ECONOMICS II

MACROECONOMICS

BMEGT30A101, BMEGT30A103

Monday: 8.15–9.45 (QA240)

THE MONETARY SYSTEM

– MONEY, INFLATION –

CH 4-5

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1. WHAT IS MONEY?
2. MONEY SUPPLY
3. MONEY, INFLATION, AND INTEREST RATE

1. WHAT IS MONEY?

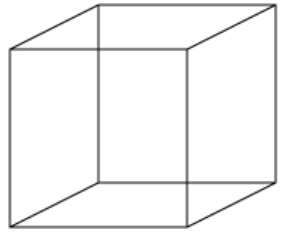
- **The best place to start in understanding… from simple to more complex models**
- **It will take several chapters to develop a more complex explanation**
- **We introduce the concept of money in a highly simplified manner**

Money is a social convention

- Humans are social beings – decentralized decision makers
- Centralization: individuals reduce their freedom
- Institutionalized repeated interactions followed by rules ➔ **GAME** (PAPI) „rules of the game”:
  - **P**layers
  - **A**ctions (strategies)
  - **P**ayoffs
  - **I**nformation (rules, feedback mechanisms, how know what)

- Trust or/and by Force ➔ **credibility** (e.g. rules of the road; right-hand rule)

MONEY



The stock of assets that can be readily used to make transactions. (p82)

Functions of Money:

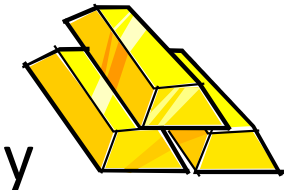
1. A **unit of accounts**: the terms in which prices are quoted, debts are recorded.
2. A **medium of exchange**: „legal tender for all debts, public or private", Money makes direct and indirect transactions possible.
3. A **store of value**: transfers purchasing power from the present to the future

Asset's **LIQUIDITY**: the ease with which an asset can be converted into the medium of exchange and used to buy other things ➔ Thus, money is the most liquid asset!

Types of money

Commodity money (gold, silver, cigarettes)

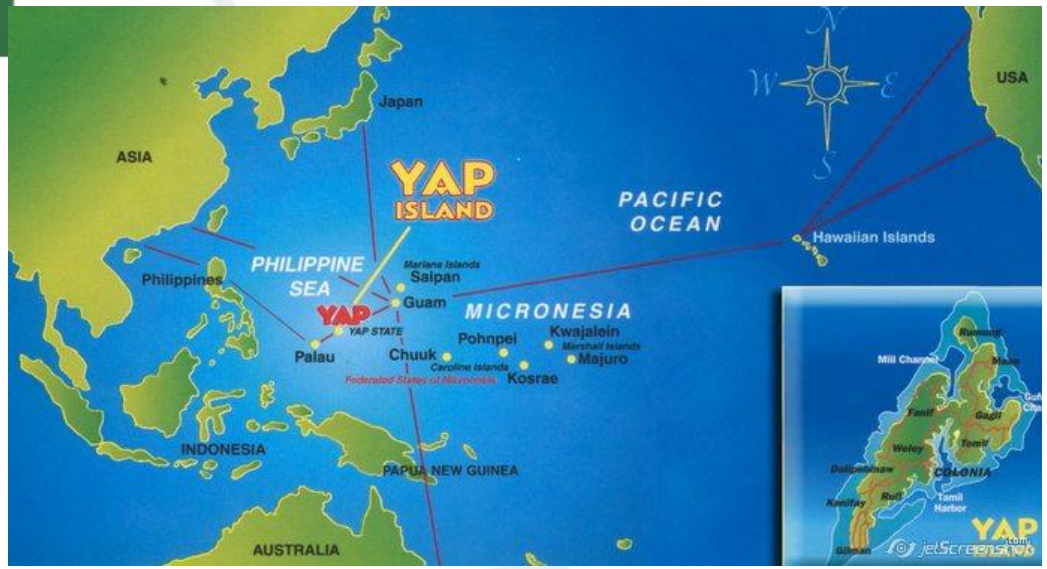
- *gold standard*: paper money is redeemable for gold)

