

CENTRAL BANK ACCOUNTING

CENTRAL BANK ACCOUNTS

- R = International Reserves
- M = Money supply
- D = Domestic Credit

| Central Bank | |
|--------------|---|
| R | M |
| D | |
| | |

START

- Assume we are in an emerging market
- Assume that exchange rate is fixed to one peso is one dollar

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 4 | | Bond | 2 |
| D | 0 | Bond | 2 | | | |
| | | | | | | |

TRANSACTIONS

- Transactions among consumers
- Increase money supply
- Taxes and Government expenses (fiscal responsibility)
- Fiscal expenditures and borrow from consumers
- Fiscal expenditures and borrow from central bank
- Fiscal expenditures and foreign borrowing
- Export services

CONSUMERS

- Any transaction between consumers does not change the balance sheet.
- Can all the pesos be converted to dollars at the prevailing rate?

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 4 | | Bond | 2 |
| D | 0 | Bond | 2 | | | |
| | | | | | | |

TRANSACTIONS

| | M/R | DD | FD |
|---|-----|----|----|
| Transactions among consumers | 0 | 0 | 0 |
| Increase money supply | | | |
| Taxes and Government expenses (fiscal responsibility) | | | |
| Fiscal expenditures and borrow from consumers | | | |
| Fiscal expenditures and borrow from central bank | | | |
| Fiscal expenditures and foreign borrowing | | | |
| Export services | | | |

INCREASE MONEY

- Central bank purchases from consumers the bonds

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 4 | | Bond | 2 |
| D | 0 | Bond | 2 | | | |
| | | | | | | |

INCREASE MONEY

- Central bank purchases from consumers the bonds

| Central Bank | | Consumers | | Government | | | |
|--------------|-----|-----------|-----|------------|-----|------|---|
| R | 4 | M | 4+2 | Cash | 4+2 | Bond | 2 |
| D | 0+2 | Bond | 2-2 | | | | |

INCREASE MONEY

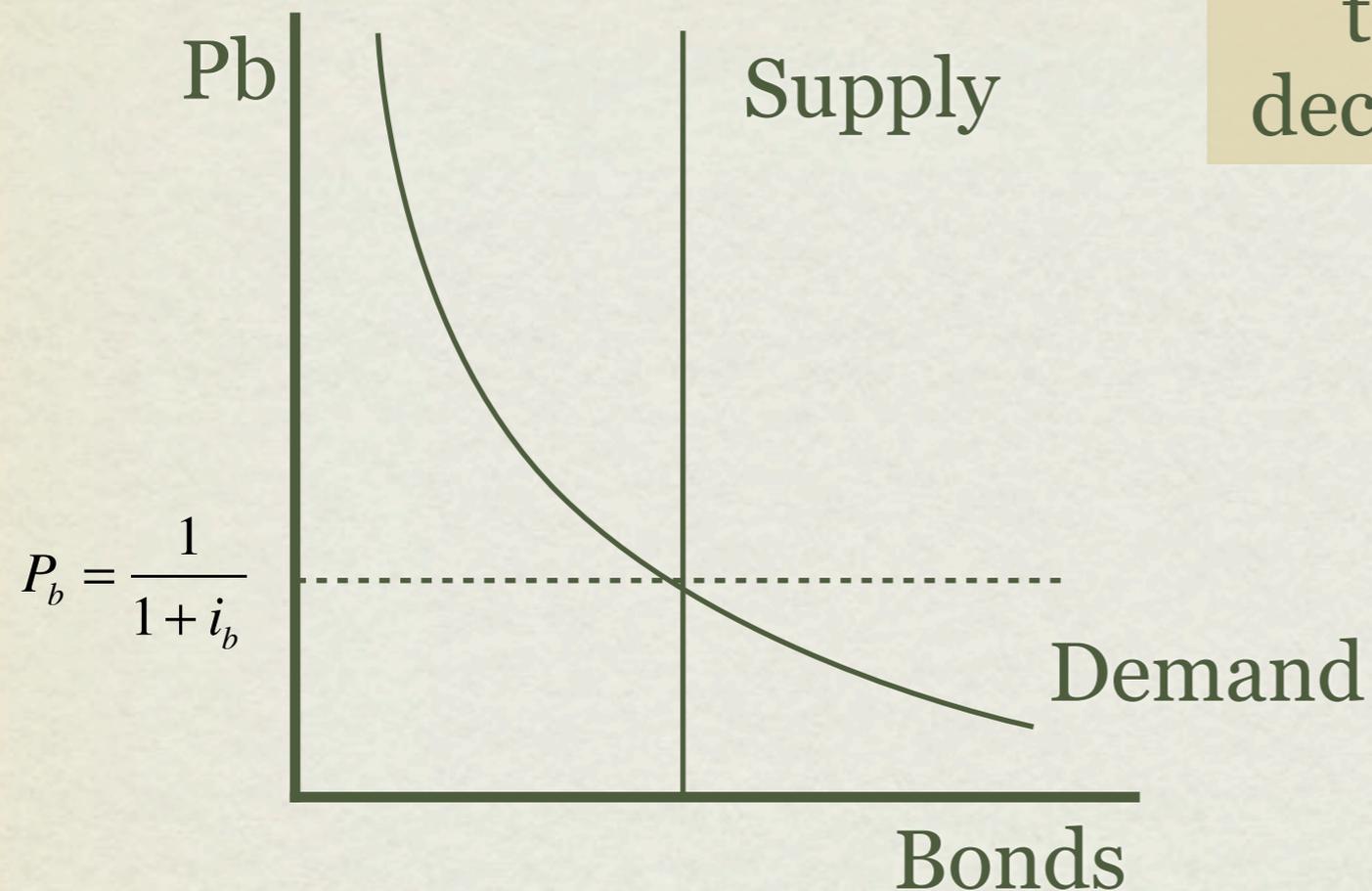
- Can all the pesos be converted to dollars at the prevailing rate?
- Printing without backing

