Introduction to Financial Markets

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Unit II, section RE 4
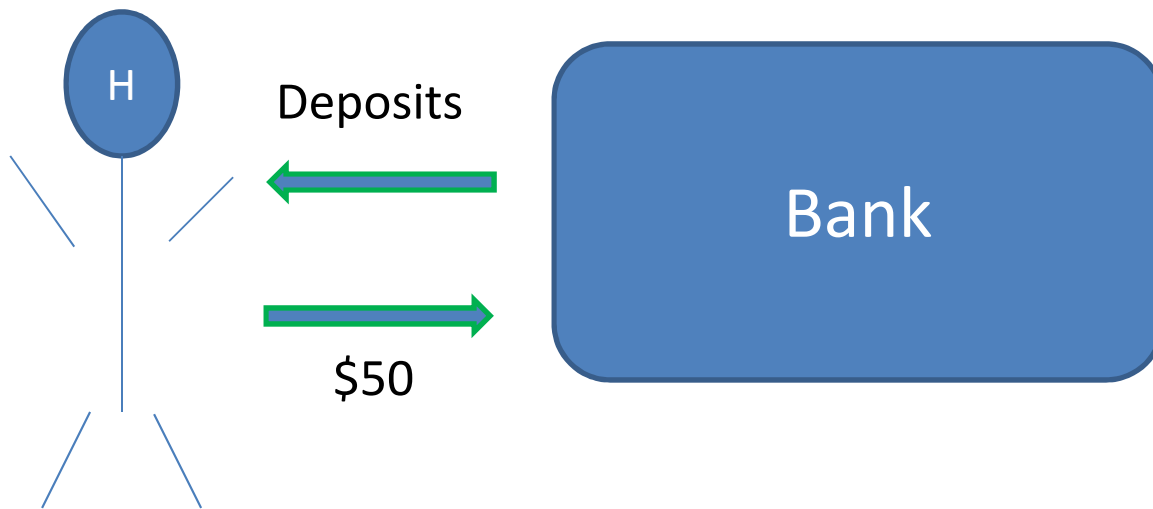
I.   Financial Intermediation

II. Direct Finance

III. Present Value and Bonds

IV. Detroit Bankruptcy

I. Financial Intermediation

Suppose you have an extra $50 that you do not plan to spend, what would you do with it??

Banks

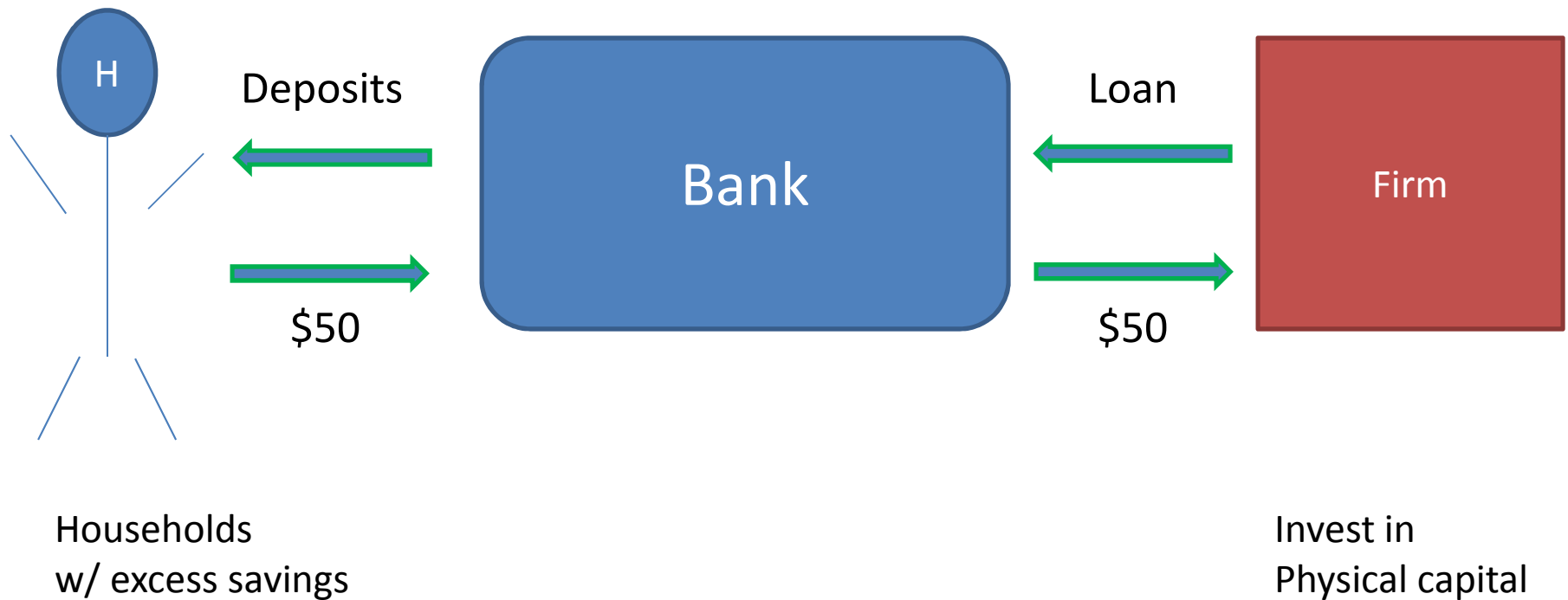Suppose you have an extra $50 that you do not plan to spend, what would you do with it??

