Developing Countries
Chapter 22

1. Growth

2. Debt

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1 Growth

1.1 Developing Countries

- Output depends on factors of production and technology

$$Y = AK^{\alpha}L^{1-\alpha}$$

- Per worker output depends on technology and per worker capital

$$\frac{Y}{L} = \frac{AK^{\alpha}L^{1-\alpha}}{L} = \frac{AK^{\alpha}L^{1-\alpha}}{L^{\alpha}L^{1-\alpha}} = A\left(\frac{K}{L}\right)^{\alpha}$$

- Marginal product of capital

$$\frac{\partial Y}{\partial K} = AK^{\alpha-1}L^{1-\alpha} = A\left(\frac{K}{L}\right)^{\alpha-1}$$

- Developing countries have low $\left(\frac{K}{L}\right)$ and therefore high marginal productivity of capital
  - Investment in developing countries should be high
  - If saving not high enough to finance it, borrow from rest of world
  - High MPK means country will be able to repay
- Since countries with low $\frac{K}{L}$ have low $\frac{Y}{L}$, poor countries should be investing more than wealthy countries
- Therefore poor countries should grow faster than wealthy ones, implying convergence of per worker output levels

1.2 Convergence

- Do poor countries grow faster than wealthy ones?

- Among rich countries – relatively poorer countries do grow faster

- For entire world – no such relationship
  - East Asian countries have grown faster
  - Latin American countries have had mixed experience
  - African countries have grown more slowly

1.3 Structural Characteristics – lower value for A

- Direct government control
  - government ownership of business
  - government allocation of loans
  - keeps market from allocating resources efficiently

- High and volatile inflation
  - makes planning more difficult and risky
  - increases nominal and real interest rates
- Inefficient and weak financial markets
  - poor supervision of banks
  - stock markets poorly developed due to lack of transparency about behavior of management
  - legal framework to resolve bankruptcy weak

- Capital controls (changing)
  - prevent capital from leaving – will not enter
  - interest rate ceilings leave interest rates too low to attract capital
- Lack of diversification in output
  - large portion of exports are agricultural or single commodity
  - volatile terms of trade
- Corruption and rent-seeking

2 Debt

2.1 Facilitates intertemporal trade

- Investment can occur where MPK is highest

- Consumption smoothing

2.2 Why Does Default Occur?

- Projects are less profitable than expected and do not generate enough revenue to allow repayment in full
  - negative domestic shock
  - negative world shock (interest rates, oil prices)

- Moral hazard – projects which are expected to fail are undertaken
  - bank accepts deposit of \$100
  - invests in a project, which, if successful, will return \$200 and nothing if unsuccessful
  - probability of success is 40%, so expected profit is $200 \times .4 - 100 = -20$
  - now assume that in the event of failure, the government will return the original \$100 deposit
    - expected profit $= -20 + 100 \times .6 = 40$
    - implies projects which are expected to fail will be undertaken

- Sudden stop
  - creditors believe that debtors cannot repay so lending ends
  - default reduces debt and restores solvency

2.3 Crisis triplets

- Default crisis – firms fail to repay bank loans in foreign currency
- Bank crisis – creditors , fearing bank failure, withdraw deposits in foreign currency

- Currency crisis – central banks, as lender of last resort, lend foreign exchange reserves to banks

3 Money-financed government deficits and crises Latin countries – early 1980's

3.1 Capital inflows financed

- Government deficits

- Excess of investment over private saving

$$Y = C + I + G + CA$$

$$(Y - T - C) - I + (T - G) = CA$$

$$S^p - I + (T - G) = CA$$

- Increasing official reserves

3.2 Exchange rates were crawling pegs

- pre-announced schedule of depreciation with respect to the dollar

- allowed countries more inflation than that of dollar

$$\frac{\Delta P}{P} = \frac{\Delta E}{E} - \frac{\Delta P_{\$}}{P_{\$}}$$

- allowed higher seigniorage revenues

3.3 US contractionary monetary policy increased world interest rates

- extended model – DD shifts left and AA accompanies
- world-wide recession as other countries reduced their money supplies
- primary commodity prices collapsed and dollar appreciated – domestic currencies appreciated (AA left)
- project profitable with low interest rates were no longer profitable with high interest rates (over investment?)