| Central Bank | | | | Consumers | | Government | | |
|--------------|---|---|---|-----------|---|------------|------|---|
| R | 4 | M | 6 | Cash | 6 | | Bond | 2 |
| D | 2 | | | Bond | 0 | | | |
| | | | | | | | | |

TRANSACTIONS

| | M/R | DD | FD |
|---|--|----|----|
| Transactions among consumers | 0 | 0 | 0 |
| Increase money supply |  | 0 | 0 |
| Taxes and Government expenses (fiscal responsibility) | | | |
| Fiscal expenditures and borrow from consumers | | | |
| Fiscal expenditures and borrow from central bank | | | |
| Fiscal expenditures and foreign borrowing | | | |
| Export services | | | |

IMPACT ON THE INTEREST RATE

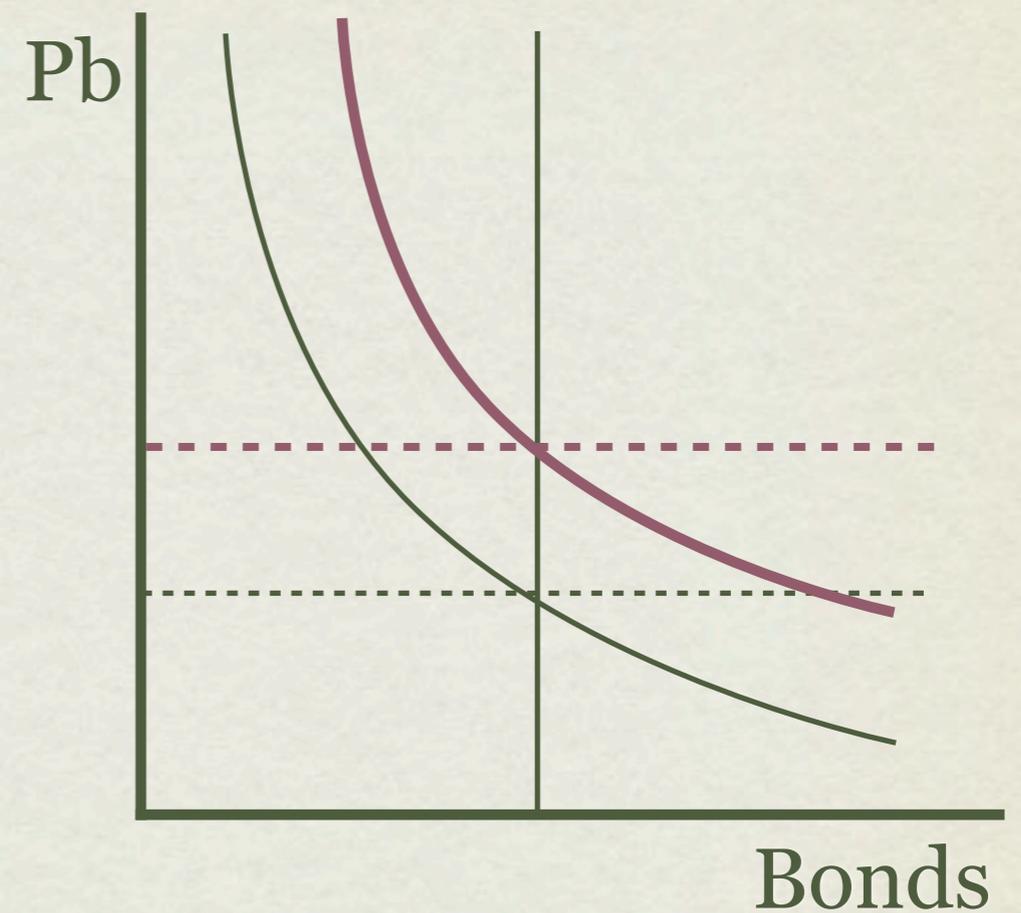
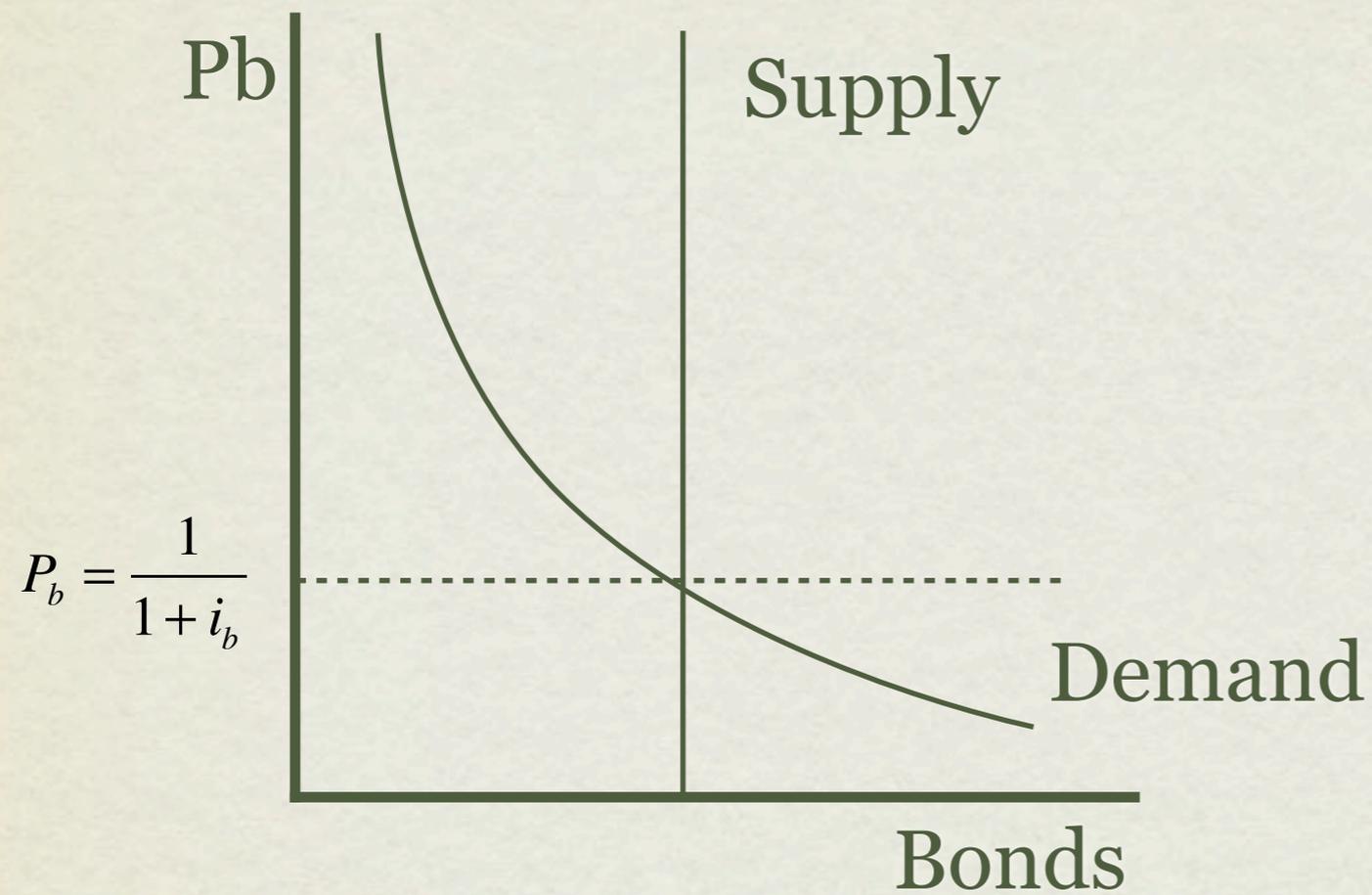


Supply is given by the treasuries decision to borrow

Demand includes 3 agents:

- How many bonds do consumers want?
- How many do foreigners want?
- How many the central bank wants?

