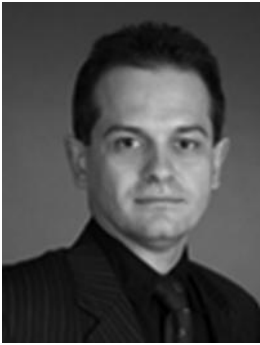


. . -
:
.



(DB)

DB

DB

DB

2008 .

2003 .

2008 .

DB

2008 .

¹ 2001 . 2003 .

(Value-at-Risk),
 ” ”² . , -
 DB (ALM). DB DB ,
 - . -
 , , 3 . -
 . -
 DB - -
 - -
 4 . -
 DB ,
 • XXI . :
 • DB DB
 • DB - -
 (ALM). -
 • ALM, -
 DB , : -
 , -
 DB ” ” ALM -

² ” ” (fat tails) ,
³ .125, .2 .209, .2 // , 110, 1999.
⁴ ” ” (pension fund governance)

(Clark, G. Pension fund governance: expertise and organizational form. //Journal of Pension Economics and Finance, 3, 2004, pp. 233–253.)

OECD Working Center, World Bank Research Center, International Federation of Pension Funds Administrators, The Pension Institute, Employee Benefits Research Institute

1.

().

⁵ (final salary schemes),

60-70%.

DB (career average schemes),

90- XX ⁶

2/3 DB

DB

DB

⁵ " "

⁶ (flat rate scheme),

DB

(vesting)⁷.

DB 40%

DB DB

-DB

DB

1) " " DB (hard freeze).

2) " " DB (soft freeze).

⁷

(Tax Reform Act) 1986 . : 1)

2) 5 (cliff vesting)

(graded vesting)

20% DB , 40% - 100%. (: U. S.

Department of Treasury. Taxation of technical Services Personnel: Section 1706 of the Tax Reform Act of 1986. //Report to the Congress, March 1991.)

⁸ Employee Benefit Research Institute. Defined Benefit Plan Freezes: Who's Affected, How Much and Replacing Lost Accruals. //Issue Brief, 291, March 2006.

			DB	
3)		DB	(partial freeze).	-
				-
				-
				-
				-
2.				-
		DB		-
				-
				-
				-
		(PBGC)	(PPF)	-
				-
				-
				-
				-
2009 ⁹		30%, 21,9	PBGC	PBGC
				-
			DB	¹⁰ ,
				-
				-
			DB	-
				-
			DB	-
				-
				-

⁹ Pension Benefit Guaranty Corporation. Annual Report. Washington D. C., 2009, p. 2.

¹⁰ (market timing)

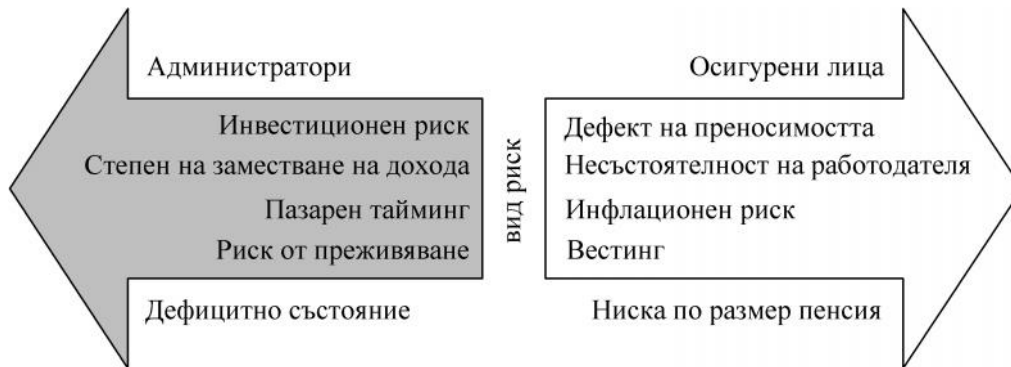
DB

DB

DB
 (longevity risk).
 (deferred life annuity),
 DB
 DB
 (portability problem)
 (. 1).
 25–30%
 DB

¹¹ DB 2,5%
 International Monetary Fund. Risk Management and the Pension Fund Industry. //Global Financial Stability Report. IMF: Washington D. C., September, 2004.