Households
w/ excess savings

Banks

Jane wants to start a bakery shop.
How would she raise the funds to finance her K?

H

Deposits

Bank

Loan

Firm

$50

$50

Households
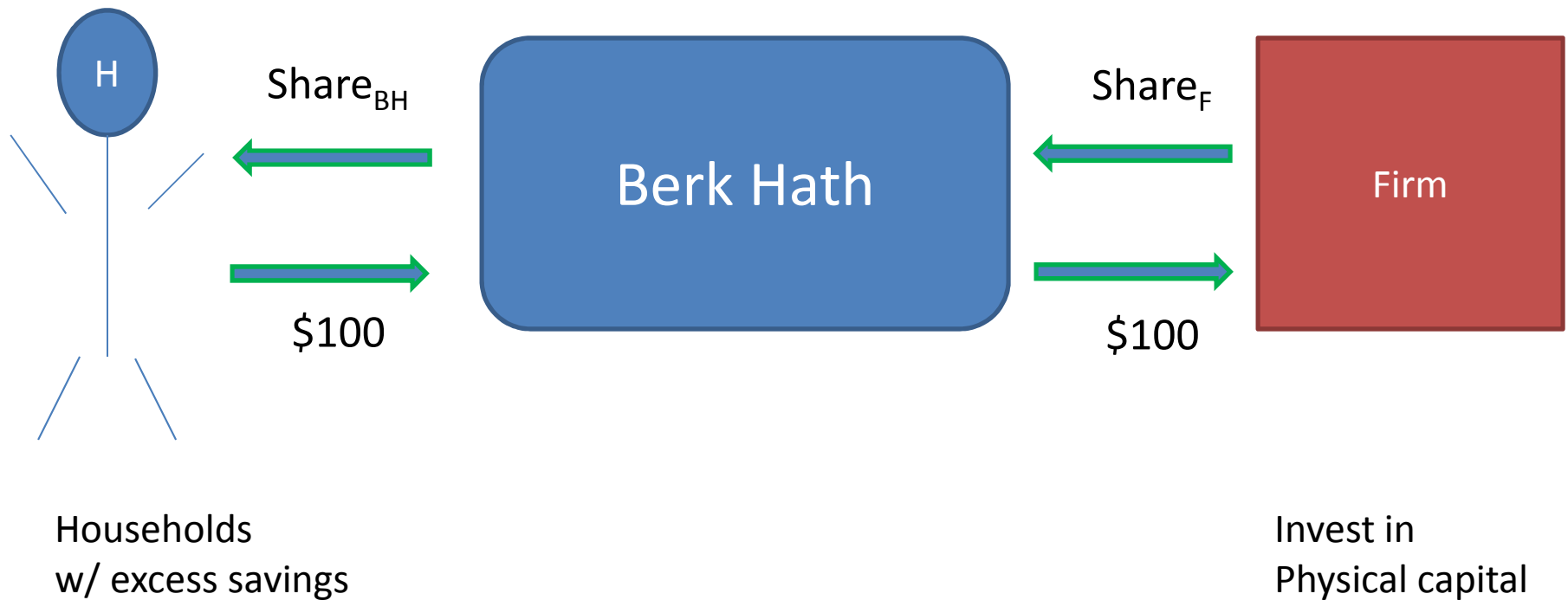w/ excess savings