IMPACT ON THE INTEREST RATE



TAXES AND EXPENDITURES

- Tax consumers and spend money

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 4 | | Bond | 2 |
| D | 0 | Bond | 2 | | | |
| | | | | | | |

TAXES AND EXPENDITURES

- Tax consumers - taxes are paid in cash

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|-----|------------|---|
| R | 4 | Cash | 4-2 | Cash | 2 |
| D | 0 | Bond | 2 | Bond | 2 |
| | | | | | |
| | | | | | |



TAXES AND EXPENDITURES

- When the government spends the money they buy services from consumers and pay the cash

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|-----|------------|-----|
| R | 4 | Cash | 2+2 | Cash | 2-2 |
| D | 0 | Bond | 2 | Bond | 2 |
| | | | | | |
| | | | | | |

TAXES AND EXPENDITURES

- Fiscal policy with balance budget has no impact on the aggregate balance sheet.
- Can all the pesos be converted to dollars at the prevailing rate?

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 4 | | Bond | 2 |
| D | 0 | Bond | 2 | | | |
| | | | | | | |

TRANSACTIONS

| | M/R | DD | FD |
|---|--|----|----|
| Transactions among consumers | 0 | 0 | 0 |
| Increase money supply |  | 0 | 0 |
| Taxes and Government expenses (fiscal responsibility) | 0 | 0 | 0 |
| Fiscal expenditures and borrow from consumers | | | |
| Fiscal expenditures and borrow from central bank | | | |
| Fiscal expenditures and foreign borrowing | | | |
| Export services | | | |

EXPENDITURES AND BORROW FROM CONSUMERS

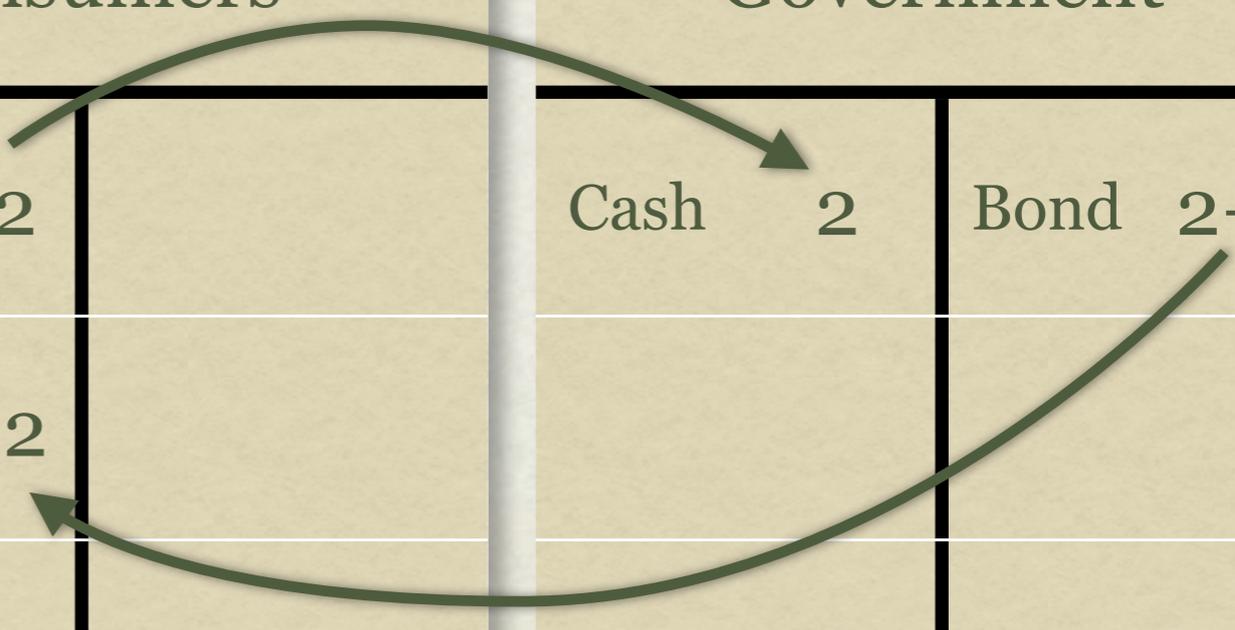
- Now the government borrows from the consumers (sells bonds in exchange of cash)
- And then it spends the cash

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 4 | | Bond | 2 |
| D | 0 | Bond | 2 | | | |
| | | | | | | |

EXPENDITURES AND BORROW FROM CONSUMERS

- Selling the bond

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|-------|------------|-------|
| R | 4 | Cash | $4-2$ | Cash | 2 |
| D | 0 | Bond | $2+2$ | Bond | $2+2$ |



EXPENDITURES AND BORROW FROM CONSUMERS

- Total cash out of the central bank does not change with the transaction.

