Funding Liquidity Risk

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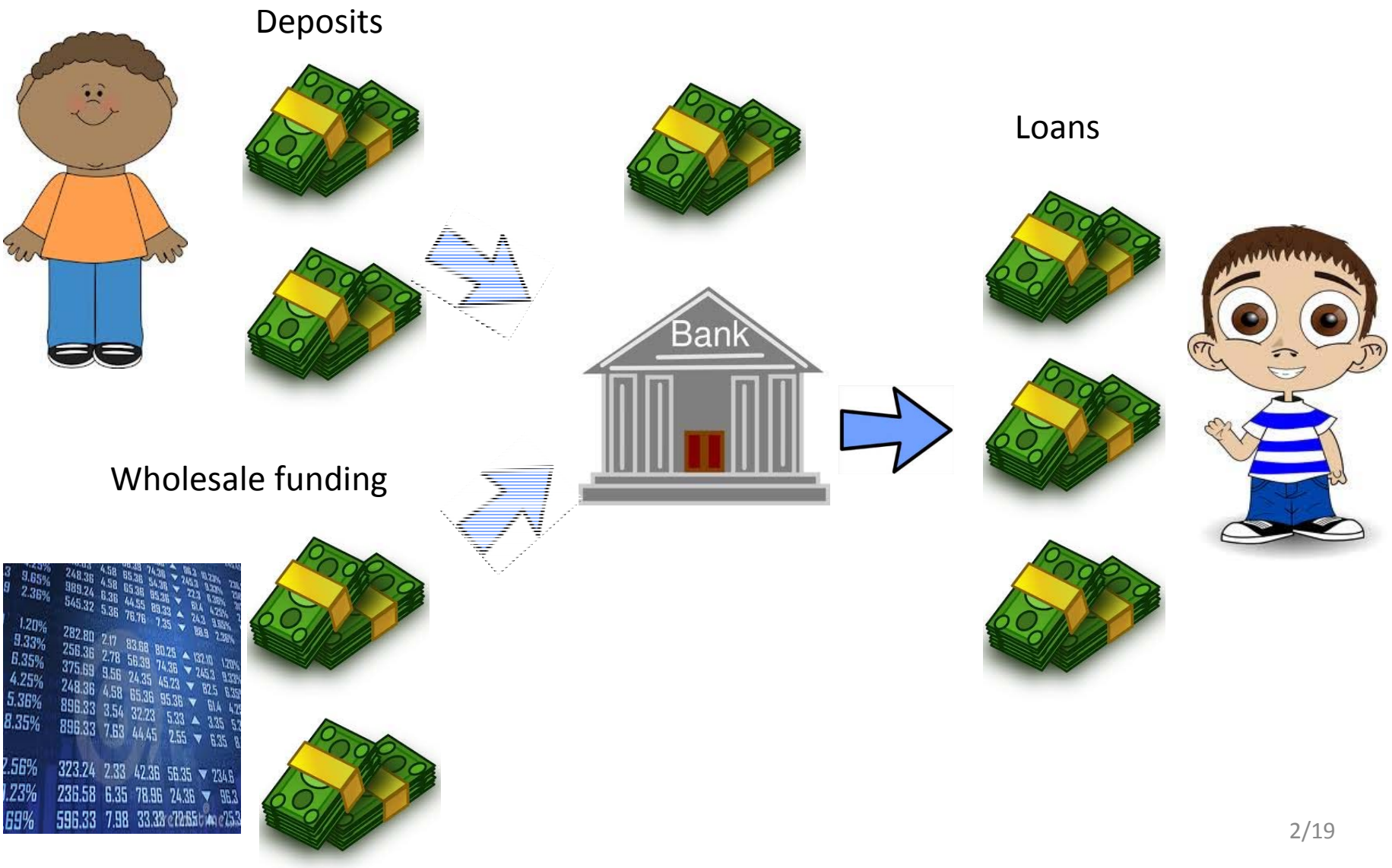
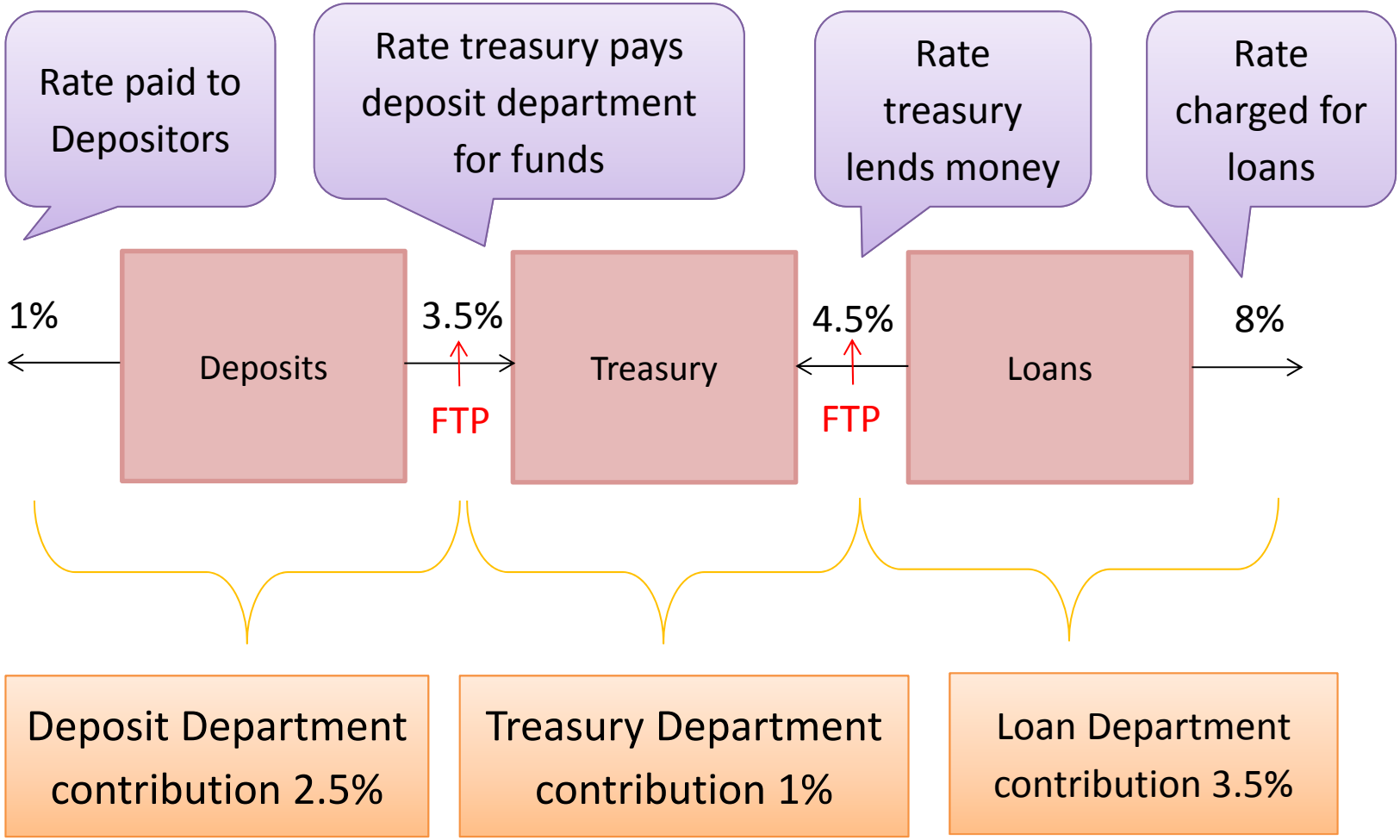
What is Liquidity Risk?

