

## **Solutions for Chapter 2**

### **Financial Crises**

1. Financial crises.

- a. 1) banking crisis, in which large parts of banking system is (near) insolvent; 2) sovereign debt crisis, in which a sovereign country (may) default on its debt obligations (i.e. government bonds); 3) currency crisis, in which a country's currency drops significantly in value.
- b. A twin crisis may happen in a country with fixed exchange rates. Currency depreciation exacerbates banking sector problems through foreign currency exposures.
- c. Reinhart and Rogoff (2009) show that on average output falls by 9 per cent GDP and unemployment rises by 7 per cent after a banking crisis. This effect is stronger than the average cost of bailout, which is about 5 per cent GDP.

2. Bank run models\*.

- a. Bank runs are possible because banks issue short-term deposits (sight deposits which can be withdrawn on demand) against long-term assets. If depositors start to doubt the solvency of the bank, they may withdraw their deposits causing a run on the bank.
- b. A bank run is a self-fulfilling prophecy. A “sunspot” can cause a bank run in the Diamond-Dybvig model with multiple equilibria (good and bad).
- c. A bad realisation of the return  $R$  on the project. This relates to the state of the business cycle (recession).

3. The Minsky financial instability hypothesis.

- a. 1) credit expansion with rising asset prices; 2) euphoria with overtrading; 3) distress with unexpected failures; 4) liquidations/failures; 5) panic with a flight to safety (cash and government bonds).
- b. Debt (credit) is the key factor driving the depth of a financial crisis. It may also be expressed as leverage (defined as debt to total assets; or debt to equity)
- c. Banks face minimum capital requirements. In good times, they add profits to capital (retained earnings). More capital expands loan business. In bad times, banks make losses, so capital is contracting. Less capital hampers the granting of new credit.

4. Loss spirals.

- a. In an asset price boom, the bank balance sheet becomes stronger, which has a positive impact on leverage. Banks then increase their balance sheet, which fuels the asset boom further. An asset price decline works in the opposite way, causing a loss spiral. In such a loss spiral, fire sale of assets plays a prominent role. The price of assets drop below their fundamental value.
- b. Sub-prime mortgages were experiencing fire sales.
- c. New international accounting standards require market value accounting, under which assets are marked to market. When fire sales lead to very low market prices of a particular asset, all holders of that asset have to mark down that asset in their balance sheet. Different responses are possible: 1) book value accounting for assets which are not for sale, but the values on the balance sheet become less meaningful; 2) make a reserve for profits on

paper, so that windfall gains cannot be distributed to shareholders. As fire sales are often preceded by an asset price boom, the profits on these assets should not be handed out to shareholders as dividend, but added to capital in a special revaluation reserve. When a crisis happens, banks can first draw on this reserve.

## 5. Business and financial cycles

- a. The business cycle measures changes in GDP. The financial cycle measures conditions in the financial system and is driven by credit growth and house prices growth.
- b. In the euro-area, the business cycle is converging, but the financial cycle remains asymmetric (i.e. diverging).

## 6. The euro crisis.

- a. Lack of fiscal discipline, diverging financial cycles, diverging competitiveness (e.g. unit labour costs)
- b. Sovereign debt assets were held in large amounts by banks, with a significant bias for the bonds of the country in which the bank is headquartered, but also significant cross-border exposures to other euro area countries' sovereign debt. As many banks were in a relatively bad shape as a result of the 2007-2009 financial crisis, timely sovereign debt restructuring became impossible, thereby prolonging the euro crisis.
- c. The ECB did buy sovereign bonds of the weak countries through its Securities Markets Programme and provided almost unlimited liquidity to banks through three-year loans (so-called Long Term Refinancing Operations).
- d. The euro-area countries created the European Financial Stability Facility and later the European Stability Mechanism. These facilities in conjunction with the IMF provided funds to the crisis-struck countries (Greece, Ireland, and Portugal).