How to value a client

Practical exercise

2206 - Banking | Session 4 | Carla Rebelo

How to value a client
Practical exercise

Step 1 Ms. Lagarde has 700 euros in deposits, earning 2%.

Step 2 She pays 10 euros/month of fees and commissions.

Step 3 She requested a loan of 8000 euros, paying 5% interest rate.

Step 4 The bank's credit scoring model suggests clients with profiles like Ms. Lagarde have a 2.5% probability of defaulting their loans, for a Loss Given Default of 60%.

Step 5 The bank has estimated managing a client like Ms. Lagarde costs €85/year.

Central bank requirements state that:

Step 6 i) a 3% cash reserve must be deposited with the CB for every deposit;

Step 7 ii) the bank must comply with a minimum 8% equity ratio.

Step 8 The Treasury department of the bank quotes liquidity at bid/ask of 3.25% - 3.75%.

Step 9 Cost of Capital stands at 7.7%.

How much does the Bank gain with Ms. Lagarde?

This exercise is taken from a lecture of Prof. Gonçalo Rocha.

How to value a client
Balance Sheet

BALANCE SHEET				Input
ASSETS	***Item***	***Amount***	***Resolution***	
Step 3	Loan	8000	*The Bank grants a loan to Ms. Lagarde @ 5% rate. The likelihood of this loan defaulting is given by the formula Cost of Risk = Probability of Default * Loss given default (2,5% * 60% = 1,5%).*	5% 1,5%
Step 6	Cash reserve held in Central Bank	21	*For every deposit received from a client (= liability), the Bank must keep 3% of the volume as a deposit with the Central Bank - ie, from the viewpoint of the Bank, it is a cash asset (700 * 3%).*	3%
Step 8 i)	Funds sold to the internal liquidity pool	679	*Reminder from session 2: a bank 'creates' money because it is allowed to use deposits, deducted from the compulsory cash reserve set aside with the Central Bank, to grant loans. This 'excess liquidity' is traded internally between the units inside the bank which collect deposits and the units which grant loans, at pre-defined prices, via a mechanism called 'Funds transfer pricing' (FTP). Therefore, the internal liquidity generated by Ms. Lagarde's deposit is equivalent to 'Deposit less Cash reserve with Central Bank' (700 - 21). The price to be charged is equivalent to FTP's bid level and can be considered interest income.*	3,25%
LIABILITIES	***Item***			
Step 1	Deposit	700	*The Bank receives the cash from Ms. Lagarde and pays a 2% rate*	2%
Step 8 ii)	Funds bought from the pool	7360	*Since the bank has granted a loan worth 8000, which is funded at 8% with own funds, this means 92% will require external funds, implying purchasing funds from the internal liquidity pool (8000 * 92% = 7360). These funds will be bought @ 3,75%.*	3,75%
EQUITY	***Item***		***Resolution***	
Step 7	Capital	640	*Capital is only required as a function of loan volumes - deposits are irrelevant for this purpose, therefore capital = 8000 * 8%.*	8,0% 7,7%

Note: please read step by step in the right order.

How to value a client
P&L

PROFIT & LOSS ACCOUNT			
INCOME	***Item***	***536***	***Resolution***
Step 2	Fees & Commissions	120	*Ms. Lagarde pays €120/year in fees (10 * 12 mths).*
	Net Interest received from loans	394	*Step 3 less step 4*
Step 3	*Gross interest received*	*400*	*Gross interest received on the loan (8000 * 5%).*
Step 4	*Interest to be lost in case of default*	*6*	*(Gross interest * Prob Default * Loss given default = 400 * 2,5% * 60%).*
Step 8 i)	Interest earned on funds sold to pool	22	*Interest @ 3,25% calculated over funds sold to pool (679 * 3,25%).*
EXPENSES	***Item***	***-544***	***Resolution***
Step 1	Interest paid	-14	*Interest paid on deposit (700 * 2%).*
Step 5	OPEX	-85	*Costs incurred by the bank to deal with Ms. Lagarde.*
Step 4	Cost of Risk	-120	*Amount at risk in case Ms. Lagarde defaults the loan (Loan * Prob Default * Loss given default = 8000 * 2,5% * 60%)*
Step 8 ii)	Interest paid on funds bought to pool	-276	*Interest @ 3,75% calculated over funds bought to pool (7360 * 3,25%).*
Step 9	Cost of capital	-49	*Cost of capital stands @ 7,7%.*
INCOME LESS EXPENSES		**-8**	
RAROC		-1,3%	(Income less Expenses) / Capital

Note: please read step by step in the right order.

How to value a client

Practical exercise

How much does the Bank gain with Ms. Lagarde?

This exercise is taken from a lecture of Prof. Gonçalo Rocha.