¹² Bodie, Z., A. Marcus, R. Merton. Defined benefit versus defined contribution pension plans: What are the real tradeoffs? //Working Paper: National Bureau of Economic Research, 1719, October, 1985.



. 1.

DB

” , ” , -

DB , , ,

DB , DB

” - , ” -

DB -

3.

XXI

DB , , , -

XXI DB - -

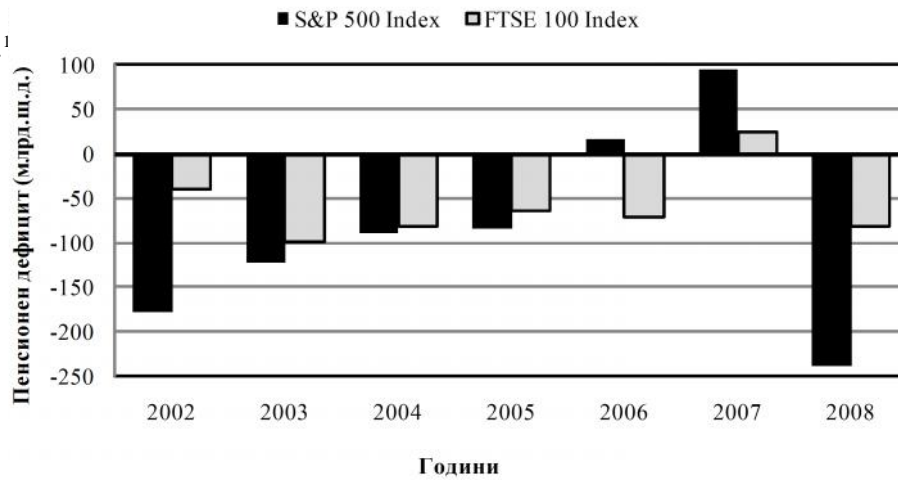
S&P 500 Index, DB ,

2008 . 238 . . . ,

- 2002 . (. . 2)¹³. , -

¹³ Bonafede, J., St. Foresti, J. Dashtara. Report on corporate pension funding levels. Wilshire Associates Incorporated, 2007, p. 2.

¹⁴ Accounting for pensions: annual survey. Lane Clark & Peacock, 2005, p. 3.



2.

DB
2002 – 2008¹⁵

DB

Dow Jones STOXX 50 blue chip Index

154

8

2008

2007¹⁶

DB

1.

I

STOXX 50

Index 2004 . 2008 .

	/ (.)					
	2004	2005	2006	2007	2008 ¹⁷	
	- 6,4	- 6,6	- 17,3	n/a*	n/a	-
	- 4,3	- 4,5	- 14,6	- 6,5	- 13,3	105%

¹⁵

¹⁶

Dow Jones STOXX 50 Index

16

¹⁷

2007 . 2008 .

FTSE Global 100 Index.
100 Index

47

Dow Jones STOXX 50 Index

9

FTSE Global

	- 2,5	- 2,5	- 4,3	- 0,3	- 2,7	800%
	- 1,9	- 2,2	- 9,3	- 11,8	- 14,0	19%
	- 1,2	- 1,8	- 6,0	n/a	n/a	–
	- 1,1	- 1,0	- 1,7	1,3	- 9,7	- 846%
	- 1,2	- 0,6	- 0,4	n/a	n/a	–
	- 0,1	- 0,1	- 0,1	n/a	n/a	–

: IFSL Research. Pension markets. IFSL Pension Group, U.K., 2006–2009.

: (*) n/a (not available) –

DB

19 (IAS 19),
DB

18

DB

2006

71

36,5%, . . . 52

18,75%,

DB
(underfunded).

(funding ratio –

¹⁸ Ageing and pension system reform: implications for financial markets and economic policies. // OECD Publishing, 2005, 1, . 89–92.

FR) 2001 . 100%. 17%
 2005 . -
 DB - 6%. 2004 .,
 DB
 101% (. . 3).
 81% 2008 .



. 3. DB 2000– 2008 .¹⁹

DB . -
 2005 .
 75,3%, - 84,8%.
 DB .
 DB 25- . 50%
 DB . 97,5%.
 DB .

¹⁹ Bonafede, J., St. Foresti, J. Dashtara. Report on corporate pension funding levels. Wilshire Associates Incorporated, 2009, p. 4.