Invest in
Physical capital

Mutual Funds

- Mutual funds
  - Households can purchase shares with small amounts of money

  - Aggregates money to buy many stocks
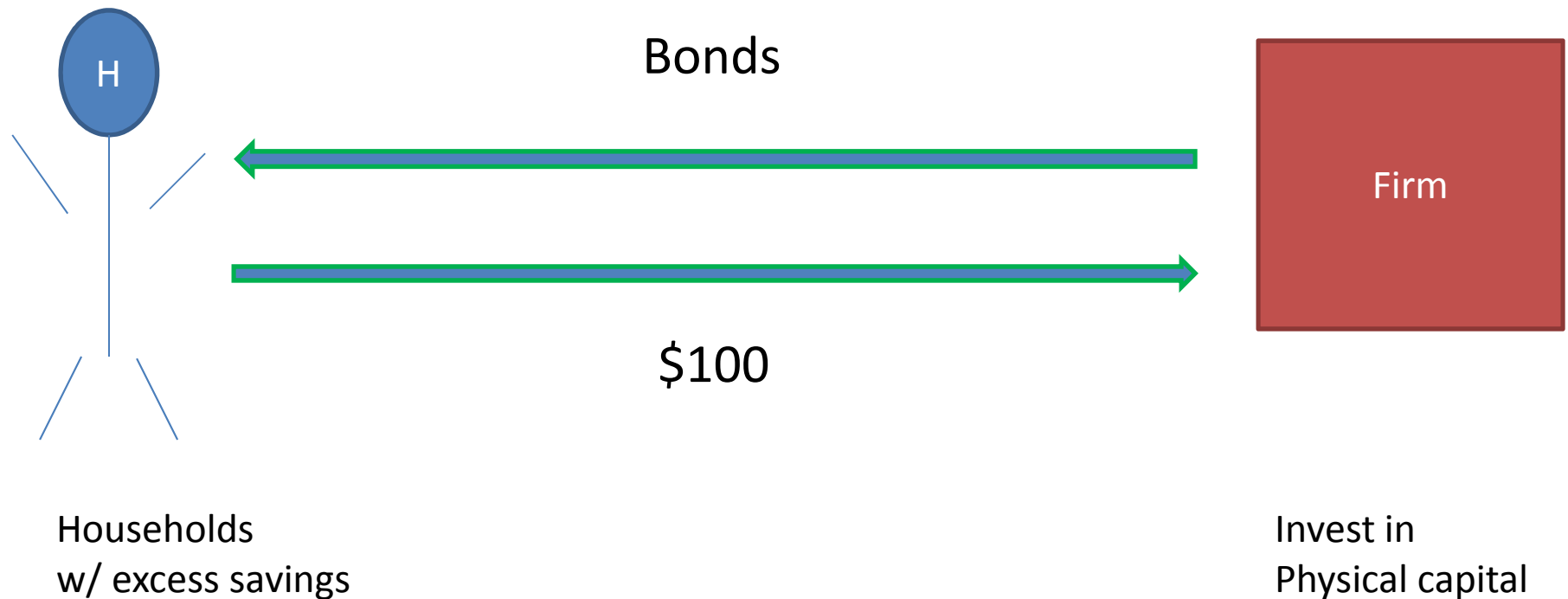   => Diversified portfolio