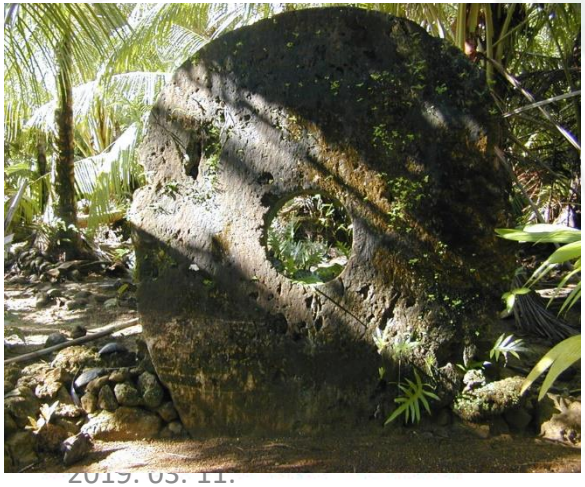


Fiat money – it has no intrinsic value, it is established by government decree of fiat.

Cryptocurrency – (such as Bitcoin) neither commodity nor fiat money

Micronesia Yap Islands





- Yap is known for its stone money, known as Rai, or Fei: 3,6 m in diameter, 0,5m wide, 4 tons heavy

2. MONEY SUPPLY

Balance Sheet

– STOCK –

Everything which has a value for the agent

ASSETS	LIABILITIES
• **REAL ASSET** – Its value is proportionate to its production cost – It depreciates (amortization) – It never belongs to other agent's Liabilities • **FINANCIAL ASSET** – Its value is not proportionate to its production cost – It does not depreciate (no amortization) – It always belongs to other agent's Liabilities	• Debt owing to others • Debt owing to yourself (EQUTIY)

The debts of the agent

MONETARY ASSET – can be easily quantified as a fixed dollar amount

Balance Sheet
– Central Bank –

ASSETS	LIABILITIES
• GOLD • LOANS to – Merchant Banks* – Government – Foreigners • FOREIGN CURRENCY RECEIVABLES • …	• Monetary **B**ase – Currency (**C**) – Reserves (**R**) • EQUITY

* Lender of last resort

Fractional-reserve banking
Balance Sheet
– Merchant Bank –

ASSETS	LIABILITIES
• Reserves (R) • LOANS to – Households – Firms – Government – Foreigners • FOREIGN CURRENCY RECEIVABLES • …	• Demand Deposits (**D**) • EQUTIY