DB

4,77% 2005 . 10%, 5,32% 2004 . 51,6

20

2,6%

2005 . 2000 . 5,60%.

DB

DB

1.

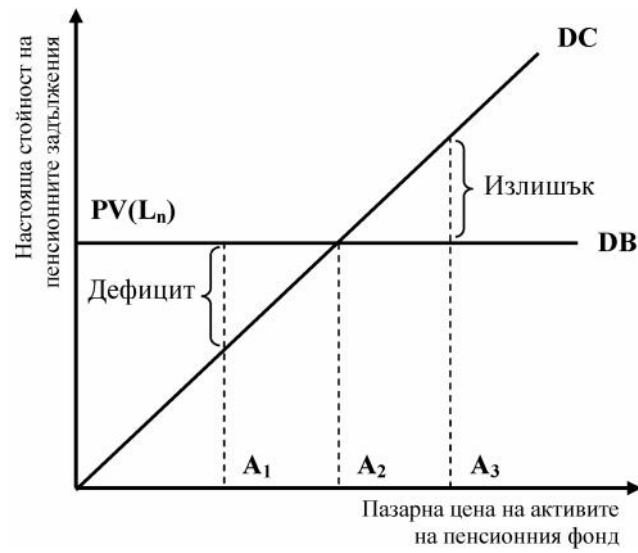
() .

²⁰ Accounting for pensions: annual survey. Lane Clark & Peacock, 2006, p. 26.

DC
(full funded).

21
DC

.4
DC



. 4.

DB
100%
(. . 4).

21

12

(dividend discount model). (- .: Head, S. et al. Pension fund valuations and market values. // British Actuarial Journal, 6 (1), 2000, . 55-141.)

DB (10),

DB (accrued benefits funding method) (prospective benefits funding method)²³.

(SCR)

²⁴ (L). SCR

SCR

$$SCR_{(0;n)} = \frac{PV[L_n] - L_0 + PV[B_{(0;n)}]}{PV[S_{(0;n)}]}, \quad (1)$$

$SCR_{(0;n)}$;
 $PV[L_n]$ - ;
 $PV[B_{(0;n)}]$ - ;
 $PV[S_{(0;n)}]$ - ;
 $n -$;
 $L_0 -$ ²⁶ - ;
 L ;
 L (, , DB).

²² contribution rate – SCR). (standard

²³ Pension fund terminology. //Guidance note: Faculty and institute of actuaries, 26, 1996.

²⁴ (actuarial liability).

²⁵ The Financial Reporting Council Ltd. Pension fund terminology: specimen descriptions of commonly used valuation methods. U.K., GN26, 2001, <<http://www.frc.org.uk>>.

²⁶ ” ”

obligation). (accumulated benefit

()

(project benefit obligation).

L.

²⁷.

L

FAS 87,
19.

SCR
DB

FRS 17

IAS

²⁸.

SCR,
DB

SCR

DB

SCR

(TB_0),

(L_0).

L_0

SCR

²⁹.

²⁷ McLeish, D., C. Stewart. Objectives and methods of funding defined benefit pension schemes. //Transactions of the faculty of actuaries, 40, 1987, p . 338–424.

²⁸ O'Regan, W., J. Weeder. A dissection of pensions funding. //Journal of the students' society, 32, 1990, p . 71–115.

²⁹ The Financial Reporting Council Ltd. Pension fund terminology: specimen descriptions of commonly used valuation methods. U.K., GN26, 2001, <<http://www.frc.org.uk>>.

$$SCR_0 = \frac{PV[TB_0] - L_0}{PV[S_0]}, \quad (2)$$

SCR_0 ;
 L_0 - ;
 $PV[TB_0]$ - ;
 $PV[S_0]$ - ;

(DB)
 FR 105%, 10%, 5-
 100% (Finance Act, 1986).
 FR 90%.
 DB
 (PBGC),

„ („Early Warning Program”).

2. :

DB

³⁰ Pension Act. U. K., 1995, <<http://www.opsi.gov.uk>>.
³¹ ERISA. The Employee Retirement Income Security Act, 29 U.S. Code, Chapter 18, 1974, <<http://finduslaw.com>>.

() .

DB „ – ” (mean-variance measure) DB

³² 90- XX DB

(asset-liability management – ALM)³³. ALM

DB

ALM.

DB , ³⁴. ALM

(. „ ”) .

