#### FRIENDS PROVIDENT

# One Company's Journey to Realistic Reporting

1

Actuarial Life Convention Edinburgh November 2004

## 

Friends Provident

A Brief History

- Demutualised 9 July 2001 this stood put us in good shape
- September 2002 involved in first realistic balance sheet submission
- March 2004 published realistic balance sheet in RNS
- November 2004 involved in pilot Individual Capital Assessment Exercise

2

## PROVIDENT Agenda

© Friends Provident

- 1. Volatility assumptions & Market Consistency
- 2. Data Grouping
- 3. Risk Appetite Setting
- 4. Diversification
- 5. Management Decisions & Policyholder Behaviour

3

6. Next Steps





















ABI volatility survey					
Value of put option	Company 1	Company 2	Company 3	Company 4	Company 5
Strike	0.7	5 * 1 million	* (1 + risk fr	ee rate) ^ tei	m
Term	5 years	5 years	5 years	5 years	5 years
Asset type (all UK assets)					
FTSE All Share Index	50,934	61,132	65,742	40,638	57,26
Property	17,769	30,824	31,192	24,559	30,99
Rolling 15 year risk free zero coupon bonds	10,733	16,309	11,110	4,546	6,38
Portfolio of 65% FTSE All Share and 35% property	36,480	33,336	29,796	23,331	29,10
Portfolio of 65% equity and 35% 15 year risk free zero coupon bonds	18,273	20,954	24,291	14,809	20,62



Volatility	Company 1	Company 2	Company 3	Company 4	Company 5
Strike	0.7	75 * 1 million	* (1 + risk fr	ee rate) ^ te	rm
Term	5 years	5 years	5 years	5 years	5 years
Asset type (all UK assets)					
FTSE All Share Index	18.49%	20.18%	20.93%	16.72%	19.55%
Property	12.23%	14.92%	14.99%	13.69%	14.95%
Rolling 15 year risk free zero coupon bonds	10.49%	11.90%	10.59%	8.45%	9.15%
Portfolio of 65% FTSE All Share and 35% property	15.97%	15.39%	14.72%	13.44%	14.59%
Portfolio of 65% equity and 35% 15 year risk free zero coupon bonds	12.35%	12.94%	13.64%	11.54%	12.87%



ABI volatility survey					
Volatility	Company 1	Company 2	Company 3	Company 4	Compar 5
Strike	0.7	5 * 1 million	* (1 + risk fr	ee rate) ^ te	rm
Term	5 years	5 years	5 years	5 years	5 year
Asset type (all UK assets)					
FTSE All Share Index	18.49%	20.18%	20.93%	16.72%	19.55%
Property	12.23%	14.92%	14.99%	13.69%	14.95%
Rolling 15 year risk free zero coupon bonds	10.49%	11.90%	10.59%	8.45%	9.15%
Portfolio of 65% FTSE All Share and 35% property	15.97%	15.39%	14.72%	13.44%	14.59%
Volatility if perfectly correlated	16.57%	18.51%	19.06%	15.73%	18.07%
Portfolio of 65% equity and 35% 15 year risk free zero coupon bonds	12.35%	12.94%	13.64%	11.54%	12.87%
Volatility if perfectly correlated	16.15%	17.73%	18.00%	14.38%	16.66%

•		

Abi volatility survey					
Volatility	Company 1	Company 2	Company 3	Company 4	Company 5
Strike	0.7	5 * 1 million	* (1 + risk fr	ee rate) ^ te	rm
Term	5 years	5 years	5 years	5 years	5 years
Asset type (all UK assets)					
FTSE All Share Index	18.49%	20.18%	20.93%	16.72%	19.55%
Property	12.23%	14.92%	14.99%	13.69%	14.95%
Rolling 15 year risk free zero coupon bonds	10.49%	11.90%	10.59%	8.45%	9.15%
Portfolio of 65% FTSE All Share and 35% property	15.97%	15.39%	14.72%	13.44%	14.59%
Volatility if perfectly correlated	16.57%	18.51%	19.06%	15.73%	18.07%
Average correlation	0.90	0.43	0.01	0.38	0.16
Portfolio of 65% equity and 35% 15 year risk free zero coupon bonds	12.35%	12.94%	13.64%	11.54%	12.87%
Volatility if perfectly correlated	16.15%	17.73%	18.00%	14.38%	16.66%
Average correlation	-0.07	-0.21	-0.14	0.08	-0.09



Volatility	Company 1	Company 2	Company 3	Company 4	Company 5
Strike	0.7	5 * 1 million	* (1 + risk fr	ee rate) ^ te	rm
Term	5 years	5 years	5 years	5 years	5 years
Asset type (all UK assets)					
FTSE All Share Index					
Property					
Rolling 15 year risk free zero coupon bonds					
Portfolio of 65% FTSE All Share and 35% property					
Volatility if perfectly correlated					
Average correlation	0.90	0.43	0.01	0.38	0.16
Portfolio of 65% equity and 35% 15 year risk free zero coupon bonds					
Volatility if perfectly correlated					
Average correlation	-0.07	-0.21	-0.14	0.08	-0.09