Types of money

–Monetary aggregates by liquidity–

M0 = High-powered money = Monetary **B**ase = Base money

= Currency + Reserves ➔ **B** = C + R

M1 = M^S (nominal money supply) = Currency + Demand Deposits

M^S = C + D

M2 = M1 + saving deposits + small time deposits

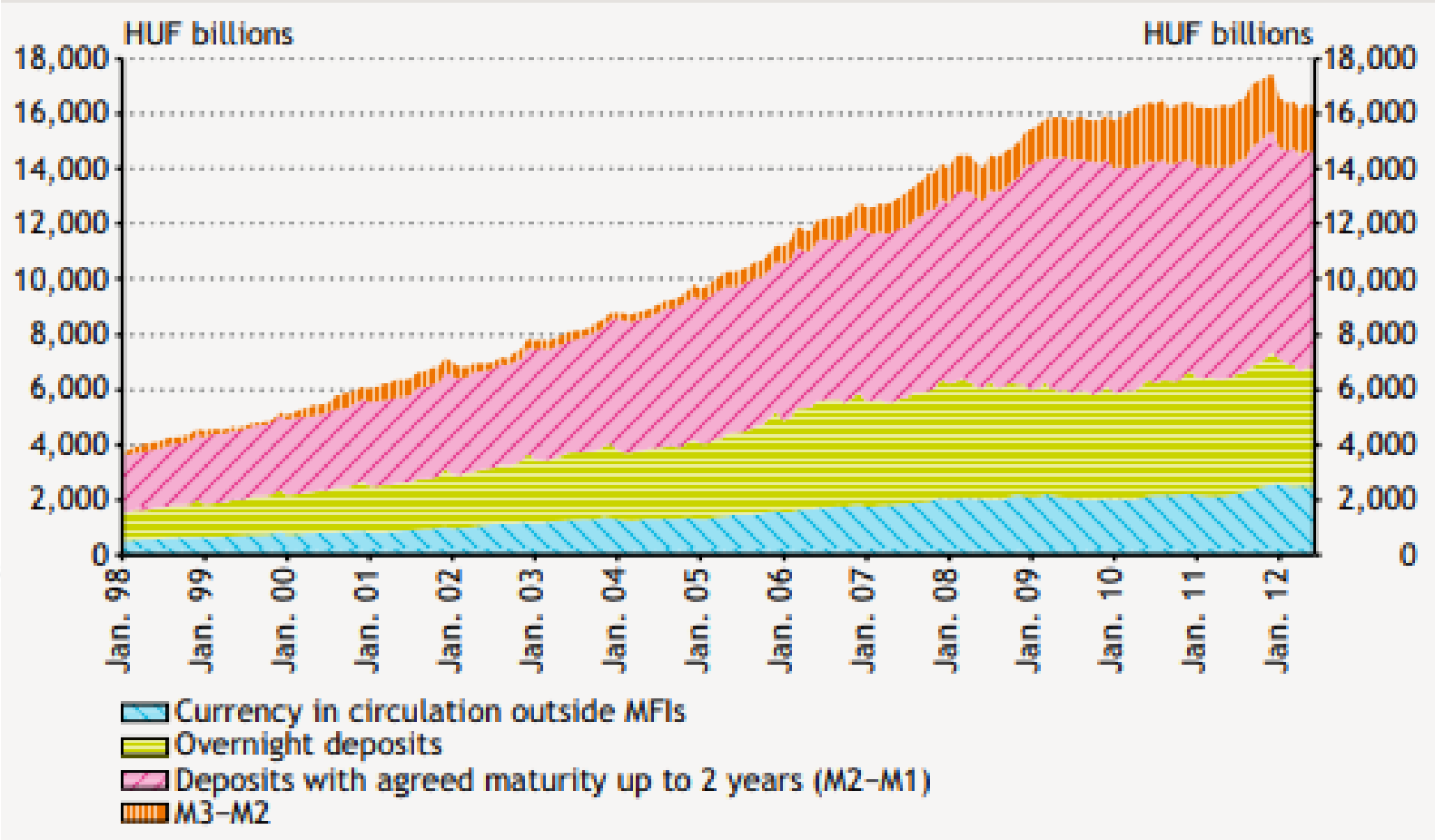
M3 = …

M4 = …

The Measures of Money

Symbol	Assets Included	Amount in April 2014 (billions of dollars)
C	Currency	$ 1,200
*M*1	Currency plus demand deposits, traveler's checks, and other checkable deposits	2,778
*M*2	*M*1 plus retail money market mutual fund balances, saving deposits (including money market deposit accounts), and small time deposits	11,215

Stock of M3 and its components



https://www.mnb.hu/letoltes/monetary-statistics-manual-2012-1.pdf

MONEY

- Money is a Bank Liability!
- **MONEY SUPPLY** – **Money multiplier**

$$\frac{M^S}{B} = \frac{C + D}{C + R} = \frac{cr + 1}{cr + rr}$$

cr= C/D = currency-deposit ratio

rr =R/D = Reserve-deposit ratio – reserve requirements

- How to increase M^S ?
  - Open-market operations (buying government bonds) → Quantitative Easing (QE)
  - Discount rate ↓
  - rr ↓
  - cr ↓

How can we pay by Demand Deposits?

- Deposits in the same merchant bank
- Deposits in different merchant bank

- Zsombor needs a LOAN for buying a new flat
  - (net interest spread)

- How much loan is the interest of a bank?
- Should it be controlled?

- Financial markets are transferring resources from t
  who wish to save to those who wish to borrow .

Money Supply vs. Monetary Policy

- The *money supply* is the quantity of money available in an economy.
- The control over the money supply is called *monetary policy.*
- In the United States, monetary policy is conducted in a partially independent institution called the central bank. The central bank in the U.S. is called the *Federal Reserve*, or the *Fed.*

The Fed cannot control the money supply perfectly (p98)

3. MONEY, INFLATION, AND INTEREST RATE

The Quantity Theory of Money (QTM)