- capital inflows stopped, leaving reserves to finance deficits
- speculative attacks on reserves and currency crises
- banking crises as deposits were withdrawn (moral hazard?)
- default as government and firms unable to repay
- not resolved until 1989 when US convinced US banks to forgive some debt

4 Latin Countries in 1990's

4.1 Argentina – policy to end hyperinflation

- Currency board 1991 – held $1 in reserves for every peso in circulation
  - could not run out of reserves until base money exhausted
  - gave up monetary policy
  - gave up lender of last resort
- Promised to reduce government deficits, but after first few years, they rose again

  - DD right due to G up and AA accompanies
  - Current account deficit and falling foreign exchange reserves
  - relative price of domestic goods rising over time
  - 1/1999 Brazil devalued, shifting AA left and $\bar{E}$ down, creating recession

- Sudden stop of capital flows – did not exhaust reserves
  - defaulted on debt 12/2001
  - abandoned currency board on 1/2002 and currency depreciated

- Banking crises

- banks were forced to hold government debt
- with default, bank assets reduced
- to prevent bank runs, government prohibited people from withdrawing money from banks
- huge loss of confidence in banking system

4.2 Chile

- crawling peg
- reduced fiscal deficits and maintained fiscal reform
- central bank was made independent of fiscal authority with goal of reducing fiscal reliance on seigniorage
- capital controls designed to limit short-term capital inflows
  - capital inflows of debt accompanied by a 1-year non-interest-bearing deposit equal to 30% of transaction

  - most costly for short-term assets

- banking reform to reduce possibility of bank insolvency and liquidation of insolvent banks

- improved bankruptcy laws

- reduction in corruption

- no crises

4.3 Mexico

- exchange rate system
  - 1987 fixed peso to US dollar
  - 1989 crawling peg
  - 1991 crawling band
  - increasing flexibility over time

- reduced fiscal deficits and maintained fiscal reform

- weak banks
  - interest rate ceilings
  - credit rationing to customers preferred by government (corruption)
  - little supervision leading to risky loans due to moral hazard
- political uncertainty in 1994, including assassination
- current account deficit and real exchange rate appreciation
- new government devalued in December 1994

- sudden stop of capital flows
- increase in interest rates
- abandoned fixed exchange rate in 1995
- loans by US and IMF

4.4 Southeast Asia

4.4.1 Asian Growth Miracle

- macroeconomic stability with low inflation
- no large fiscal deficits
- high savings rates used to finance investment in physical and human capital
- large human capital and low physical capital led to high marginal product of capital – attracted savings from ROW

- high rate of accumulation of factors of production led to high growth rates

$$\frac{Y}{N} = A\left(\frac{K}{N}\right)^{\alpha}\left(\frac{L}{N}\right)^{1-\alpha}$$

  - high rate of capital accumulation – $\frac{K}{N}$ increasing
  - growing labor-force participation – $\frac{L}{N}$ increasing
  - not a particularly high rate of growth for A

4.4.2 Asian Crises 1997

- Weak banks and other financial intermediaries due to absence of monitoring and incentives for moral hazard

- Weak bankruptcy laws

- Bank failures
  - moral hazard
  - negative shocks and risky projects (recession in close trading partner, Japan)
  - foreign-currency reserves used in lender of last resort role to support banks

- Sudden stop of capital flows
  - exogenous sun-spot equilibrium – if everyone else stops lending, optimal for me to stop lending too
  - increase in expected future government spending to recapitalize the banking system
- Large exchange rate depreciation
  - reserves reached lower bound – very little post-crisis inflation
  - depreciation restores fiscal solvency
- Contagion - first depreciation was in Thailand – spread to Malaysia, Indonesia, and South Korea

5 Currency Boards

- hold foreign exchange reserves for every unit of domestic currency – can't run out of reserves
- credibility higher because cannot be forced to devalue
- lose lender of last resort ability

6 International Financial Architecture for the Future

6.1 Reduce the probability of bank crises

- well-regulated banks with increased capital requirements
- transparency – accounting rules so lenders know the position of those to whom they lend
- credit lines for countries with liquidity (not solvency) problems

6.2 Reduce the probability of debt crises

- increase equity finance

- increase direct foreign investment

6.3 Role of the IMF

- Moral hazard – IMF loans are expected to shield creditors from loss encouraging risky behavior

- Lender of last resort – provide liquidity so countries and their firms do not have to liquidate long-term projects at short notice to pay creditors

- International bankruptcy laws for insolvent countries
  - administered by IMF?
  - allow countries to reenter capital markets sooner

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