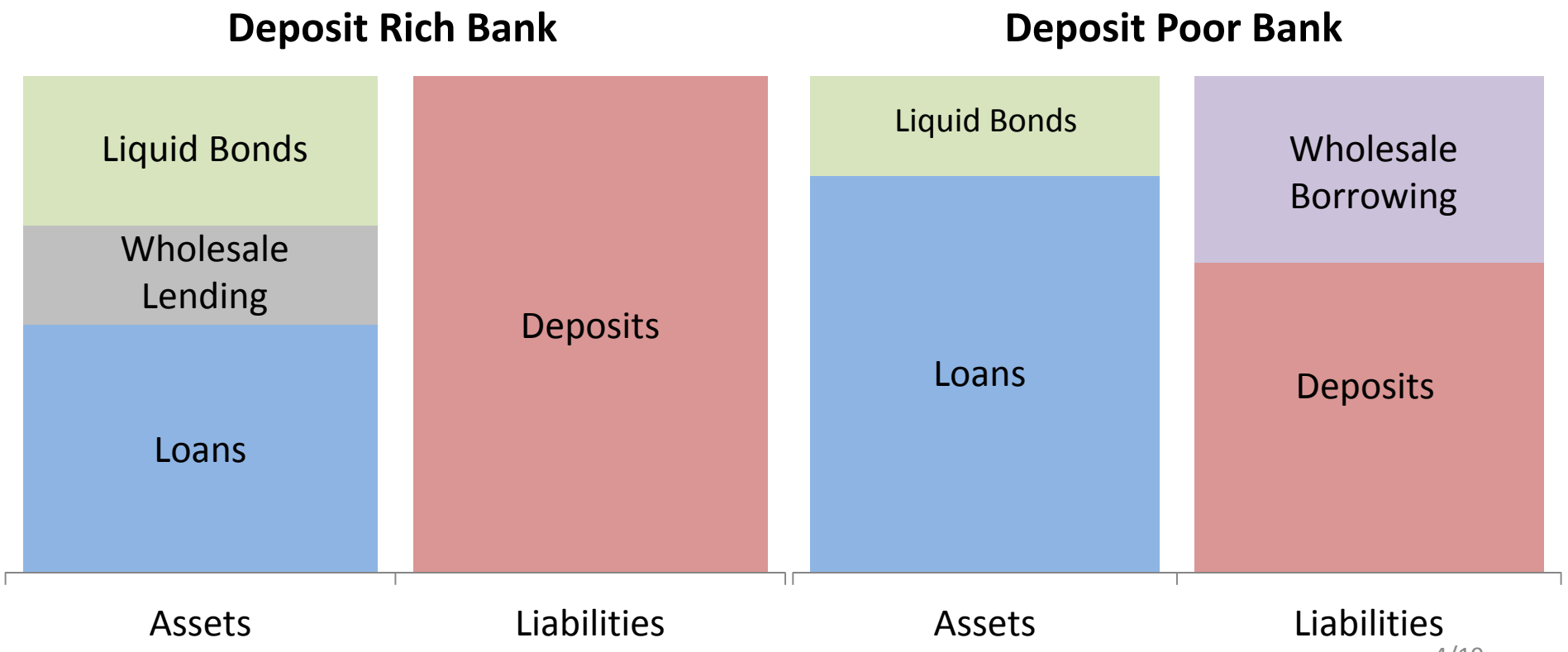


Fund Transfer Pricing



Bank's Balance Sheet

- Either be deposit rich or poor as shown in the graphs.



Profit Maximisation

Want to Maximise Profit from the following equation:

$$P = \underbrace{Li_L + M_L W_O + Bi_B}_{\text{Assets multiplied by asset return}} \underbrace{- Di_D - M_B W_B}_{\text{Liabilities multiplied by rate of return}}$$

Regulatory Requirements for Liquid Bonds:

$$B = \alpha D + \beta M_B$$

Comments

Comments on Profit Maximisation Formula

Bank sets i_L, i_D:

$$L \equiv L(i_L)$$
$$D \equiv D(i_D)$$

Wholesale market: Borrowing or Lending

Normally $M_B > 0, M_L = 0$

or $M_B = 0, M_L > 0$

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FTP Results

Deposit Rich (M_B=0):

$$P = L(i_L)(i_L - W_O) + D(i_D)\left((1-\alpha)W_O + \alpha i_B - i_D\right)$$

FTP Rate when bank is Deposit Rich:

For Loan Unit, FTP Rate is W_O

For Deposit Unit, FTP Rate is $(1-\alpha)W_O + \alpha i_B$

FTP Results

Similarly:

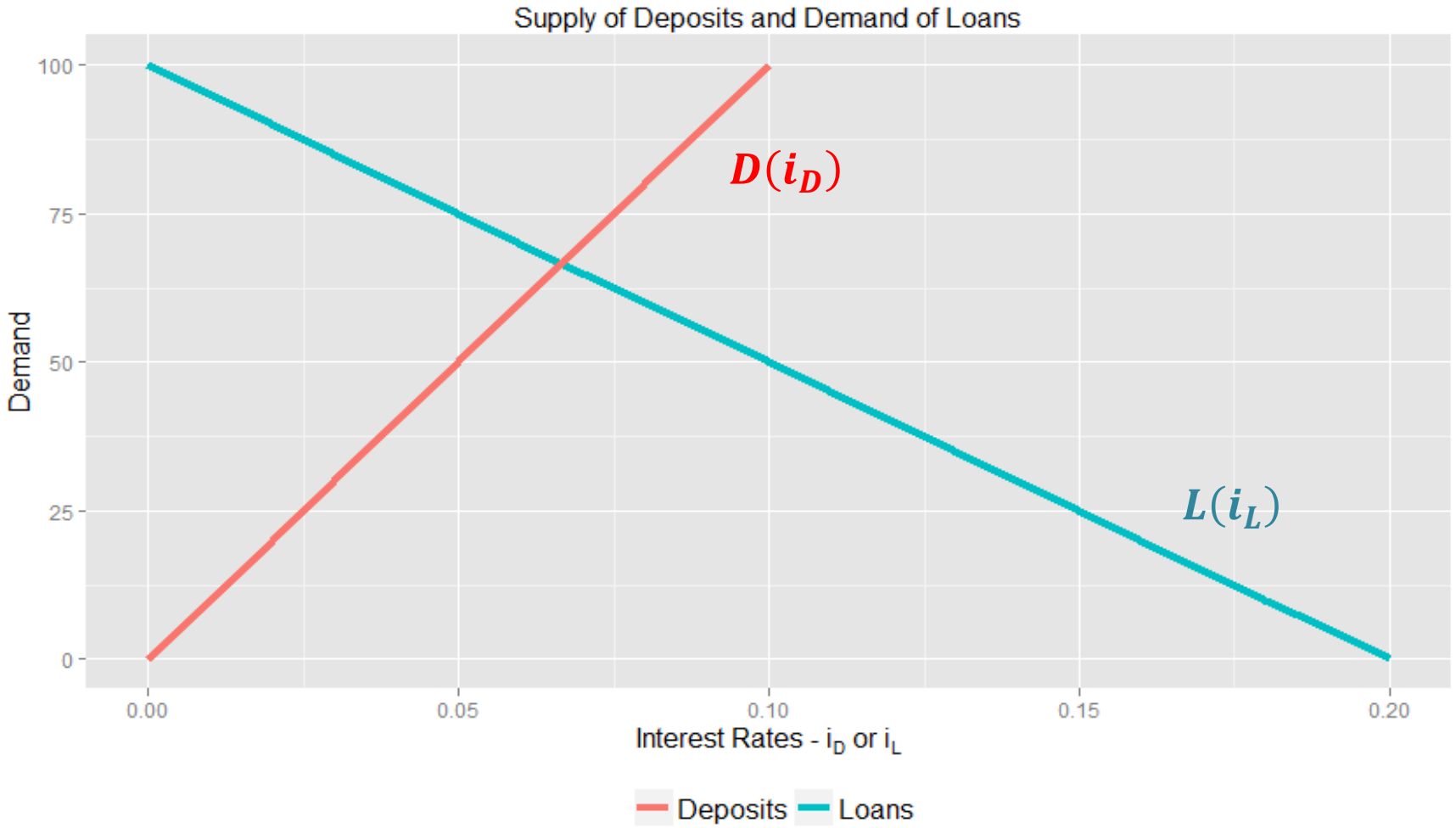
FTP Rate when bank is Deposit Poor (M_L=0):