  - "Expert" stock picker

Mutual Fund

Mutual Fund is a Financial Intermediary

H

Share$_{BH}$

Berk Hath

Share$_F$

Firm

$100

$100

Households
w/ excess savings

Invest in
Physical capital

II. Direct Finance

Firms can also borrow directly with households through **Bond Markets**

Bonds

H

Firm

$100

Households
w/ excess savings

Invest in
Physical capital

II. Direct Finance

Firms can also borrow directly with households through **Stock Markets**

Stocks

$100

H

Firm

Households
w/ excess savings

Invest in
Physical capital
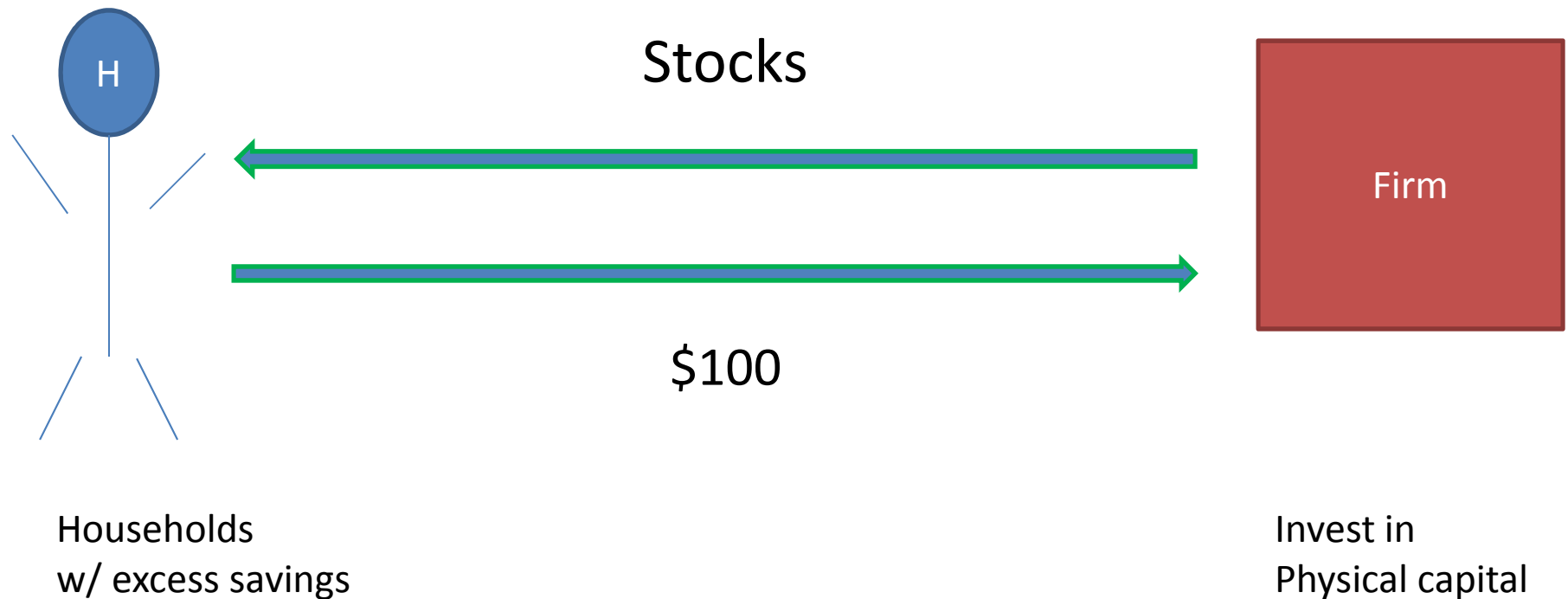
Financial Markets

- Connect households and firms in the loanable funds market

- r, real interest rate:

  – Return to saving

  – Cost of borrowing

- S = Savings

- I = Investment

Bonds and Stocks

Bonds

- Method to raise $
- Loan
- Fixed coupon and face payments

- Debt finance

Stocks

- Method to raise $
- Ownership share

- Equity finance

III. Present Value and Bonds

Time Value of Money

Assume that r = real interest rate =7%

What would you choose, $100 today, or $105 next year?

$$FV = 100 \, (1 + r) = 100(1.07) = 107$$

=> $100 today

Present Value

If someone offers you $100 one year from now, how much would you be WTP?

PV = ? $100

```
|-----------|-----------|---------------->
0           1           2
```

Convert future cash flows to their value today

Present Value Formula

$$PV(1 + r) = 100$$

$$PV = \frac{100}{(1 + r)} = \frac{100}{(1 + 0.07)} = \frac{100}{(1.07)} = 93.46$$

- $93.46 today, is equivalent to $100 one year from now

Present Value

If someone offers you $100 two years from now, how much would you be WTP?

PV = ? $100

|----------------|----------------|---------------->

0   1   2

Convert future cash flows to their value today

Present Value Formula

$$PV(1 + r)^2 = 100$$

$$PV = \frac{100}{(1 + r)^2} = \frac{100}{(1.07)^2} = 87.34$$

- $87.34 today, is equivalent to $100 two years from now
- => CFs farther in the future are discounted more, or worth less to you today.

Present Value: Multiple Cash Flows

PV = ? $100 $150

0   1   2

$$PV = \frac{100}{(1+r)} + \frac{150}{(1+r)^2} = \frac{100}{(1.07)} + \frac{150}{(1.07)^2}$$