ALM, DB ALM

ALM DB

DB

ALM

³⁵ DB

³² Campbell, J., L. Viceira. Strategic Asset Allocation for Pension Plans. Oxford handbook of pensions and retirement income. 2006.

³³ ALM 1998 . : Dert, C. A Dynamic Model for Asset Liability Management for Defined Benefit Pension Funds. Cambridge University Press, 1998, pp. 501 – 536.).

³⁴ Ziemba, W., J. Mulvey. Worldwide asset and liability modeling. Cambridge: Cambridge University Press, 1998.

³⁵ Boulier, J. Selected ALM Issues. Asset and Liability Mangement J. A Synthesis of New Methodologies. London: Risk Books, 1998, pp. 21 J. 47.

ALM DB

ALM.

ALM

()

ALM DB

36.

ALM

ALM

ALM

DB

90- XX 37.

2007-2009 . 80%.

DB

ALM.

³⁶ Myner, P. Institutional investment in the UK: a review. London: HM Treasury, 2001, p. 7.

³⁷ "paradox)." (equity premium

investments – LDI). LDI (liability driven

, -
-
-
DB -
DB -
-
LDI -
LDI -
DB -
, LDI DB -
-
-
LDI -
DB -

1.

DB LDI

1) 100% DB

PBO,

2)

e -

3)

XXI (. . 3). DB

DB

38 DB 12-15

$$PV[L_n]$$

$$PV[L_n],$$

38 DB

(D) $t, A_0 -$: $D = \left[\sum_{t=1}^n PV(L_t)t \right] / A_0,$ L_t , r -

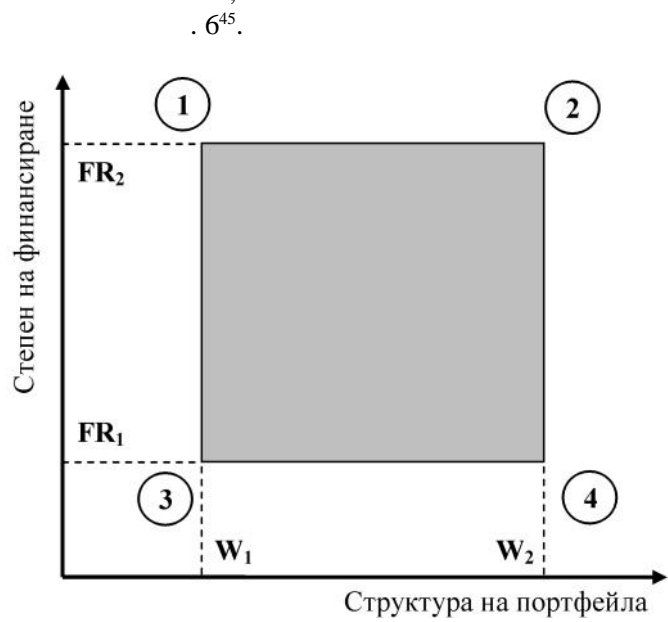


. 5.

2.

” , ” . , .
 , .
 42 , -
 43 , , -
 DB 44 , -
 , , -

42
 . Legal Developments, Novel Consult, 24, 2009, <http://www.novelconsult.net>.
 43 .44, .1 , -
 (.: , // , 105,
 2006.).
 44 , -



. 6.

. 6

W_1

W_2 (1) (4)