For Loan Unit, FTP Rate is $\frac{W_B}{1-\beta} + \frac{\beta i_B}{1-\beta}$

For Deposit Unit, FTP Rate is

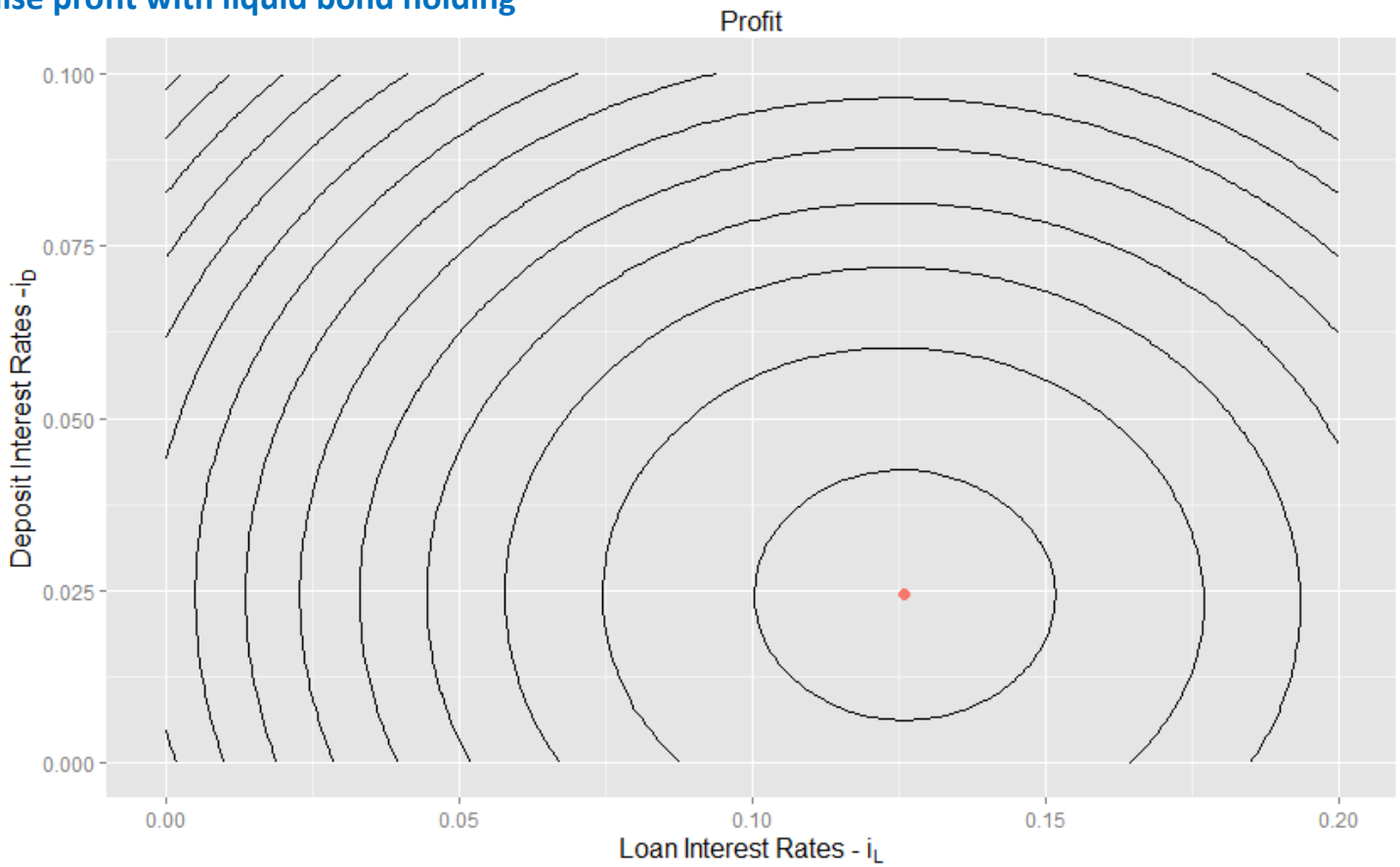
$$(1-\alpha)\left(\frac{W_B}{1-\beta} + \frac{\beta i_B}{1-\beta}\right) + \alpha i_B$$

