

# LECTURE 7

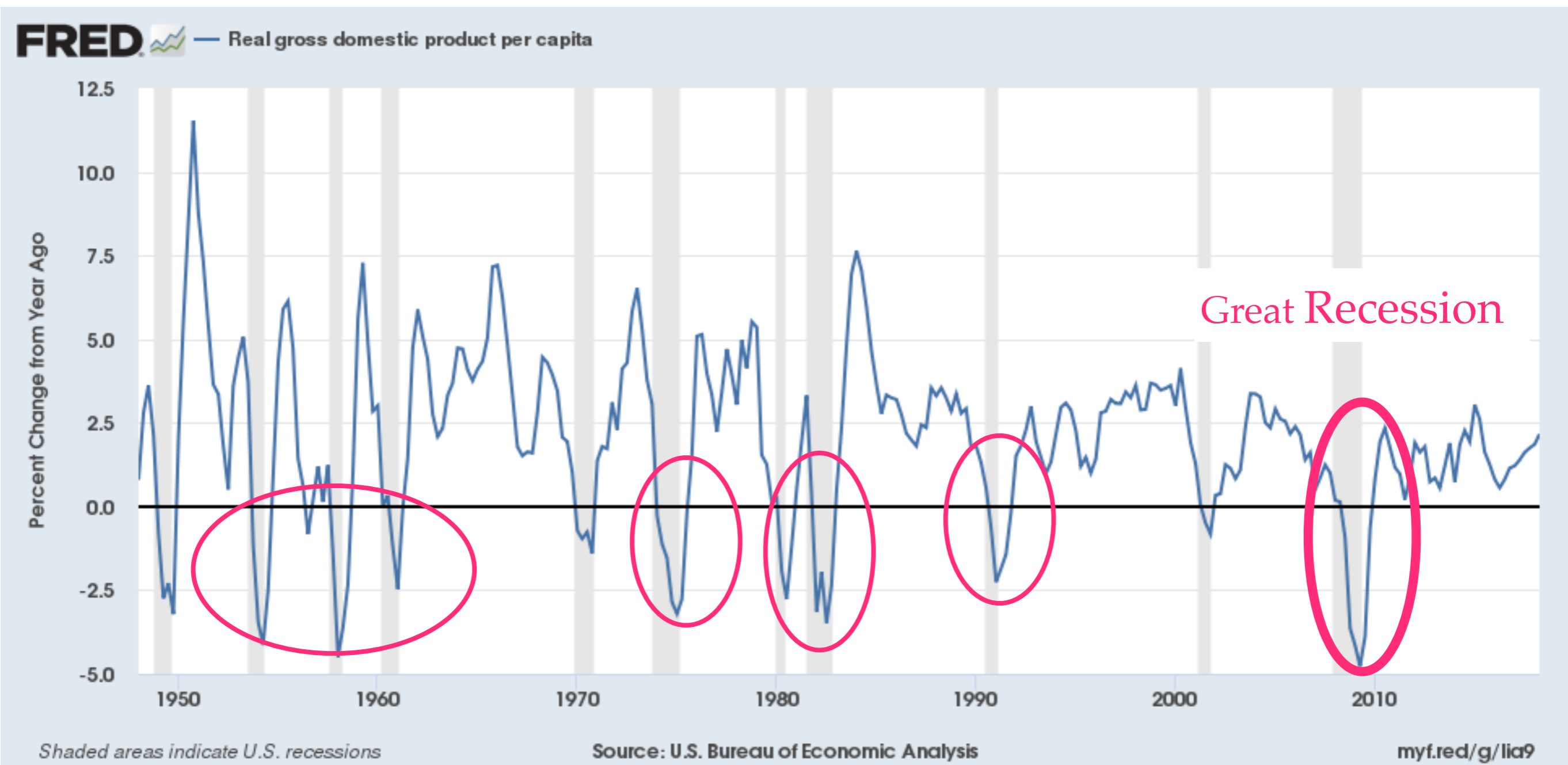
## IS-LM | EXPENDITURE FUNCTION

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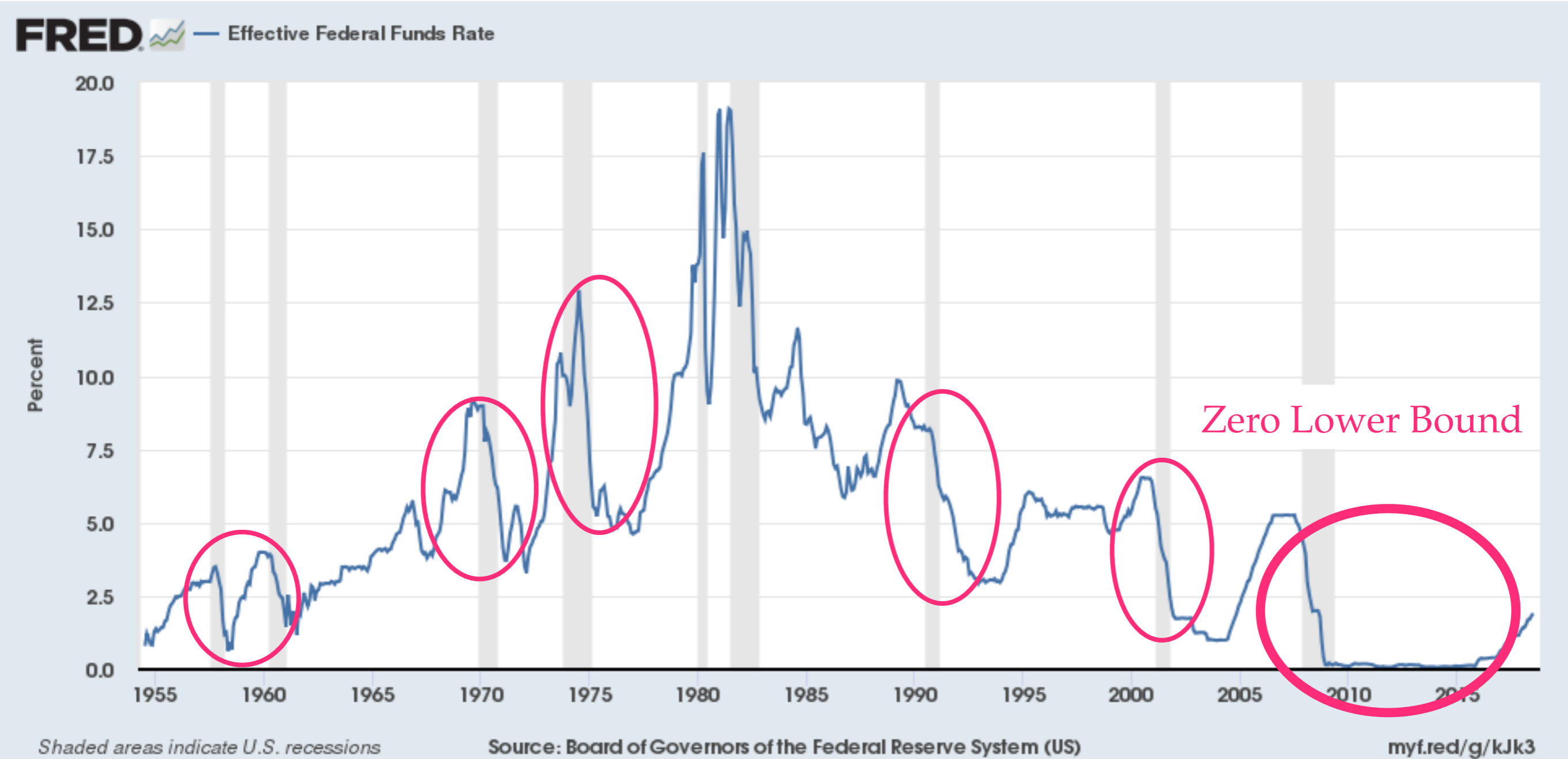
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# MOTIVATION FOR IS-LM MODEL: GROWTH RATE OF GDP / CAPITA



# MOTIVATION FOR IS-LM MODEL: US MONETARY POLICY



# EXPENDITURE ON GOODS (Z)

- expenditure on consumption goods + newly produced capital goods by
  - households
  - firms
  - government
- assumption: closed economy so exports = imports = 0
- expenditure on goods is  $Z = C + G + I$