–Money Demand, Liquidity–

$$M\,V = T \approx P\,Y$$

where

V = velocity

T = value of all transactions

M = money supply

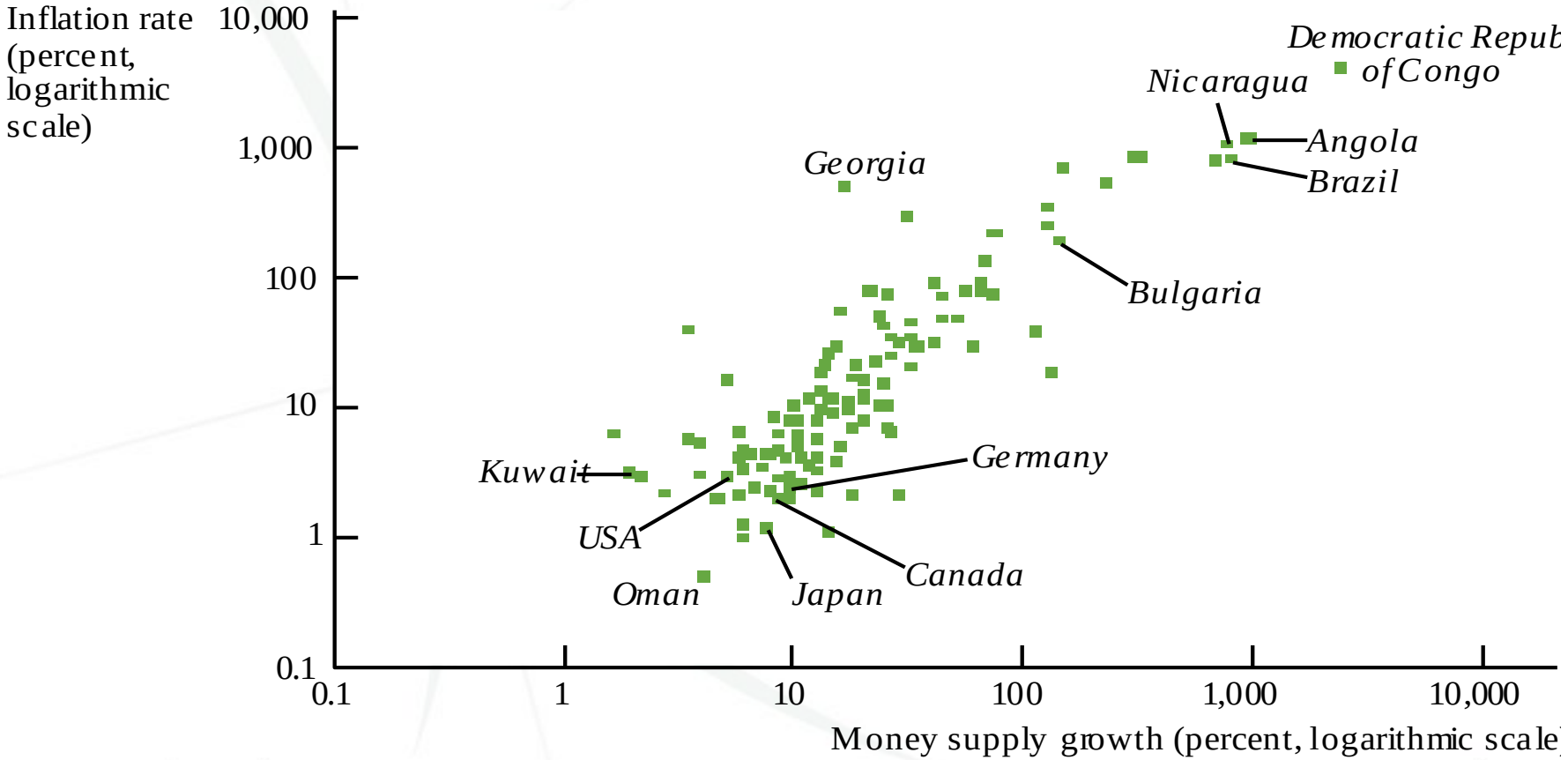
PY = nominal income

Real Money Balances

$$M^D(Y) = (M/P)^D = (1/k)\,Y$$

INFLATION IS A MONETARY PHENOMENON!