ABI volatility survey					
Volatility	Company 1	Company 2	Company 3	Company 4	Company 5
Strike	0.7	5 * 1 million	* (1 + risk fr	ee rate) ^ te	rm
Term	5 years	5 years	5 years	5 years	5 years
Asset type (all UK assets)					
FTSE All Share Index	18.49%	20.18%	20.93%		19.55%
Property	12.23%	14.92%	14.99%		14.95%
Rolling 15 year risk free zero coupon bonds					
Portfolio of 65% FTSE All Share and 35% property	15.97%	15.39%	14.72%		14.59%
Volatility if perfectly correlated					
Average correlation	0.90	0.43	0.01		0.16
Portfolio of 65% equity and 35% 15 year risk free zero coupon bonds					
Volatility if perfectly correlated					
Average correlation					

- 1. Volatility assumptions & Market Consistency
- 2. Data Grouping
- 3. Risk Appetite Setting
- 4. Diversification
- 5. Management Decisions & Policyholder Behaviour

15

6. Next Steps

PRIENDS PROVIDENT			
Grouping of	data – a simple exai	nple	
Contract A – £1000 Contract B – £1000 Contract C – £1000 Versus <b>Grouped A+B+C =</b>	) guarantee in 10 years with as guarantee in 10 years with as ) guarantee in 10 years with as 2 guarantee in 10 years with as 2 £3000 guarantee with £3500	set share worth £1500 now set share worth £1000 now set share worth £500 now D asset share	
Using only general	reasoning:		
	Start Intrinsic Value Min (gtee – asset share, 0)	Option value	1
Contract A	0	zero Intrinsic + low Time value	
Contract B	0	zero Intrinsic + high Time value	
Contract C	500	high Intrinsic + low time value	
	500	= Significant liability	
Grouped A+B+C	0	zero Intrinsic + low Time value = Low liability	
A poor grouping rul individual model po	e has destroyed the intrinsic v ints.	alue of the grouped model point relat	ive to the
© Friends Provident	16	1	



PROVIDENT					
Convergence of grou	ped data				
Impact of grouping	Number of model points used	Cost of guarantee	Grouping error understatement	Sum of In the Money	Sum of Out The Money
Individual model points	326,080	1,021	0	625	451
© Friends Provident	17				

PROVIDENT						
Convergence of gr	ouped data					
Impact of grouping	Number of model points used	Cost of guarantee	Grouping error understatement	Sum of In the Money	Sum of Ou The Money	
Individual model points	326,080	1,021	0	625	451	
Outstanding term only	40	885	(136)	233	59	
Friends Provident	18					



Convergence of grouped data											
Impact of grouping	Number of m points use	odel ed	Cost of guarantee	Grouping error understatement	Sum of In the Money	Sum of Out The Money					
Individual model points Grouped by:		326,080	1,021	0	625	451					
Outstanding term only		40	885	(136)	233	59					
Plus by product	40 * 58 =	2,320	949	(72)	490	316					
© Friends Provident		19									



PROVIDENT										
Convergence of gro	uped data									
	-									
Impact of grouping	Number of m	odel	Cost of	Grouping error	Sum of In	Sum of Out				
impact of grouping	points use	ed	guarantee	understatement	the Money	The Money				
Individual model points		326,080	1,021	0	625	451				
Grouped by:										
Outstanding term only		40	885	(136)	233	59				
Plus by product	40 * 58 =	2,320	949	(72)	490	316				
Plus by in the Money / Out the Money	2320 - 2 =	4,640	996	(25)	625	451				
© Friends Provident		20								



Convergence of grouped data												
Convergence of group	ed data											
Impact of grouping	Number of n points us	nodel ed	Cost of guarantee	Grouping error understatement	Sum of In the Money	Sum of Out The Money						
Individual model points		326,080	1,021	0	625	451						
Grouped by:												
Outstanding term only		40	885	(136)	233	59						
Plus by product	40 * 58 =	2,320	949	(72)	490	316						
Plus by in the Money / Out the Money	2320 - 2 =	4,640	996	(25)	625	451						
then by Degree in the money = 3% and 8% bands	4,64U * 3 =	13,920	1,010	(11)	625	451						
© Friends Provident		21										



						_				
Convergence of grouped data										
	Number of n	nodel	Cost of	Grouping error	Sum of In	Sum of Out				
Impact of grouping	points us	ed	quarantee	understatement	the Money	The Money				
			<b>J</b>							
Individual model points		326,080	1,021	0	625	451				
Grouped by:			<i>,.</i>							
Outstanding term only		40	885	(136)	233	59				
Plus by product	40 * 58 =	2,320	949	(72)	490	316				
Plus by In the Money / Out the Money	2320 * 2 =	4,640	996	(25)	625	451				
then by Degree in the money = 3% and 8% bands	4,640 * 3 =	13,920	1,010	(11)	625	451				
or by Degree in the money = 5% and 15% bands	4,640 * 3 =	13,920	1,015	(5)	625	451				
© Friends Provident		22								