$$P = L(i_L)i_L + M_L W_O + B i_B$$
$$-D(i_D)i_D - M_B W_B$$



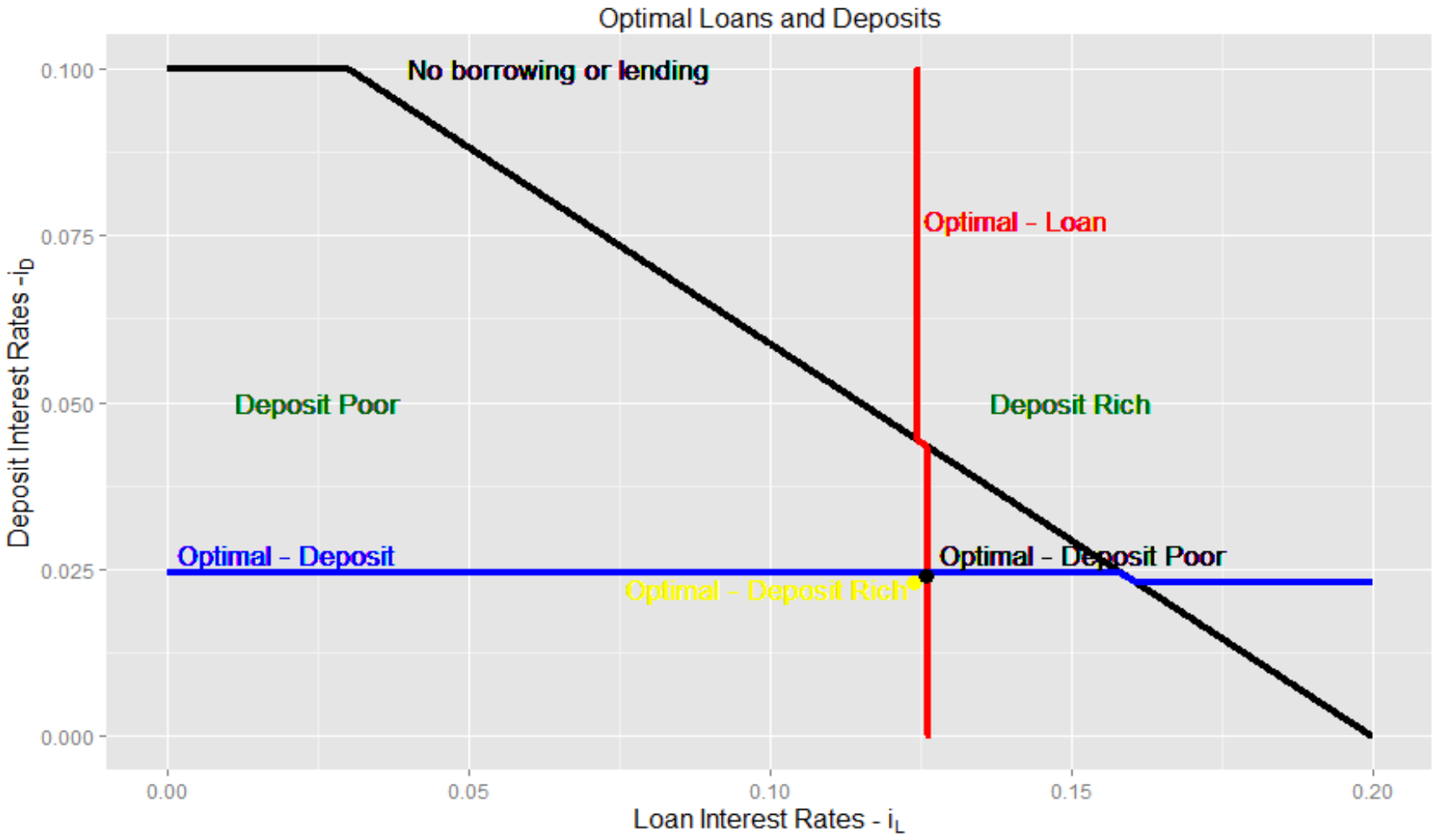
Profits

Maximise profit with liquid bond holding



Maximum Profit is £3.33m when $i_L = 12.61\%$ and $i_D = 2.44\%$

Deposit Poor



Conclusion

- FTP can be separated independently between business units
- FTP rates are independent of demand and supply functions
- Can be used to maximise overall profits of the bank
- It incorporates liquidity constraints within the FTP system
- More work needs to be done to estimate the appropriate α and β