International data on inflation and money growth



Seigniorage

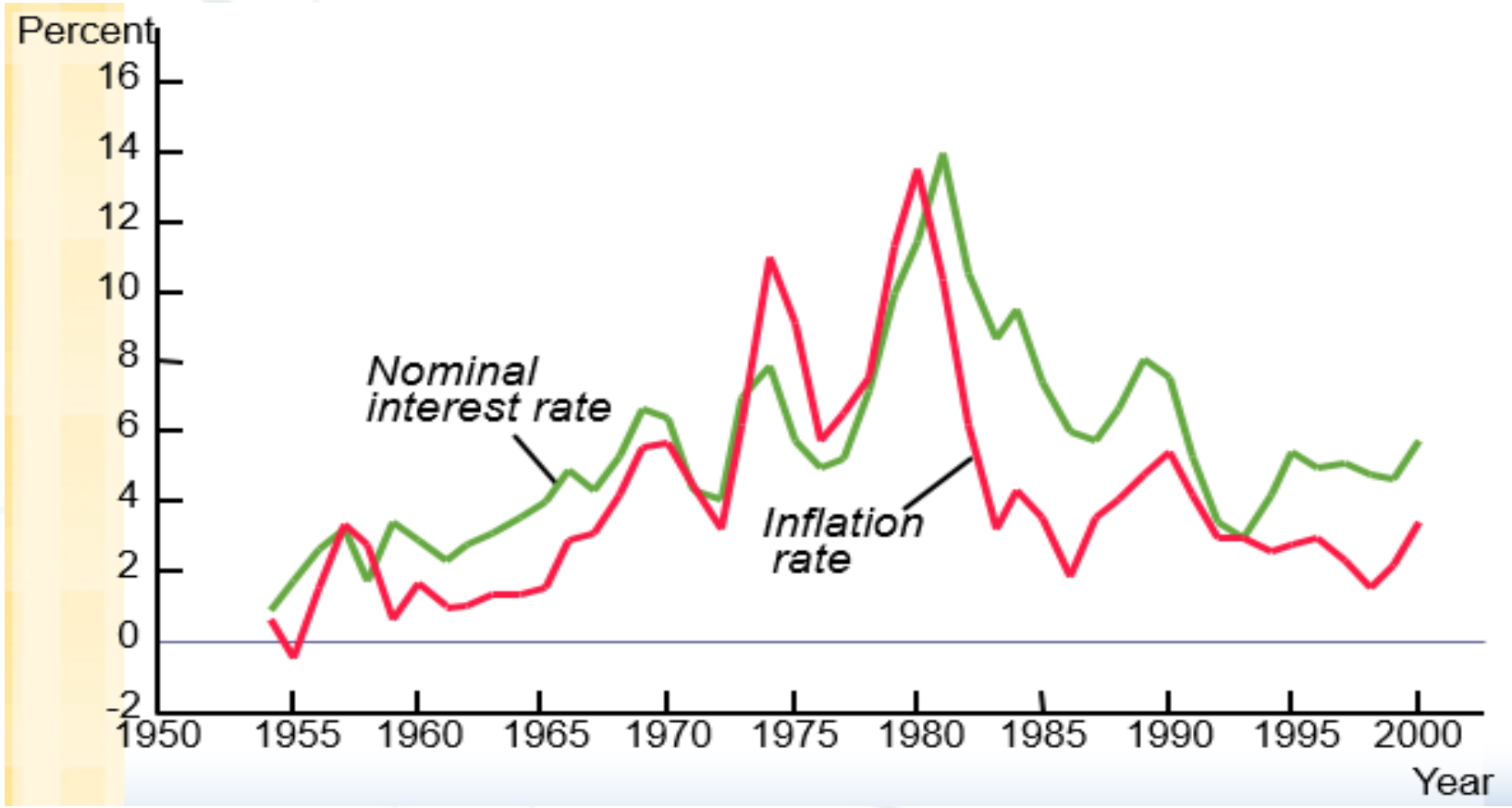
- To spend more without raising taxes or selling bonds, the government can print money.
- The “revenue” raised from printing money is called **seigniorage**
  (pronounced SEEN-your-ige)
- The „**inflation tax**”:
  Printing money to raise revenue causes inflation.
  Inflation is like a tax on people who hold money.