$$= 93.46 + 131.02 = 224.48$$

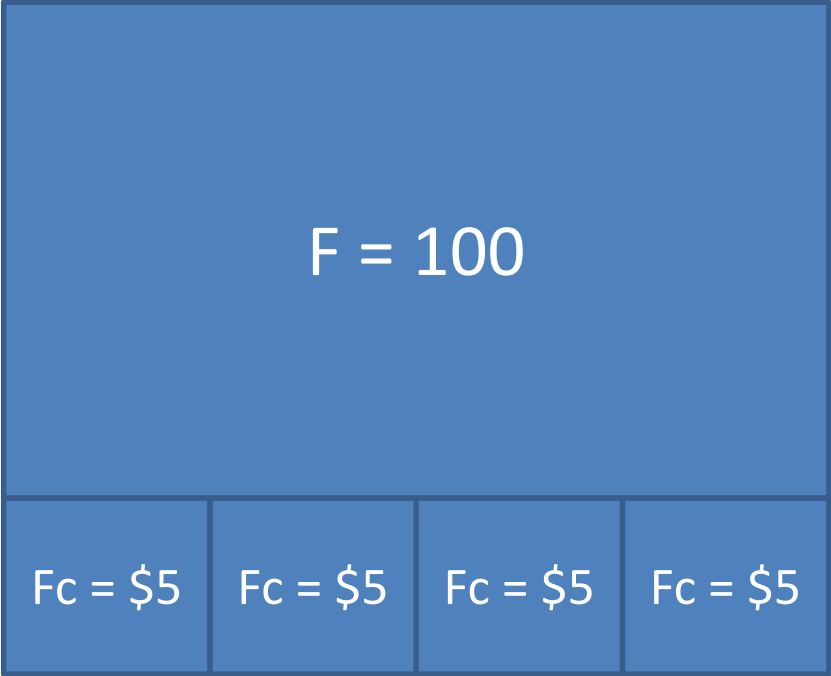Convert future cash flows to their value today
PV and r are inversely related

Rule of 70

$$N = \frac{70}{X}$$

X = annual % growth rate

N = Number of years to double

Bond Basics

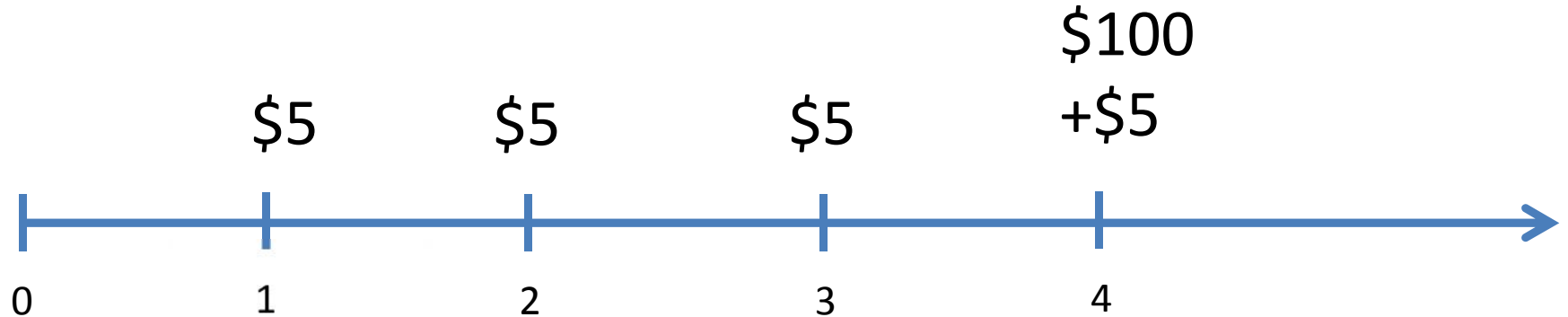| F = 100			
Fc = $5	Fc = $5	Fc = $5	Fc = $5