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|---|------------|---|
| R | 4 | Cash | 2 | Cash | 2 |
| D | 0 | Bond | 4 | Bond | 4 |
| M | 4 | | | | |
| | | | | | |
| | | | | | |

EXPENDITURES AND BORROW FROM CONSUMERS

- Spend taxes

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|-----|------------|-----|
| R | 4 | Cash | 2+2 | Cash | 2-2 |
| D | 0 | Bond | 4 | Bond | 4 |
| | | | | | |
| | | | | | |

EXPENDITURES AND BORROW FROM CONSUMERS

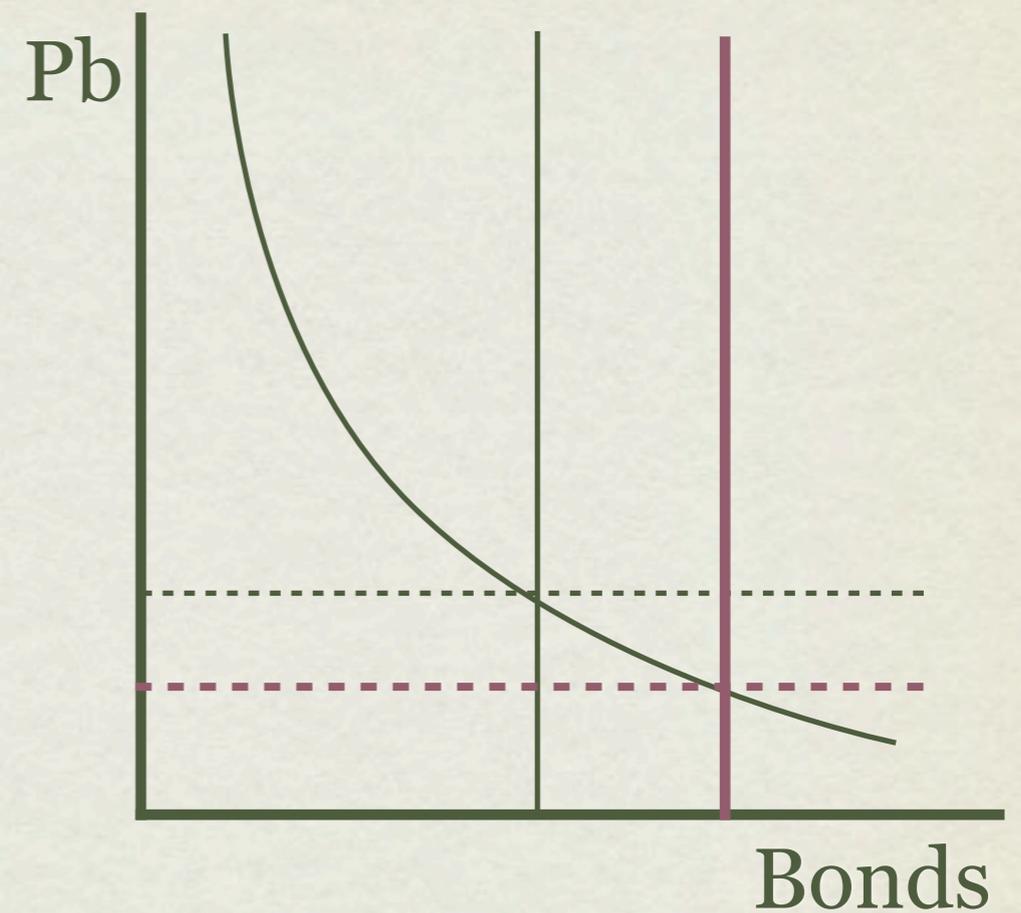
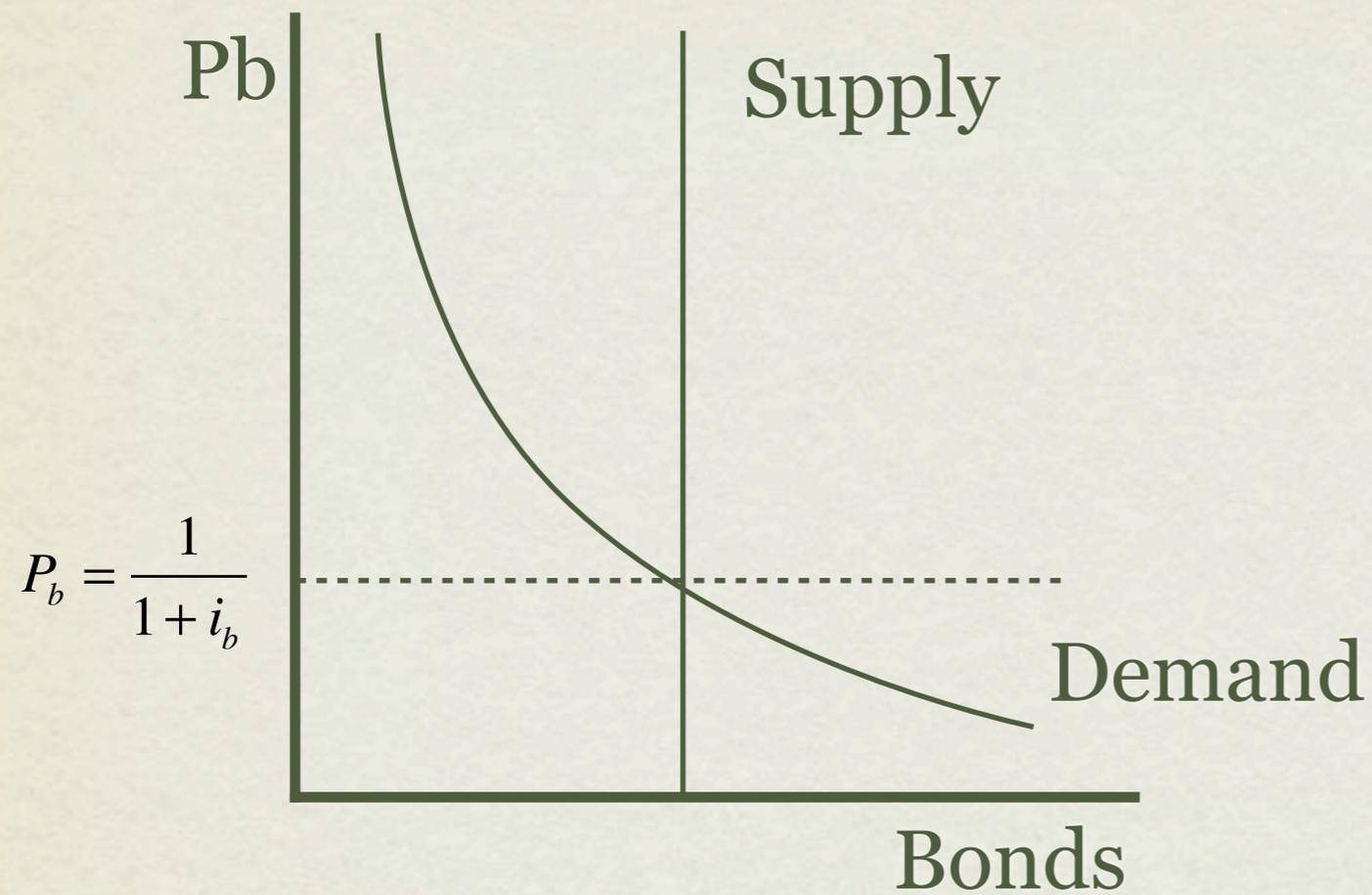
- Can all the pesos be converted to dollars at the prevailing rate?
- Government debt increases. The consequence is that domestic interest rates increase. That is exactly what happens in the ISLM.

