



# WHAT IS MONEY?



**WHAT DO THESE OBJECTS HAVE IN COMMON?**



**MoE**



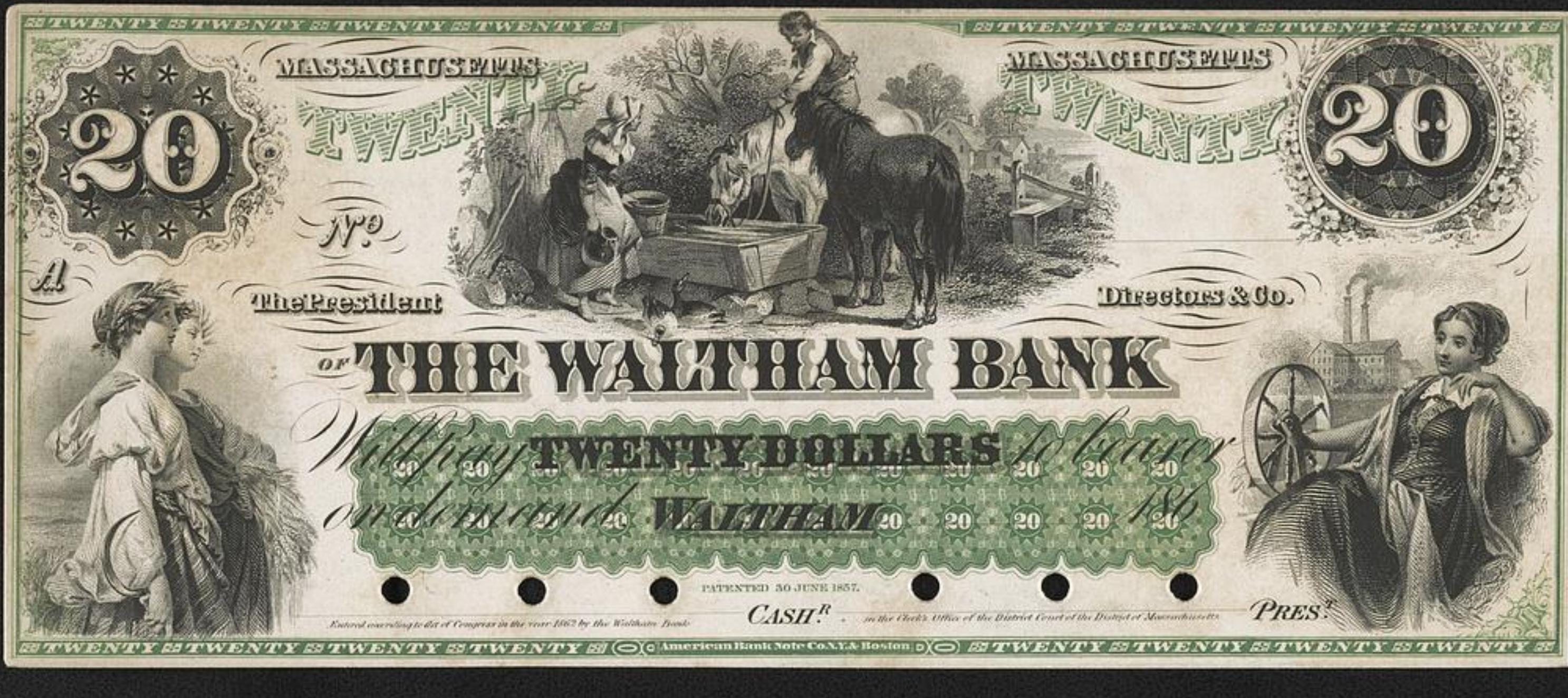
## COINS AS MEDIA OF EXCHANGE

# PAPER AS CURRENCY

CHINA IS WHERE MONEY ACQUIRED THREE MODERN FEATURES

1. PAPER (TANG DYNASTY, 600 CE)
2. STATE MONOPOLY (SONG DYNASTY, 1000 CE)
3. FIAT ISSUANCE (CHIN AND YUEN DYNASTIES, 1115-1368 CE)

BUT IT DID NOT LAST (OVER ISSUANCE)



WHAT IS UNUSUAL ABOUT THIS \$20 NOTE?

