Teaching Plan

Title	Credit/Deposit/Money Creation (CE or A-Level)
Instructional Objectives	➢ To illustrate the credit/deposit/money creation process
Keywords and Concepts Illustrated	➢ Central Bank ➢ Required Reserve ➢ Credit/Deposit/Money Creation
Assumption	➢ This game serves as an introduction of this topic.
Needed Time	➢ A double-lesson period, 80 minutes in total

Sessions	**Details**	**Time Spent**
Activity/ Announcement	1 T: Where does money come from? (Let students brainstorm their answers). Have you ever thought of money will create more money? 2 T: Today we will experience how money can be created within the banking system. 3 Divide the class into three zones, pair-up students in one zone being bankers, in another zone loan customers, and in the third zone firms. Thus, there will be 6 – 7 pairs of bankers, loan customers and firms. Teacher serves as the central banker. 4 T: In this game, our money will be in the form of pebbles. Let me explain some rules to you first (Suggestion: print out the following instructions and post them on the board. At the same time, draw or post an enlarged balance sheet showed in figured 3 on board.).	15 mins
	5 Explain simulation rules 5.1 Loan customers: 5.1.1 Loan customers must provide their bankers with an IOU (please refer to Fig. 1) for any loan they arrange. 5.1.2 The amount of loan must be assumed to match whatever amount the banker has to lend. 5.1.3 The entire amount of any loan must be paid to whatever firm supplies the resources which the loan customers need; loan customers keep none of the loan proceeds in cash or deposits. 5.2 Firms:	10 mins

	5.2.1 Firms have the capacity and are eager to fill orders as they come in from loan customers. *5.2.2* Firms must keep some of the payment form loan customers in cash, and deposit the rest in a bank. The amount of cash kept in hand by firms can be between one and three pebbles. *(Note that this rule violates one of the assumptions of "no leakage" stated in textbooks. Nevertheless, this rule provides the opportunities for students to make decisions. It is up to teacher's preference to apply this rule).* 5.3 Bankers 5.3.1 Each banker tries to maximize the bank's profits. 5.3.2 Cash reserve assets earn zero interest. 5.3.3 Each bank starts the simulation with no excess reserves to lend out. 5.3.4 Banks have a minimum cash reserve requirement of 10% for deposits, round up to the nearest pebble. 5.3.5 Bankers are expected to issue deposit certificate (please refer to Fig. 2) for any new deposit made with them. 5.3.6 Bankers should record the new deposit and extra cash reserves they keep to satisfy the cash reserve requirement on the consolidated balance sheet of the banking system posted/drawn on the blackboard. 5.3.7 In lending out excess cash reserve, bankers lend the whole amount to a single loan customer, without worrying about diversifying the new business over several different loans. It is assumed that the new loan is only a small addition to the banks' total loans.	
	6	T: Now, I will give you 3 minutes to discuss with your partner your business strategies. For all the bankers, plan your strategies on how to win firm's deposits; for all loan customers, plan the business you want to set up and the types of resources you have to buy from firms; and for the	5 mins

	firms, decide what goods and services you want to sell and how to attract loan customers to buy.	
	7 (After 3 minutes) T: I have several new bags of pebbles, i.e., extra cash reserves that I want to inject into this banking system. Once the bankers receive the cash reserves, you can start to find any interested loan customers right away.	30 mins
	8 Teacher distributes: 8.1 A bag of pebbles to each pair of bankers (each bag should circulate independently but simultaneously); 8.2 Deposit certificates to each pair of bankers. 8.3 IOUs to each pair of loan customers; 8.4 And then post/draw the balance sheet on blackboard.	
	9 Bankers who receive the cash reserves go to the loan customer zone to find the pair of willing borrowers.	
	10 Borrowers then write out an IOU for the same amount in acknowledge. **Bankers add the amount of new loan to the loan category in the consolidated balance sheet**.	
	11 The loan customers approach students in the firm zone in order to buy whatever they need.	
	12 The firms receive the sales revenues *and take out any amount they may need to spend later (not applicable to class where no cask leakage is assumed)* and then deposit the rest of the money into banks. **Bankers** who successfully win any deposit from the firms should issue a deposit certificate and **record the extra deposits to the consolidated balance sheets of the banking system**.	
	13 The successful **bankers** take out what pebbles they must keep as required reserves (to the nearest pebble) and **record the amount of required reserves in the consolidated balance sheet**. The pebbles left are excess reserves, for which the bankers would like to find willing borrowers.	
	14 The sequence will go on until all the pebbles in each bag have been withdrawn by banks *or firms (not applicable to class where no leakage is assumed)*. That is the sequence will stop when there are no excess reserves to lend out. This will take between 4 to 6 rounds, depending on the amount of cash taken out by firms.	

	15 Discussion: 15.1 What happens to the consolidated balance sheet of the banking system? (Ask students to add up all the changes/entries in three areas of reserves, deposits and loans separately). 15.2 Initially, how much money was there (how many pebbles were there) in this economy? And how much money was there after our game? Can you observe any deposit/credit/money creation in this game? (The amount of money created is a) firms' extra cash holdings, b) plus the summation of deposits or the summation of loans and c) minus the money, i.e. pebbles, put into the banking system initially.) 15.3 How can banks create deposit/credit/money? (Bankers cannot create any money unless they receive a bag of cash reserve, either from the central bank or from a deposit. Banks can only lend out what they take in.) 15.4 How does the process of deposit creation affect aggregate demand? (If the loan customers use the extra loan to buy newly produced physical assets, such as new equipments, that would represent an aggregate demand expansion.)	20 mins
Roles of Teacher	➢ Central Banker ➢ Facilitator	
Tools	➢ 6 – 7 bags of 10 pebbles	
Definitions	➢ Required reserve – banks are required to keep only a fraction of their cash deposits received from customers as reserves in vaults.	
References	➢ Cameron, Norman E. 1997. "Simulating Money Supply Creation in Class", *Economic Inquiry*, 35, July, P. 686 – 693. ➢ Lam, P. L. 1998. Advanced Level Macroeconomics 3rd ed. (Hong Kong: Macmillan Publishers).	

Appendix	**Materials for Teacher**
Figure 1	IOU
Figure 2	Deposit Certificates
Figure 3	Consolidated Balance Sheet for the Banking System