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|---|------------|--------|
| R | 4 | Cash | 4 | | |
| D | 0 | Bond | 4 | | Bond 4 |
| | | | | | |

TRANSACTIONS

| | M/R | DD | FD |
|---|-----|----|----|
| Transactions among consumers | 0 | 0 | 0 |
| Increase money supply | ↑ | 0 | 0 |
| Taxes and Government expenses (fiscal responsibility) | 0 | 0 | 0 |
| Fiscal expenditures and borrow from consumers | 0 | ↑ | 0 |
| Fiscal expenditures and borrow from central bank | | | |
| Fiscal expenditures and foreign borrowing | | | |
| Export services | | | |

IMPACT ON THE INTEREST RATE



EXPENDITURES AND BORROW FROM CENTRAL BANK

- The government borrows from the central bank (sells bonds in exchange of cash)
- And then it spends the cash

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 4 | | Bond | 2 |
| D | 0 | Bond | 2 | | | |
| | | | | | | |

EXPENDITURES AND BORROW FROM CENTRAL BANK

- Borrowing from the Central Bank (selling the bond to the Central Bank)
- The Central Bank pays with cash (in other words we are printing money again).

| Central Bank | | Consumers | | Government | |
|--------------|-----|-----------|-----|------------|-----|
| R | 4 | M | 4+2 | Cash | 4 |
| D | 0+2 | Bond | 2 | Cash | 2 |
| | | | | Bond | 2+2 |

EXPENDITURES AND BORROW FROM CENTRAL BANK

- Debt of the government has increased
- Cash out of the central bank has also increased

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|---|------------|---|
| R | 4 | Cash | 4 | Cash | 2 |
| D | 2 | Bond | 2 | Bond | 4 |
| | | | | | |
| | | | | | |

EXPENDITURES AND BORROW FROM CENTRAL BANK

- Spending

| Central Bank | | Consumers | | Government | |
|--------------|---|-----------|-----|------------|-----|
| R | 4 | Cash | 4+2 | Cash | 2-2 |
| D | 2 | Bond | 2 | Bond | 2+2 |
| | | | | | |
| | | | | | |



EXPENDITURES AND BORROW FROM CENTRAL BANK

- Debt increases and there is an imbalance between domestic currency and reserves.
- Can all the pesos be converted to dollars at the prevailing rate?

| Central Bank | | Consumers | | Government | | |
|--------------|---|-----------|---|------------|------|---|
| R | 4 | Cash | 6 | | Bond | 4 |
| D | 2 | Bond | 2 | | | |
| | | | | | | |

TRANSACTIONS

| | M/R | DD | FD |
|---|-----|----|----|
| Transactions among consumers | 0 | 0 | 0 |
| Increase money supply | ↑ | 0 | 0 |
| Taxes and Government expenses (fiscal responsibility) | 0 | 0 | 0 |
| Fiscal expenditures and borrow from consumers | 0 | ↑ | 0 |
| Fiscal expenditures and borrow from central bank | ↑ | ↑ | 0 |
| Fiscal expenditures and foreign borrowing | | | |
| Export services | | | |

EXPENDITURES AND BORROW FROM FOREIGNERS

- The government issues debt in foreign currency (US\$) to foreigners and get dollars for it.
- They convert the dollars into pesos in the central bank
- Then the spend the money in the consumers

| Central Bank | | Consumers | | Government | | Foreigners | | | |
|--------------|---|-----------|---|------------|---|------------|---|-----------|----|
| R | 4 | Cash | 4 | Cash | 0 | Bond | 2 | \$'s | 10 |
| D | 0 | Bond | 2 | \$'s | 0 | For. Bond | 0 | For. Debt | 0 |
| | | | | | | | | | |

EXPENDITURES AND BORROW FROM FOREIGNERS

- Borrow from Foreigners

| Central Bank | | Consumers | | Government | | Foreigners | | | |
|--------------|---|-----------|---|------------|-----|------------|-----|-----------|------|
| R | 4 | M | 4 | Cash | 0 | Bond | 2 | \$'s | 10-2 |
| D | 0 | Bond | 2 | \$'s | 0+2 | For. Bond | 0+2 | For. Debt | 0+2 |
| | | | | | | | | | |

EXPENDITURES AND BORROW FROM FOREIGNERS

- For the moment there is no impact on the domestic economy.

| Central Bank | | Consumers | | Government | | Foreigners | | | |
|--------------|---|-----------|---|------------|---|------------|---|-----------|---|
| R | 4 | Cash | 4 | Cash | 0 | Bond | 2 | \$'s | 8 |
| D | 0 | Bond | 2 | \$'s | 2 | For. Bond | 2 | For. Debt | 2 |
| | | | | | | | | | |

EXPENDITURES AND BORROW FROM FOREIGNERS

- Change the dollars to pesos in the central bank

| Central Bank | | Consumers | | Government | | Foreigners | | | | | |
|--------------|-----|-----------|-----|------------|-----|------------|-----|-----------|---|------|---|
| R | 4+2 | M | 4+2 | Cash | 4 | Cash | 0+2 | Bond | 2 | \$'s | 8 |
| D | 0 | Bond | 2 | \$'s | 2-2 | For. Bond | 2 | For. Debt | 2 | | |
| | | | | | | | | | | | |

EXPENDITURES AND BORROW FROM FOREIGNERS

- Change the dollars to pesos in the central bank

| Central Bank | | Consumers | | Government | | Foreigners | |
|--------------|---|-----------|---|------------|---|------------|---|
| R | 6 | Cash | 4 | Cash | 2 | \$'s | 8 |
| M | 6 | Bond | 2 | Bond | 2 | For. Debt | 2 |
| D | 0 | | | \$'s | 0 | | |
| | | | | For. Bond | 2 | | |