UoM

*days*

*seconds*

**Metres**

OUNCES

**inches**

\$

*MINUTES*

**radians**

£

**Kg**

**FEET**

**POUNDS**

**YEARS**

**Euros**

*Hours*

*degrees*

**WHAT DO THE ABOVE HAVE IN COMMON?**



Mesopotamian Cuneiform  
Tablet, 3500 BCE

## Ancient Accounting Methods



Mesopotamian Bulla  
6000 BCE



Congolese Tally Sticks, 18000 BCE

## Gross national income at current prices (million GBP)

2018	2123051
2019	2231667
2020	2058523
2021	2299051
2022	2540238

MODERN ACCOUNTING

WHAT IS THE BIG CHANGE?



**WHAT DO THESE IMAGES HAVE IN COMMON?**

**ALL ARE FORMS OF ACCUMULATING WEALTH**



# WHAT SHALL YOU STUDY IN THIS MODULE?

1. A FORMAL ANALYSIS OF THE ROLE OF MONEY IN AN ECONOMY
2. HOW THE UNIT OF ACCOUNT ROLE LEADS TO THE MACROECONOMIC CONCEPT OF THE “PRICE LEVEL” (WHICH IN TURN IS IMPORTANT FOR UNDERSTANDING INFLATION).
3. HOW AND WHY MONETARISTS AND KEYNES DIFFER IN THEIR ANALYSIS OF THE MACROECONOMIC EFFECTS OF MONETARY POLICY.
4. HOW MONEY’S ROLE AS A STORE OF VALUE LEADS TO THE POSSIBILITY OF RECESSIONS.

## **WHAT SHALL YOU STUDY IN THIS MODULE?**

5. BUT IN ITS OTHER TWO ROLES, IT LEADS TO A CAUSAL LINK BETWEEN MONEY SUPPLY AND INFLATION.
6. HOW THIS INTERPLAY BETWEEN THESE TWO ROLES LED A CONSENSUS ON THE CONDUCT OF MONETARY POLICY.
7. THE EFFECTS OF 2008/9 AND SUBSEQUENT “SHOCKS” ON THE ABOVE.



# THE NATURE AND ECONOMIC ECONOMIC ROLE OF MONEY MONEY

Exploring money's fundamental functions and its critical role in modern economies

# THREE CORE FUNCTIONS OF MONEY

## UNIT OF ACCOUNT

A measure of value for all goods, services, and assets in the economy

## MEDIUM OF EXCHANGE

A means of payment that facilitates transactions between parties

## STORE OF VALUE

An asset that preserves purchasing power over time

# UNIT OF ACCOUNT: MEASURING VALUE

A unit of account measures the value of every object in the economy. While it need not be physical, money serves this role in practice.

The value of any object is measured by the number of money units that exchange for one unit of that object—its **price** or **monetary value**.

More important than absolute prices are **relative prices**: the exchange ratio between two goods.



# THE COMPLEXITY OF EXCHANGE RATIOS

Without money, economies need numerous exchange ratios to describe relative values:

01

## 2 GOODS

Only 1 exchange ratio needed (Apples/Bananas)

02

## 3 GOODS

3 exchange ratios needed (Apples/Bananas, Apples/Cabbages,  
Bananas/Cabbages)

03

## 4 GOODS

6 exchange ratios needed

04

## N GOODS

Formula:  $(1/2)n(n-1)$  ratios needed

# THE POWER OF A COMMON YARDSTICK

**700**

**CPI CATEGORIES**

Approximate number of broad category items  
tracked

**245K**

**EXCHANGE RATIOS**

Number needed without money as unit of  
account

**700**

**MONEY PRICES**

Number needed with money—dramatically  
simpler!

With money as a common measure, we need only  $n$  prices instead of approximately  $n^2/2$  exchange ratios.

# CALCULATING RELATIVE PRICES

Example with 3 goods where 1 Apple = 2 Bananas and 3 Apples = 1 Cabbage:

Good	Money Price	Interpretation
Apples	0.5	Base price
Bananas	0.25	Half an apple's value
Cabbages	1.5	Three times an apple's value

Relative prices:  $PA/PB = 0.5/0.25 = 2$  Bananas per Apple

$PC/PA = 1.5/0.5 = 3$  Apples per Cabbage

# THE IMPERFECT RULER

Money as a unit of account allows for **economy of measurement and record-keeping**.

However, unlike a ruler measuring length consistently, money measures value only **imperfectly**.

Why? Because money's own value is not constant due to **inflation**.



CHAPTER 2

# MEDIUM OF EXCHANGE

How money transforms the complexity of barter into simple, efficient transactions



# BARTER VS. MONETARY TRADE

1

## BARTER

One-step direct exchange of one good for another

2

## MONETARY TRADE

Two-step process: sell for money, then buy with money

- At first glance, barter appears simpler. But appearances can be deceiving...