'Kékfrank' in **Sopron (2010)**

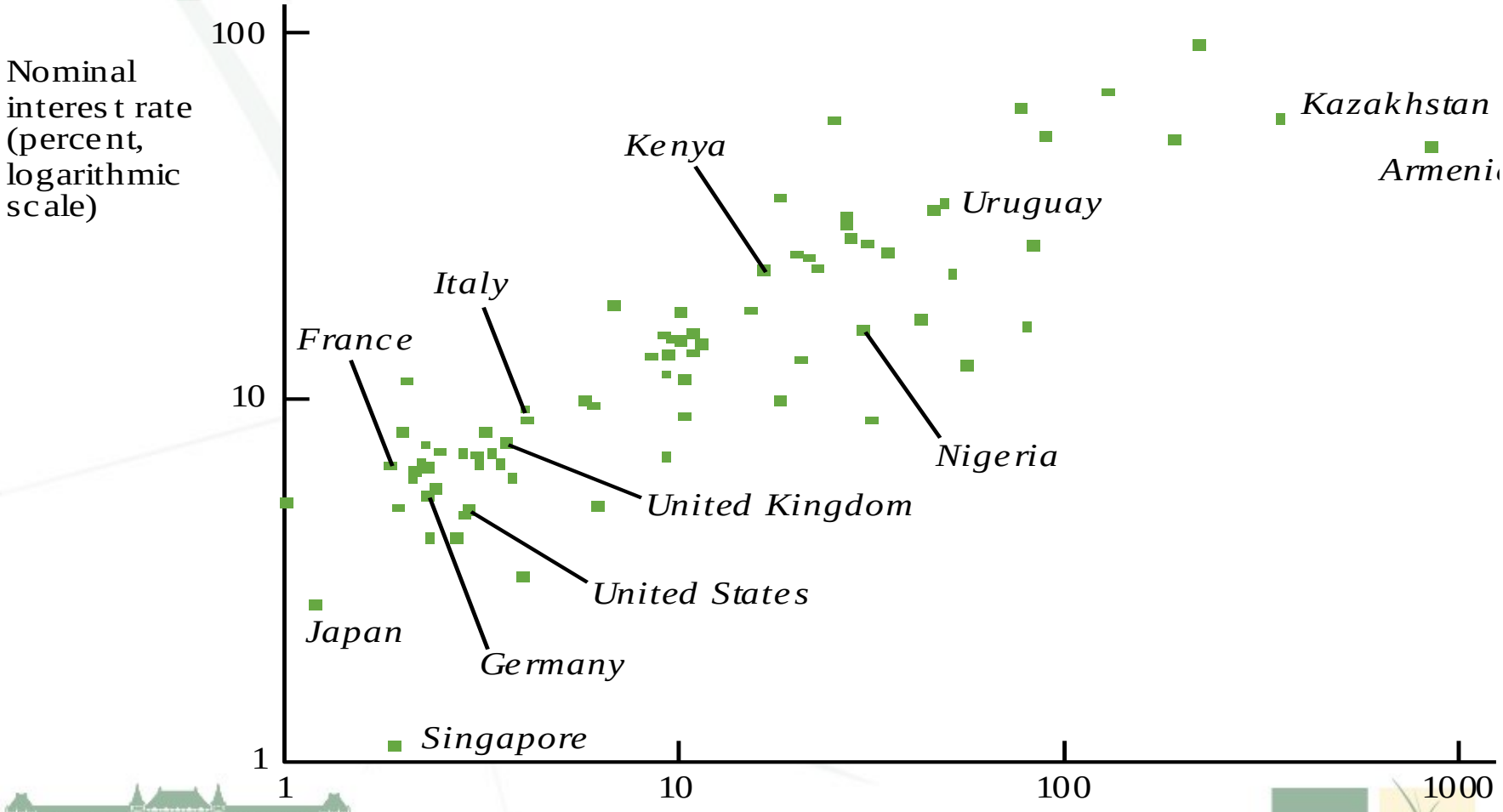
The Fisher Effect

- The Fisher equation: $i = r + \pi$
- Chap 3: $S = I$ determines r .
- Hence, an increase in π causes an equal increase in i.
- This one-for-one relationship is called the **Fisher effect**.

U.S. inflation and nominal interest rates, 1952-1998



Inflation and nominal interest rates across countries



The money demand function

$$(M/P)^d = L(i, Y)$$

$$= L(r + \pi^e, Y)$$

- Opportunity cost of holding money
  - Asset return: r
  - Holding money return: $-\pi^e$

The Classical Dichotomy („CD”)

- Real variables measured in physical units (CH3)
- Nominal variables expressed in terms of money (CH4-5)

- **„CD”**: The theoretical separation of real and nominal variables
- **MONEY NEUTRALITY**: the irrelevance of money in determination of real variables