F= Face value = 100

c = Coupon rate = 5%

Fc = Coupon payment = $5

N = Maturity = 4 yrs

Present Value: Bond

$100
+$5

$5 $5 $5

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0        1         2         3         4
```
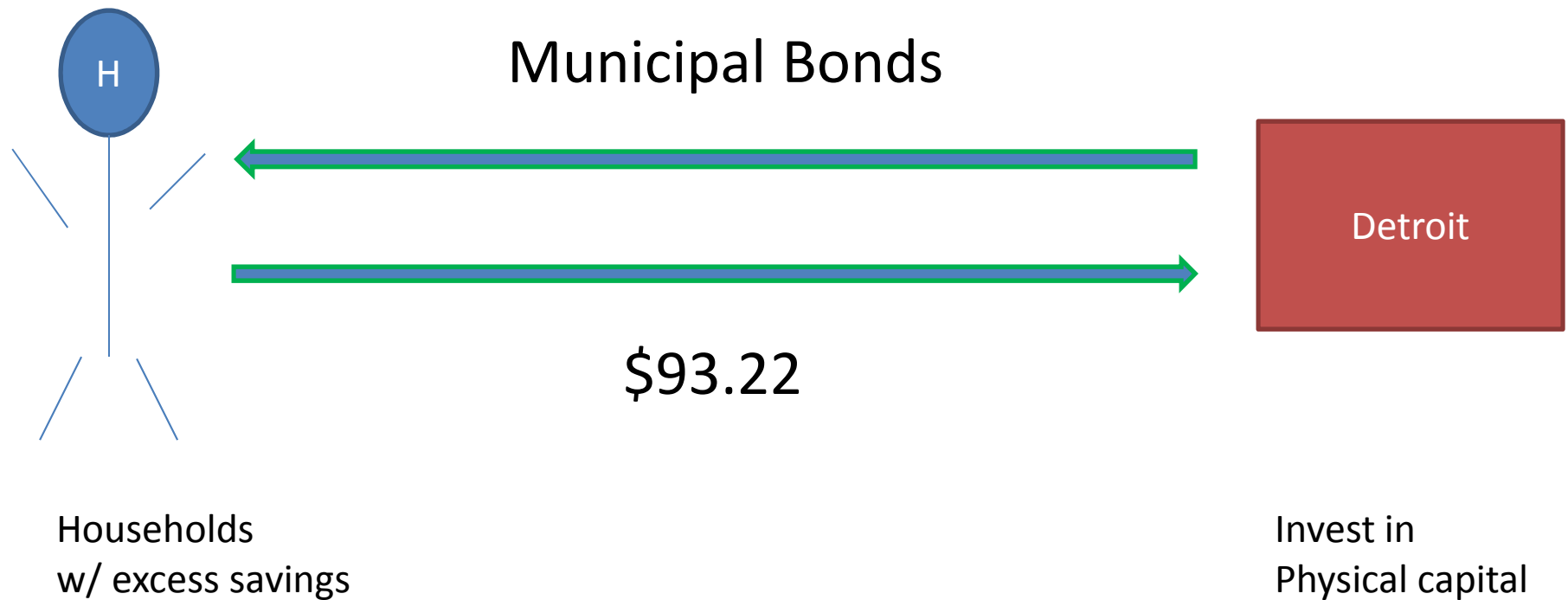
$$P_B = PV = \frac{5}{(1.07)} + \frac{5}{(1.07)^2} + \frac{5}{(1.07)^3} + \frac{5}{(1.07)^4} + \frac{100}{(1.07)^4}$$

$$= 4.67 + 4.37 + 4.08 + 3.81 + 76.29 = 93.22$$

III. Detroit Bankruptcy

Detroit Bankruptcy

- Largest municipal bankruptcy (July 2013)
  - Detroit: $20B Debt
  - Stockton CA (?), Jefferson County AL ($4B debt)

- Poor finances => Default => Fail to pay coupon and face payments to bondholders