## THE DOUBLE COINCIDENCE OF WANTS

Barter requires a **double coincidence of wants** (William Stanley Jevons, 1835-1882).

Two types of frictions impede this coincidence:

### COSTLY BARTER

Time and resources spent searching for appropriate trade partners

### MISALIGNED PREFERENCES

Endowments and desires don't match between potential traders

# THE SEARCH COST PROBLEM

Finding a trade partner requires more than just matching goods—it requires matching *wants*.

An agent with Apples who wants Bananas must find someone who has Bananas **and** wants Apples.

Societies evolved specialized shops to reduce search costs, but without money, even shops face challenges.



# TRADING POSTS WITHOUT MONEY

Without a medium of exchange, we'd need "trading posts" for direct barter between each pair of goods:

<b>2 COMMODITIES</b> 1 trading post	<b>3 COMMODITIES</b> 3 trading posts
<b>4 COMMODITIES</b> 6 trading posts	<b>N COMMODITIES</b> $(1/2)n(n-1)$ posts

With money, only **one shop per commodity** is needed—the buyer always pays with money.

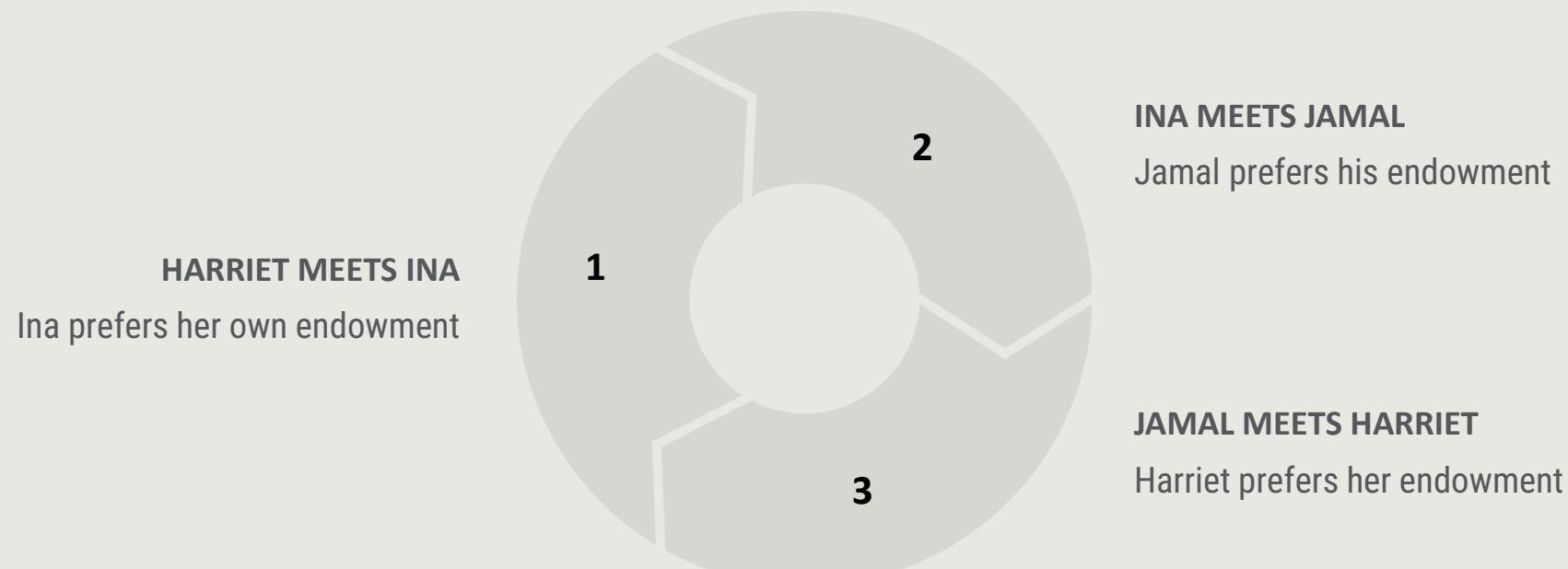
# THE FAMOUS THREE-TRADER PROBLEM

Consider three traders with misaligned preferences:

Trader	Has	Wants Most	Wants Least
Harriet	3 Apples	6 Bananas	1 Cabbage
Ina	6 Bananas	1 Cabbage	3 Apples
Jamal	1 Cabbage	3 Apples	6 Bananas

# THE BARTER DEADLOCK

Each trader's endowment equals every other's in value. A three-way swap would make everyone better off.