- 1. Volatility assumptions & Market Consistency
- 2. Data Grouping
- 3. Risk Appetite Setting
- 4. Diversification
- 5. Management Decisions & Policyholder Behaviour

23

6. Next Steps

	PROVIDENT									
	Different ways of expressing Risk Appetite									
	Risk appetites quantitatively a	can be expressed qualita and through scenario tes	atively, tting							
	Approach	Description	Examples							
	Quantitative measures	Probability of survival over defined time horizon Target credit ratings Earnings volatility Economic capital Target share price Exposure limits Allowable loss by risk type	<ul> <li>95% probability of remaining solvent over 40 years</li> <li>AA (S&amp;P) / Az (Moody's)</li> <li>Will not suffer downside earnings shock of more than £100m</li> </ul>							
	Scenario- based	Ability to survive defined events     / circumstances	<ul> <li>Ability to survive a 20% fall in the stock market</li> <li>Ability to survive disaster at head office site</li> </ul>							
	Qualitative expressions	<ul> <li>Extent to which FP is willing to take on particular risk types, or is risk averse</li> </ul>	<ul> <li>Will actively seek to make a return from credit risk, while minimising operational risk</li> </ul>							
© Friends	s Provident	24								











## PROVIDENT

© Friends Provident

## Qualitative Risk Appetite – Components

Risk appetite can be considered in 2 parts:

27

- Time horizon
- Confidence level





## 

ds Pro

#### **Review of Risk Appetite**

## Once set, the risk appetite should be periodically reviewed.

A change in risk appetite may be considered because of:

- A change in the business environment, for example regulatory or market condition changes, resulting in new organisational ambitions and goals
- A significant change in the business's risk profile, for example a new cure for cancer causing a shift in mortality expectations
- A significant change in business's risk bearing capacity such as a change in credit rating changing the cost of raising capital

29









- 1. Volatility assumptions & Market Consistency
- 2. Data Grouping
- 3. Risk Appetite Setting
- 4. Diversification
- 5. Management Decisions & Policyholder Behaviour

32

6. Next Steps

Friends Provident

## 

#### Does Diversification really exist?

Examples:

- · Investing in one company versus investing in many companies
- The chance of one person dying versus the chance of many independent people dying
- A policy for combined PHI and Term Assurance the PHI policy pays out whilst the person is sick the Term Assurance pays when the person dies.
- Mortality risk in Annuitants versus Term Assurance

The Insurance Industry is built on the concept of diversification!!

33









## PROVIDENT

© Friends Provident

#### Allowing for diversification?

- i. If the risks are dependent then add the risks together
- ii. If the risks are hedged then subtract the risks from each other
- iii. If the risks are independent then can use the square root of the sum of the squares
- iv. If the risks are normally distributed then can use correlations between the risks to allow for diversification.
- v. If the risks are not normally distributed then need to use more powerful stochastic methods

36







- 1. Volatility assumptions & Market Consistency
- 2. Data Grouping
- 3. Risk Appetite Setting
- 4. Diversification
- 5. Management Decisions & Policyholder Behaviour

39

6. Next Steps

Management desigions			
Management decisions			
Managing a simple balance a covers the RCM:	sheet with 50	0 working	capital t
	Assets	Liabilities	
Asset shares	10,000	10,000	
Options and guarantees	2,000	2,000	
RCM for market r only	risk 500	500	
There are various levers ava balance sheet:	ailable to man	agement t	o influer
Hedg	ge		
• Varia	able benefits		
Char	ge for guaran	tees	
ends Provident	40		

Management decisions										
Aim	Aim Hedge Variable benefits						Charge for guarantees			
Method	Using i replic port	nternal ating iolio	Buy deri in the n plac	vatives narket ce	Reduce t	he EBR	Redu futur assun	ce the e RB nption	Retrosp char	pective ges
Benefit	Protect future v is as as	cted if olatility sumed	The market risk is transferred, but at an expensive bid/offer spread		Lower volatility sha	Lowers the volatility of asset share		Lowers the level of guarantees		ices share
Risk	Still exp future c in the ri rate and vola	osed to hanges sk free d asset tility	May n available hefty bio spre	ot be e, pay a d/offer ad	Reduces the customers upside potential		May be by minir guara	limited num RB ntees	ls it f	air?
Impact on RBS	Assets	Liabs	Assets	Liabs	Assets	Liabs	Assets	Liabs	Assets	Liabs
Asset shares						-				(150)
Options			-		-	(150)	-	(100)		25
RCM	-	(200)	(100)	(500)	-	(50)	-	(30)	-	-
Working capital	200	-	400	-	200	-	130		125	-
© Friends Provident	t				41					









