically, until the 20th century)
  - Small value coins cannot be in gold
  - Large value coins cannot be in silver,
- In Rome (and after)
  - 1 aureus (gold) = 25 denarius (silver) = 100 sesterces (bronze)= 250 asses
  - 1 aureus (40-45 to the Roman pound of 327 gr), about 8gr: $ 640
  - 1 denarius (silver) : weight? 4.5 grams
    - 1 denarius ˜ 1 drachma (Greece), one day work as galley rower
    - Under Augustus, annual pay of legionnaire 9 aureus =225 denarius (denarii)
  - 4 HS (sesterce) unskilled daily wage
  - Difficulty in comparing developed and underdeveloped economies.

19mm

36mm