**Result:** No bilateral trade is possible despite mutual gains from exchange!

# MONEY BREAKS THE DEADLOCK

Now suppose Harriet also has 1 unit of Money (1M). The following bilateral trades become possible:

TRADE 1

Harriet gives 1M to Ina for 6 Bananas

1

TRADE 3

Jamal gives 1M to Harriet for 3 Apples

3

2

TRADE 2

Ina gives 1M to Jamal for 1 Cabbage

Each trade maintains quid pro quo:  $1M = 1C = 3A = 6B$ . Everyone gets their most preferred bundle!

CHAPTER 3

# STORE OF VALUE

When money serves as a medium of exchange, it must also function as a store of value during the gap between sales and purchases.



# MONEY AMONG OTHER ASSETS

A medium of exchange is always a store of value, but the converse isn't true.



SAVINGS DEPOSITS



BONDS



STOCKS



PROPERTY

All are stores of value, but only money serves as the universal medium of exchange.

# THE OPPORTUNITY COST OF HOLDING MONEY

## MONEY OFFERS:

- No financial reward while held
- Maximum liquidity
- Convenience in transactions

## OTHER ASSETS OFFER:

- Interest or dividends
- Capital appreciation
- Other pecuniary rewards

By holding money, people sacrifice the benefits other assets could provide. This is the **opportunity cost of holding money**.



**WHAT IS LIQUIDITY?**

**THE EASE WITH WHICH AN ASSET CAN BE EXCHANGED  
EXCHANGED**

A medium of exchange is the most liquid of all stores of value. This liquidity is what economic agents get in return for forsaking interest.

# FOUR CRITERIA FOR LIQUIDITY

According to Carl Menger (1840-1921), liquidity depends on:

1

## MARKETABILITY

Ease of sale; high demand in the market

2

## PREDICTABILITY

Stable and predictable exchange value over time

3

## REVERSIBILITY

No gap between purchase value and sale value

4

## DIVISIBILITY

Can be exchanged in arbitrarily small units



# THE CIRCULARITY OF MONEY

**MONEY IS LIQUID**  
Because it's universally accepted



**MONEY IS UNIVERSALLY ACCEPTED**  
Because it's the medium of exchange

**MONEY IS THE MEDIUM OF EXCHANGE**  
Because it's liquid

- Could any arbitrary object serve as money? No—certain objective properties are necessary.

# OBJECTIVE PROPERTIES OF MONEY



## TRANSPORTABILITY

Easy to move from place to place



## DURABILITY

Withstands wear and tear over time



## INHERENT DIVISIBILITY

Can be broken into smaller units



## UNIVERSAL APPEAL

Acceptable to all parties in transactions

# MODERN MONEY: INTRINSICALLY WORTHLESS

In modern economies, money is created by central banks as an artificial object with no intrinsic value.

Yet it meets all objective criteria to serve as a medium of exchange, fulfilling money's three core functions perfectly.



# MEASURES OF MONEY SUPPLY

1

M0

Coins + paper currency (most liquid)

2

M1

M0 + demand deposits (conventional definition)

3

M2

M1 + savings deposits

4

HIGHER AGGREGATES

Less liquid, more reward-bearing

As we move to higher aggregates, liquidity shrinks and pecuniary rewards grow.

# THE LIQUIDITY-INTEREST TRADEOFF

People must decide how to store value between interest-bearing assets and money. This decision involves **trading off liquidity for interest** (a shorthand for any pecuniary reward).