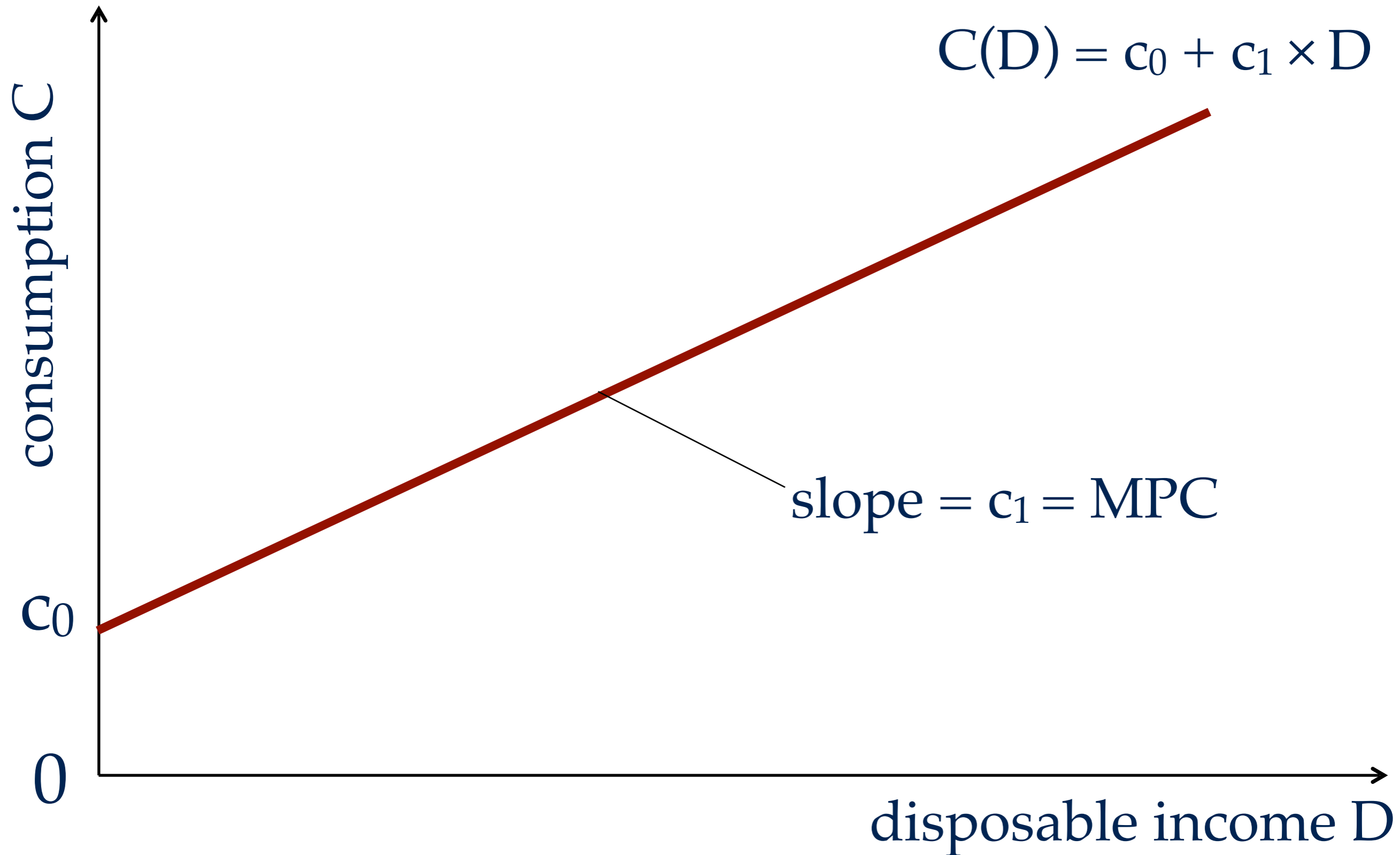
# CONSUMPTION BY HOUSEHOLDS (C)

- consumption is an increasing function of disposable income (D)
  - $C = C(D)$  with  $C'(D) > 0$
- shape of consumption function:  $C(D) = c_0 + c_1 \times D$ 
  - $c_0 > 0$ : what people consume if  $D = 0$ 
    - to consume without disposable income, people use their savings
  - $0 < c_1 < 1$ : the **marginal propensity to consume (MPC)**
    - when D increases by \$1, consumption increases by MPC
    - $0 < MPC$ : people spend part of any increase in D
    - $MPC < 1$ : people save part of any increase in D

# DISPOSABLE INCOME (D)

- disposable income is the income remaining once households have paid their taxes & received transfers:  $D = Y - T$
- $Y$  = total income
- $T$  = taxes – government transfers
  - taxes: income tax, property tax, sales tax, payroll tax
  - transfers: Social Security, Medicare, Medicaid, UI
  - $T > 0$ : household pays more taxes than it receives benefits
  - $T < 0$  : household receives more benefits than it pays taxes
- $T$  is a parameter of the model (taken as given)

# CONSUMPTION FUNCTION



# OTHER COMPONENTS OF Z

- recall:  $Z = C + I + G$ 
  - C is given by the consumption function, describing households' behavior
- government expenditure ( $G > 0$ ): parameter of the model (taken as given)
- investment ( $I > 0$ ): parameter of the model (for now)
  - in the complete IS-LM model, investment will be a function of the interest rate and aggregate income



# TOTAL EXPENDITURE ON GOODS

- $Z = C + I + G + NX$
- $Z = C(Y-T) + I + G$  [NX=0 & C=C(D) & D=Y-T]
- $Z = c_0 + c_1 \times (Y - T) + I + G$  [using C(D)]
- $Z = [c_0 + I + G - c_1 \times T] + c_1 \times Y$  [algebra]

# EXPENDITURE FUNCTION

- $Z(Y) = [c_0 + I + G - c_1 \times T] + c_1 \times Y$
- $[c_0 + I + G - c_1 \times T] > 0$ : autonomous expenditure
  - with balanced government budget,  $G = T$ , and then  $G - c_1 \times T = (1 - c_1) \times G > 0$ ; furthermore  $c_0 > 0$  and  $I > 0$ ; so autonomous spending  $> 0$
  - autonomous expenditure is the amount of expenditure when income is 0
- $c_1 \times Y$ : consumers' expenditure out of income