

Institute and Faculty of Actuaries

Scottish Board and Knowledge Sharing Scotland Iain McLellan

The Scottish Board

- The Scottish Board of the IFoA is accountable to members in Scotland and has three main key responsibilities (KRs):-
 - KR1 Encourage and Develop the Actuarial Community in Scotland. Key success to date has been the KSS and OCF CPD events. Greater links to students and understanding optimal communication strategy are 2015 objectives as well as greater oversight of the wider CPD programme in Scotland.
 - KR2 Raise the Profile of Actuaries and the Profession in Scotland. The profile and understanding of the IFoA was substantially enhanced by the Independence Vote with many new strong relationships made. Further 2015 work on engaging Employers, Schools/Universities, Media and PR as well as maintaining political engagement.
 - KR3 Encourage and Advance Academic Developments in Scotland. The key success has been use of the Endowment Fund to help set up the ARC which is maturing and developing, we would welcome member input on use of the remaining Endowment Fund. The key 2015 roadmap for this KR is to understand and develop structure around academic developments in Scotland as well as develop a forward plan for the Endowment.
- The Leader of the Scottish Board is Suzanne Vaughan (Towers Watson) and the Regions Manager is Tess Joyce (<u>Tess.Joyce@actuaries.org.uk</u>). We'd actively like more member feedback on the Scottish Board activities and willing volunteers to join the Board to help support the profession in Scotland.

Summary of Scottish Events



- This is a KSS event put on by the Scottish Board in relation to feedback from members wanting more frequent and less formal CPD events in Scotland.
- The future KSS and OCF events for 2015 are:-
 - KSS 29 September What is funding liquidity risk and how can a bank manage it? Edinburgh
 - KSS 22 October Model Independent Price Bounds for the Swiss Re Mortality Bond 2003. Edinburgh
 - OCF 27 October Testing, communicating and justifying your capital model Working paper of the Life Aggregation and Simulation Techniques working party. Edinburgh
 - OCF 26 November Sustainability and the Financial System. Edinburgh
- The Leading Actuary Programme.
 - First workshop 23 September in Glasgow



What is funding liquidity risk and how can a bank manage it?

lain Ritchie

Actuarial Research Centre 16 September



LEHMAN BROTHERS





northern rock



















Depositors











Run on the bank!



Managing Liquidity

Maturity mismatch

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			Ма	aturit	y mis	matc	h			LUSTRA	
Purpose: bucket. Measure:	To measure the net funding requirement (or surplus) per maturity This is the main regulatory requirement for liquidity measurement.										
Analysis: liquid additional determine	In the short-term, when commitments (cash outflows) exceed assets (cash inflows) the Money Markets desk need to raise funding. In the longer-term, structural imbalances, ALCO will the appropriate funding strategy.										
Maturity Mismate	ch Ladde	er									
Si	ght 8	8 Day	1 month	3 то	6 то	1 year	3 years	5 years	5 years+	TOTAL	

	Sight	8 Day	1 month	3 mo	6 mo	1 year	3 years	5 years	5 years+	TOTAL
Inflows	805	383	273	268	143	129	276	657	742	3,675
Outflows	980	813	838	1,563	277	52	11	0	0	4,533
Mismatch	(175)	(430)	(570)	(1,295)	(134)	77	265	657	742	(858)













Bank's Balance Sheet

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

Deposit Rich Bank

Deposit Poor Bank



Want to Maximise Profit from the following equation:

 $P = Li_L + M_L W_O + Bi_B - Di_D - M_B W_B$ Liabilities multiplied Assets multiplied by asset return

by rate of return

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 $M_B = 0, M_L > 0$

Want to Maximise Profit from the following equation:

 $P = \underline{Li}_{L} + M_{L}W_{O} + Bi_{B} - Di_{D} - M_{B}W_{B}$ Liabilities multiplied Assets multiplied by asset return

by rate of return

Want to Maximise Profit from the following equation:

 $P = Li_L + M_L W_O + Bi_B - Di_D - M_B W_B$

Assets multiplied by asset return

Liabilities multiplied by rate of return

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Assets multiplied by asset return

Liabilities multiplied by rate of return

FTP Results

Deposit Rich (M_B =0):

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

FTP Rate when bank is Deposit Rich: For Loan Unit, FTP Rate is W_0 For Deposit Unit, FTP Rate is $(1 - \alpha)W_0 + \alpha i_B$

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

FTP: What we have learned

- FTP can be separated independently between business units
- FTP rates are independent of demand and supply functions
- FTP can be used to maximise overall profits of the bank
- Liquidity constraints can be incorporated within the FTP system

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



Profits



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

Deposit Poor



Multi-Period Model

- So far we have only looked at one time period
- Loans and deposits are often granted for multiple time periods
- There is uncertainty on when loans may be repaid due to the option of prepayment
- Customers have the right to withdraw their money anytime
- These options have a cost for the business and need to be reflected in the FTP

Conclusion

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