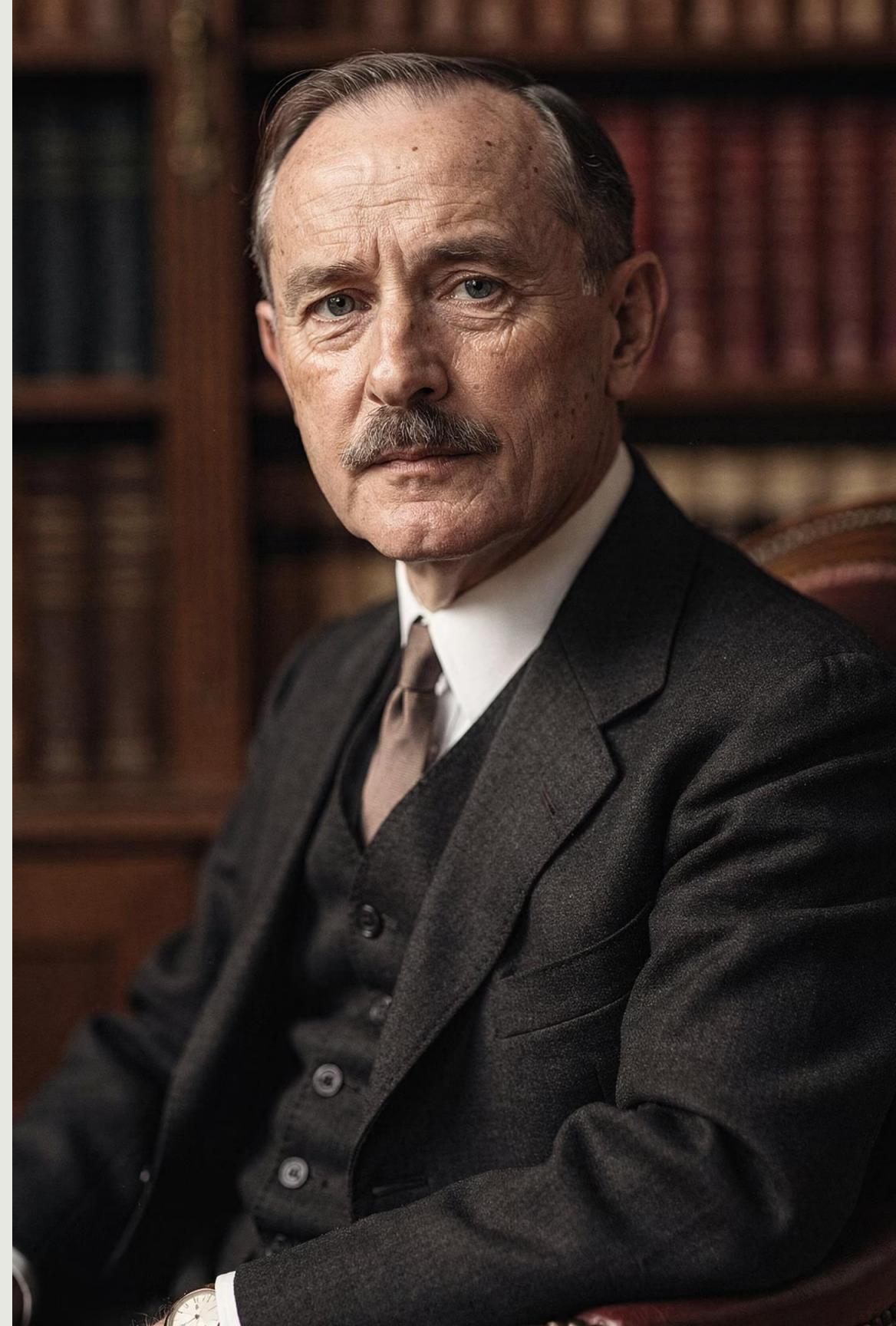


This tradeoff is central to understanding money's macroeconomic role.

CHAPTER 4

# KEYNES VS. THE CLASSICS

Two fundamentally different views on money's macroeconomic importance



# THE KEYNESIAN VIEW



## MONEY AS MORE THAN EXCHANGE

Money's role extends beyond being a medium of exchange or unit of account



## SPILOVER EFFECTS

Money interacts with other markets through liquidity demand spillovers



## REAL ECONOMIC IMPACT

Greater liquidity desire can lower demand for assets and goods

# THE CLASSICAL VIEW: MONEY AS A VEIL A VEIL

The Classical school focused on the medium of exchange role and downplayed spillover effects.

Money is a "veil" which appears important on the surface but has no effect on real economic activity.

In the three-trader example, the exact quantity of money was arbitrary—whether 1 unit or 5 units, the real trades remained the same.



# THE QUANTITY OF MONEY MATTERS

In macroeconomic debates, the **quantity of money**—the level of money supply—plays a central role.



## CLASSICAL VIEW

1 Money quantity irrelevant to real outcomes



## KEYNESIAN VIEW

2 Money quantity affects real economic activity through liquidity effects

The rest of this module examines debates emerging from these divergent views on money's macroeconomic importance.



# KEY TAKEAWAYS

## THREE FUNCTIONS

Money serves as unit of account, medium of exchange, and store of value

## LIQUIDITY PREMIUM

People hold money despite opportunity cost because of its superior liquidity

## EFFICIENCY GAINS

Money dramatically reduces transaction costs compared to barter systems

## MACROECONOMIC DEBATES

Keynes and Classics disagree on whether money affects real economic activity