

Problem Set #3—Dealer Model
(due Wednesday October 16)

1. **Classic 19th Century Discount Mechanism.** Using the Sources and Uses accounting framework (lec 4), investigate the operations of the classic discount mechanism (lec 9). Specifically,

a) Suppose that cash inflows (from maturing bills) exceed cash outflows (from new discounts). What is the Use of the excess? Suppose that cash inflows fall short of cash outflows. What is the Source of the excess?

b) Suppose that the bank decides to shorten the term of its discount loans, so they repay sooner. How does this affect the balance between inflows and outflows?

c) In lecture, I asserted that an increase in the discount rate tends to cause a contraction of credit by discouraging customers from bringing new bills for discount. Use Sources and Uses (for flows) and T-accounts (for stocks) to show how the changing inflows and outflows result in overall balance sheet changes.

2. Treynor's Dealer Model. Please refer to Table III at

<http://www.newyorkfed.org/banking/reportingforms/primarystats/deal.pdf> (The question below refers to the numbers as of close of trading September 25, 2013: Government, Agency and GSE, MBS, Corporate.)

a) Taking all the dealer positions together, observe that primary dealers hold a net long position in bonds of about \$270 billion. (They may have derivative hedges against price risk on this position, so these positions are not necessarily their actual exposures, but let us assume so for the sake of the problem.) Using the Treynor model, depict this position in between the dealers' hypothetical maximum short and maximum long position.

b) In the Treynor model, the quoted price at the maximum short and maximum long position depends on the price at which value investors are willing to absorb excess inventories. But the size of the maximum position depends on the dealers' ability and willingness to shoulder the risk involved. What is the relevant risk in holding an inventory of bonds?

c) According to the Treynor model, how would dealers change their quoted price if a client (say the Fed) came in with a large order (say \$40 billion) to buy Mortgage Backed Securities? Use the Treynor diagram to show what happens.

d) Now consider what happens, according to the Treynor model, if the Fed instead announces a price at which it would be prepared to buy, but does not actually buy anything yet (similar to what Draghi has done at the ECB). You may assume that the announced price is slightly higher than current market price.

3. Funding Liquidity and Market Liquidity

a) Suppose that the dealers' maximum position increases, while the value investors hold constant the price at which they are willing to absorb excess dealer inventories. How does such a change affect the price the dealer quotes to the market? How does it affect price efficiency, assuming that fundamental value is the price when dealer net exposure is zero?

b) Suppose that the dealer raises his quote for both bid and ask. What is the likely effect on the flow of buy and sell orders? What is the likely effect on dealer inventories?

c) If dealers expand their inventories of bonds, they expand also their issuance of repo in order to finance those inventories. But that means that somewhere else in the economy someone is holding less bonds and more repo. Who?

4. Bank Holding Companies. Please refer to Stigum's Table 6.7 (p. 190-3).

a) Construct a balance sheet for 2005 Q3, and translate the line items into percentages of total assets to get a sense of the relative importance of loans and security holdings, as well as deposits, other borrowings, and capital.

b) Observe that the unused commitments to lend are about as big as total lending. How could the banking system fulfill those commitments if called upon?

c) Observe that the notional value of derivatives (billions, not millions) is a multiple of the entire balance sheet. Using a FRA as your example, show how the balance sheet would be changed if these off-balance sheet commitments were brought onto the balance sheet.

d) Explain the off-balance sheet item called "securitizations outstanding". What is the banking system's exposure here?