(1) DB

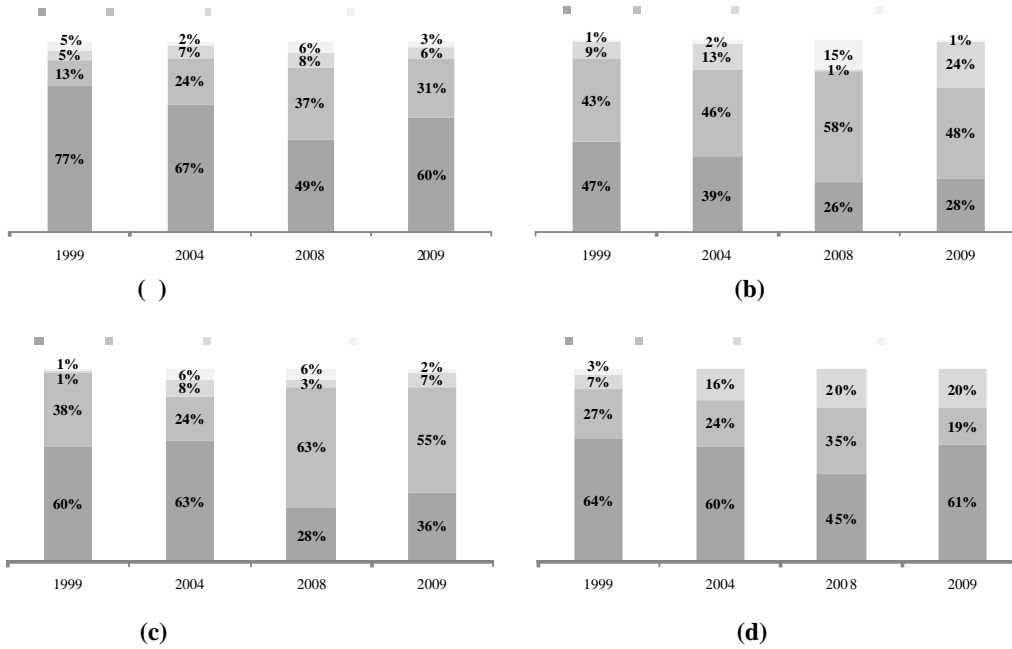
(4).

$-FR_1$.

⁴⁵ Harrison, M., W. Sharpe. Optimal funding and asset allocation rules for defined benefit pension plans. In: Bodie, Z., E. Davis. The Foundations of pension finance, vol. II, UK, 2000, p. 255.

FR. (2). (4).
FR DB
2008 . – 65–75%. -
⁴⁶. (3) -
3.
DB (frozen schemes).
DB
DB
DB (mature schemes).
DB
DB .7.
DB

⁴⁶ Carter, D. Four trillion dollars lost worldwide by pension funds in 2008. // Workforce Management, November 14, 2008, <http://www.workforce.com>.



. 7.

DB
2009 .
XXI ⁴⁷

11%.
6%,
3-5%
DB 9-

DB XXI .

DB

⁴⁷ Watson Wyatt Worldwide. // Global Pension Assets Study, January, 2010, pp. 29-30.

”, DC

DB

DB

DB

, ALM.

DB

ALM LDI

DB

LDI

DB

DB

LDI

DB

DB

DB

1. Accounting for pensions: annual survey. Lane Clark & Peacock, 2006.
2. Ageing and pension system reform: implications for financial markets and economic policies. // OECD Publishing, 2005, 1.
3. Bodie, Z., A. Marcus, R. Merton. Defined benefit versus defined contribution pension plans: What are the real tradeoffs? //Working Paper: National Bureau of Economic Research, 1719, October 1985.
4. Bonafede, J., St. Foresti, J. Dashtara. Report on corporate pension funding levels. Wilshire Associates Incorporated, 2009.
5. Boulier, J. Selected ALM Issues. Asset and Liability Management – A Synthesis of New Methodologies. London, Risk Books, 1998.
6. Campbell, J., L. Viceira. Strategic Asset Allocation for Pension Plans. Oxford handbook of pensions and retirement income. 2006.
7. Carter, D. Four trillion dollars lost worldwide by pension funds in 2008. //Workforce Management, November 14, 2008, <<http://www.workforce.com>>.
8. Dert, C. A Dynamic Model for Asset Liability Management for Defined Benefit Pension Funds. Cambridge University Press, 1998.
9. ERISA. The Employee Retirement Income Security Act, 29 U.S. Code, Chapter 18, 1974, <<http://finduslaw.com>>.
10. Harrison, M., W. Sharpe. Optimal funding and asset allocation rules for defined benefit pension plans. In: Bodie, Z. and E. Davis (ed.). The Foundations of pension finance, vol. II, UK, 2000.
11. Head, S. et al. Pension fund valuations and market values. //British Actuarial Journal, 6 (1), 2000.
12. The Financial Reporting Council Ltd. Pension fund terminology: specimen descriptions of commonly used valuation methods. U.K., GN26, 2001, <<http://www.frc.org.uk>>.
13. Legal Developments. // Novel Consult, 24, 2009, <<http://www.novelconsult.net>>.
14. McLeish, D., C. Stewart. Objectives and methods of funding defined benefit pension schemes. //Transactions of the faculty of actuaries, 40, 1987.
15. Myner, P. Institutional investment in the UK: a review. London: HM Treasury, 2001.
16. O'Regan, W., J. Weeder. A dissection of pensions funding. //Journal of the students' society, 32, 1990.
17. Pension Act. U. K., 1995, <<http://www.opsi.gov.uk>>.
18. Pension fund terminology. //Guidance note: Faculty and institute of actuaries, 26, 1996.
19. Ziemba, W., Mulvey, J. Worldwide asset and liability modeling. Cambridge: Cambridge University Press, 1998.
20. Watson Wyatt Worldwide. // Global Pension Assets Study, January 2010, pp. 29-30.
21. , , , , , : , 2000.