- Gov. Rick Snyder appoints Kevin Orr as emergency manager
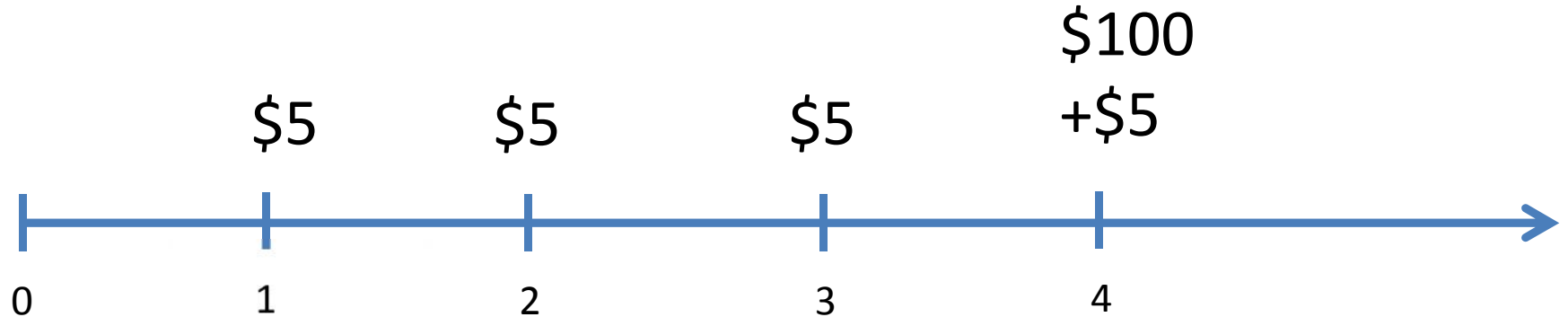
Detroit Bankruptcy

- T: government revenue

- G: government spending

What can Detroit do?

- Raise taxes?

- Reduce government spending?

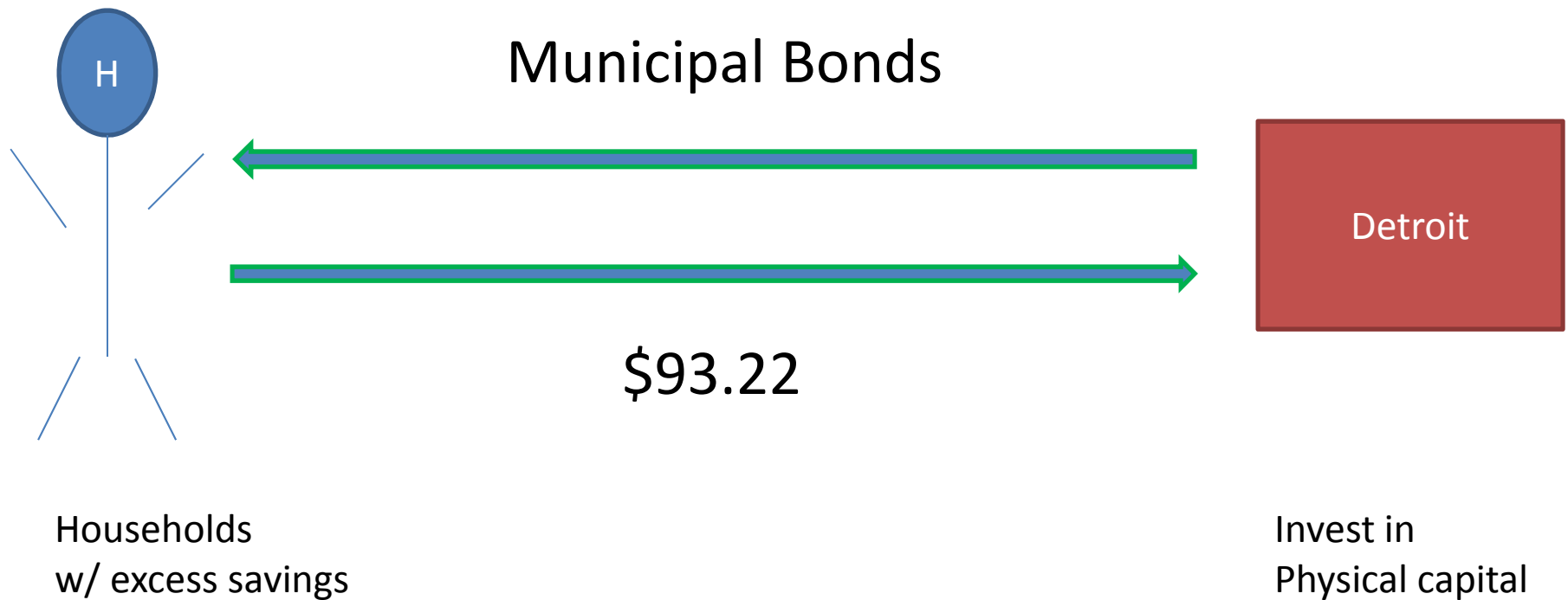- Issue more bonds?

- Declare bankruptcy

Present Value: Bond

$100
+$5

$5 $5 $5

|---------|---------|---------|---------|------------->
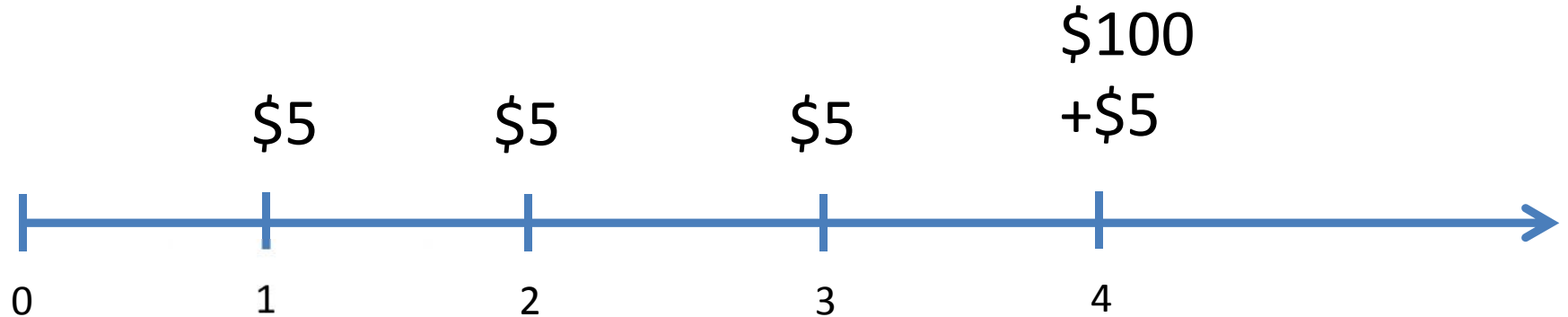0   1   2   3   4

$$P_B = PV = \frac{5}{(1.07)} + \frac{5}{(1.07)^2} + \frac{5}{(1.07)^3} + \frac{5}{(1.07)^4} + \frac{100}{(1.07)^4}$$

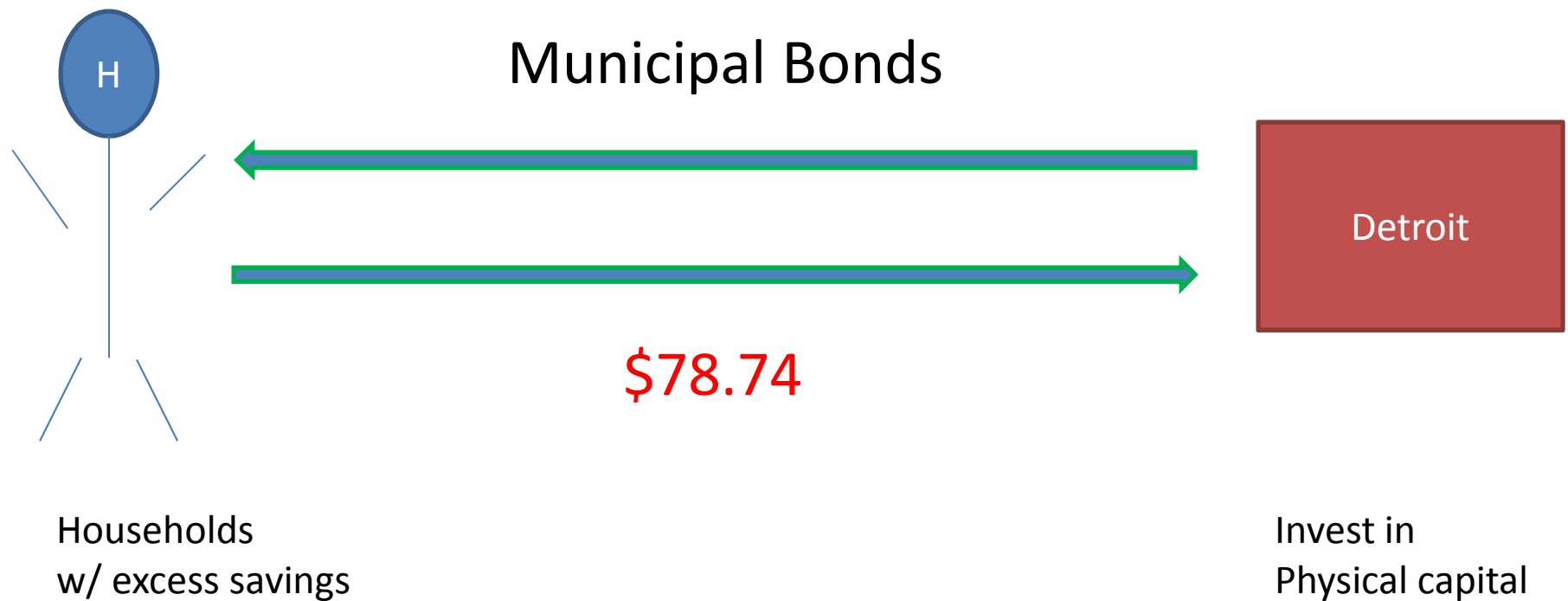$$= 4.67 + 4.37 + 4.08 + 3.81 + 76.29 = 93.22$$

Detroit bankruptcy

Municipal Bonds

H

Detroit

$93.22

Households
w/ excess savings

Invest in
Physical capital

Present Value: Bond

$100
+$5

$5 $5 $5

0   1   2   3   4

$$P_B = PV = \frac{5}{(1.12)} + \frac{5}{(1.12)^2} + \frac{5}{(1.12)^3} + \frac{5}{(1.12)^4} + \frac{100}{(1.12)^4}$$

$$= 4.46 + 3.99 + 3.56 + 3.18 + 63.55 = 78.74$$

Detroit bankruptcy

Municipal Bonds

H

Detroit

$78.74

Households
w/ excess savings

Invest in
Physical capital

Detroit Bankruptcy in a Nutshell

- Sell Assets
  - Belle Isle Park, Detroit-Windsor Tunnel, Coleman Young Airport, DIA?

- Pay Off Liabilities
  - Bondholders($.20 on $1)
  - Renegotiate with Retirees

- Structural Reforms
  - Limit new pensions & healthcare
  - Cut government programs