EXPENDITURES AND BORROW FROM FOREIGNERS

- Spend the money

| Central Bank | | Consumers | | Government | | Foreigners | |
|--------------|---|-----------|-----|------------|-----|------------|---|
| R | 6 | Cash | 4+2 | Cash | 2-2 | Bond | 2 |
| D | 0 | Bond | 2 | \$'s | 0 | For. Bond | 2 |
| | | | | | | \$'s | 8 |
| | | | | | | For. Debt | 2 |

EXPENDITURES AND BORROW FROM FOREIGNERS

- Notice that credibility is not affected!
- Foreign debt increases. That's all! This is why a lot of countries prefer to borrow in international markets. Very small consequences to the local economy.

| Central Bank | | Consumers | | Government | | Foreigners | | | |
|--------------|---|-----------|---|------------|---|------------|---|-----------|---|
| R | 6 | Cash | 6 | Cash | 0 | Bond | 2 | \$'s | 8 |
| D | 0 | Bond | 2 | \$'s | 0 | For. Bond | 2 | For. Debt | 2 |
| | | | | | | | | | |

TRANSACTIONS

| | M/R | DD | FD |
|---|-----|----|----|
| Transactions among consumers | 0 | 0 | 0 |
| Increase money supply | ↑ | 0 | 0 |
| Taxes and Government expenses (fiscal responsibility) | 0 | 0 | 0 |
| Fiscal expenditures and borrow from consumers | 0 | ↑ | 0 |
| Fiscal expenditures and borrow from central bank | ↑ | ↑ | 0 |
| Fiscal expenditures and foreign borrowing | 0 | 0 | ↑ |
| Export services | | | |

EXPORTS OF SERVICES

- Consumers sell services to foreigners. Foreigners pay with dollars.
- The consumers go to the central bank and exchange the dollars for pesos.

| Central Bank | | Consumers | | Government | | Foreigners | |
|--------------|---|-----------|---|------------|---|------------|----|
| R | 4 | Cash | 4 | Cash | 0 | \$'s | 10 |
| D | 0 | Bond | 2 | Bond | 2 | | |
| | | \$'s | 0 | | | | |
| | | | | | | | |

EXPORTS OF SERVICES

- Sell services and goods to foreigners (the act of exporting)

| Central Bank | | Consumers | | Government | | Foreigners | |
|--------------|-----|-----------|--|------------|--------|------------|--|
| R 4 | M 4 | Cash 4 | | Cash 0 | Bond 2 | \$'s 10-2 | |
| D 0 | | Bond 2 | | | | | |
| | | \$'s 0+2 | | | | | |

EXPORTS OF SERVICES

- Exchange of dollars for pesos

| Central Bank | | Consumers | | Government | | Foreigners | | | | | |
|--------------|-----|-----------|-----|------------|-----|------------|---|------|---|------|----|
| R | 4+2 | M | 4+2 | Cash | 4+2 | Cash | 0 | Bond | 2 | \$'s | 10 |
| D | 0 | | | Bond | 2 | | | | | | |
| | | | | \$'s | 2-2 | | | | | | |

EXPORTS OF SERVICES

- Reserves increase
- Credibility of the currency is unaffected

| Central Bank | | Consumers | | Government | | Foreigners | |
|--------------|-----|-----------|--|------------|--------|------------|--|
| R 6 | M 6 | Cash 6 | | Cash 0 | Bond 2 | \$'s 8 | |
| D 0 | | Bond 2 | | | | | |
| | | \$'s 0 | | | | | |

TRANSACTIONS

| | M/R | DD | FD |
|---|-----|----|----|
| Transactions among consumers | 0 | 0 | 0 |
| Increase money supply | ↑ | 0 | 0 |
| Taxes and Government expenses (fiscal responsibility) | 0 | 0 | 0 |
| Fiscal expenditures and borrow from consumers | 0 | ↑ | 0 |
| Fiscal expenditures and borrow from central bank | ↑ | ↑ | 0 |
| Fiscal expenditures and foreign borrowing | 0 | 0 | ↑ |
| Export services | 0 | 0 | 0 |

TRANSACTIONS

| | M/R | DD | FD | R |
|---|-----|----|----|---|
| Transactions among consumers | 0 | 0 | 0 | 0 |
| Increase money supply | ↑ | 0 | 0 | 0 |
| Taxes and Government expenses (fiscal responsibility) | 0 | 0 | 0 | 0 |
| Fiscal expenditures and borrow from consumers | 0 | ↑ | 0 | 0 |
| Fiscal expenditures and borrow from central bank | ↑ | ↑ | 0 | 0 |
| Fiscal expenditures and foreign borrowing | 0 | 0 | ↑ | ↑ |
| Export services | 0 | 0 | 0 | ↑ |

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