22. , , . . : , 2006.
23. .// , 105, 2006.
24. : , 2004–2008.
25. , . : -
 .// , : -
 , 2007.
26. , , . . -
 : , 2003.
27. .// , 110, 1999.
28. , . : -90, 1997.
29. , . . . -
 : , 1995.
30. , . : -
 .//
31. - , . : , 2009.
 .// , : ,
 2007.

- ALM - (Asset-liability management).
- ABO - (Accumulated benefit obligation).
- DB - (Defined benefit schemes).
- FAS - (Financial Accounting Standard).
- FR - (Funded ratio).
- IAS - (International Accounting Standard).
- L - , .
- LDI - (Liability driven investments).
- PBGC - (Pension Benefit Guaranty Corporation).
- PBO - (Project benefit obligation).
- SCR - (Standard contribution rate).

ANTI-DEFICIT MANAGEMENT OF PRIVATE DEFINED BENEFIT SCHEMES

Chief Assist. Prof. Dr Stoyan Kirov

Abstract

The defined benefit schemes need urgent anti-deficit measures, with which to guarantee their solvency under crisis conditions. Although there are no „painless solutions”, they must renovate their risk management and mark the direction of their future development. Until the appropriate reforms are selected, their customers and sponsors will lose confidence in them and will create prerequisites for worsening their financial status. That is why in the current work there is assessed the possibility for DB schemes to use some techniques for anti-deficit management, applied by commercial banks and insurance companies, including the ALM model, LDI strategies, etc. These approaches are considered in the context of the specific investment restrictions and standards. Unfortunately, the DB schemes are highly limited by government regulation and can hardly, by way of the market, solve all their problems on their own.

AUSFALLRISIKO MINIMIERENDES MANAGEMENT DER PRIVATEN RENTENVERSICHERUNGEN MIT FEST DEFINIERTEN RENTEN

Hauptass. Dr. Stoyan Kirov

Zusammenfassung

Die Rentenversicherungen mit fest definierten Renten brauchen dringende Ausfallrisiko minimierende Maßnahmen, damit ihre Zahlungsfähigkeit in der Zeit der Krise garantiert wird. Obwohl es keine „schmerzlosen Lösungen” gibt, müssen sie ihr Risiko-Management erneuern und ihre Entwicklung für die Zukunft definieren. Solange noch keine entsprechenden Reformen beschlossen worden sind, werden ihre Kunden und Sponsoren ihnen das Vertrauen verweigern und damit eine weitere Verschlechterung der finanziellen Lage der Versicherungsanbieter herbeiführen. Vor diesem Hintergrund untersucht die Studie die Möglichkeiten der privaten Rentenversicherungen mit fest definierten Renten, einige Verfahren des Ausfallrisiko minimierenden Managements anzuwenden, die von Handelsbanken und Versicherungsgesellschaften angewendet werden, wie z. B. das Bilanzstrukturmanagement (ALM), die Strategien für Liability-driven Investment (LDI) u. a. Diese Ansätze werden im Kontext der spezifischen Investitionsbeschränkungen und -standards behandelt. Leider sind private Rentenversicherungen mit fest definierten Renten stark von staatlichen Regelungen beschränkt und können nur schwer selbstständig mit marktwirtschaftlichen Mitteln alle ihre Probleme bewältigen.

. . . -

“ ’

” , -

DB -

ALM, LDI -

DB -

DB -

..... 208

..... 210

1. 210

2. , 212

3. XXI 214

..... 218

1. 218

2. : 222

..... 225

1. 225

2. 228

3.	.....	230
	.....	231
	.....	233
	.....	234
	.....	235
	.....	235
	.....	236