Optional Professional - Module

Advanced Financial Management

Paper P4

Time allowed : 15 minutes for reading and planning

3 hours for writing

December 16 – 2025

Section (A) The Question Compulsory .

Section (B) Two out of Three Question .

Do not open this paper until instructed by the supervisor This question paper must not be removed from the examination hall.

The Accountancy & Audit Profession Org. Council - Sudan

AAPOC

Financial Management P4

Section (A)

This question is compulsory and MUST be attempted

Question 1:

Background

BlueWave Telecom Sudan (BTS) is one of Sudan's largest mobile network operators, offering nationwide 4G services, fibre-optic solutions for corporates, mobile-money platforms, and data-centre hosting. The company is majority-owned by a Middle Eastern telecom group, with the remainder held by Sudanese institutional investors.

Sudan's macroeconomic environment remains extremely challenging. Persistent inflation, rapid depreciation of the Sudanese pound (SDG), unreliable power supply, and political instability have driven operating costs significantly higher. Nevertheless, demand for mobile broadband continues to grow strongly, supported by remote working, online learning, mobile commerce, and digital payments.

BTS is evaluating a major network modernisation and expansion programme involving:

- Expansion of 4G coverage to underserved rural areas
- Introduction of pre-5G capability in Khartoum and major cities
- Upgrade of billing, customer analytics, and digital-service platforms

The project requires an immediate capital investment of SDG 420 billion, payable entirely in USD to international suppliers.

Financial Information

Projected Cash Flows (SDG billions)

(all cash flows occur at year-end)

Year	Operating Cash Inflows	Operating Costs	Net Cash Flow
1	290	140	150
2	350	160	190
3	420	190	230
4	480	220	260
5	540	250	290

Residual value at end of Year 5: SDG 80 billion

Currency & Inflation Assumptions

- Current exchange rate: 1 USD = SDG 4,800
- Expected SDG inflation: 30% per annum
- Expected USD inflation: 8% per annum
- SDG depreciation expected to follow Purchasing Power Parity (PPP)

Financing Options

Option 1 – Local-Currency Bank Loan

- Nominal SDG interest rate: 45%
- Up-front arrangement fee: SDG 2 billion

Option 2 – Foreign Loan from Parent Company (USD)

- USD interest rate: 10%
- Loan repayable over 5 years
- Parent requires a risk-premium payment of SDG 20 billion at project start

Current WACC for BTS (in SDG terms): 33%

Additional Information

- Power outages are expected to worsen; power-backup system costs must be included from Year 3 onward.
- Regulator may implement a mobile-tariff cap, reducing revenue forecasts by 7% from Year 2 onward.
- The Board has asked for an evaluation of financing choices and an assessment of key FX, interest-rate, and inflation exposure.
- You, as Finance Manager, must prepare a strategic recommendation.

Required:

a) Evaluate the network modernisation project using:

i. A traditional SDG-based NPV approach using nominal SDG cash flows and discounting at the WACC; and

ii. A USD-based valuation applying PPP-consistent exchange-rate adjustments to convert cash flows.

Comment on:

i. **internal consistency of each method**

ii. **reliability under hyperinflationary conditions**

iii. **the impact of inflation differentials and expected currency depreciation on project outcomes** **(16 marks)**

Professional marks will be awarded in part (a) for the structure, clarity and presentation

(4 marks)

b) Assess the two financing options and recommend the most suitable, considering:

i. **Cost-of-capital implications**

ii. **Exposure to FX volatility and inflation risk**

iii. **Interest-rate risk in local vs. foreign borrowing**

iv. **Strategic and managerial considerations relevant to telecom operators in Sudan**

(12 marks)

c) Prepare a concise report to the Board of Directors advising whether BTS should:

- **Proceed with the network-modernisation project**
- **Adopt the recommended financing strategy**

Your report should provide address the key risks associated with the project and appropriate risk-management strategies, clear strategic justification, alignment with multinational telecom-sector objectives, and recommendation. (12 marks)

Professional marks will be awarded in part (c) for the structure, clarity, and presentation of your report. (6 marks)

(Total = 50 marks)

Section (B)

TWO questions ONLY to be attempted

Question 1:

Background

NileHarvest Manufacturing Co. (NHM) is a major Sudanese producer of essential consumer goods—cooking oil, wheat flour, and sugar-based products. Demand for essential commodities has remained relatively resilient, but the sector faces pressures from high inflation and shortages in imported raw materials.

NHM is assessing the acquisition of its competitor, BlueNile Commodities Ltd. (BNC), which owns a large processing plant in Gezira State and has a strong distribution network across central and southern Sudan. BNC is financially constrained and unable to fund expansion; NHM believes an acquisition would strengthen market share, reduce cost volatility, and create economies of scale.

Financial Information

NileHarvest (NHM) – 2024 Extracts

- Revenue: SDG 850 billion
- EBITDA margin: 18%
- Cost of capital (WACC): 29%
- Gearing (D/E): 45%
- Cash reserves: SDG 60 billion

BlueNile Commodities (BNC) – 2024 Extracts

- Revenue: SDG 480 billion
- EBITDA margin: 12%
- Net assets (book value): SDG 140 billion
- Debt: SDG 50 billion
- Expected maintainable free cash flow: SDG 40 billion per year
- Long-term growth expectation: 6%

Additional Information

1. Expected synergies:
    - Procurement and production cost savings: SDG 18 billion per year
    - Distribution efficiency gains: SDG 9 billion per year
    - Integration costs: SDG 22 billion (one-off, immediate)

2. BNC requires a major capital upgrade of SDG 65 billion in Year 2.
3. Inflation expected to remain above 25% annually; exchange rate likely to depreciate further. Commodity prices generally track inflation.
4. BNC shareholders demand SDG 230 billion for the business.
5. NHM valuation methods include:
    - FCF valuation discounted at WACC
    - EV/EBITDA multiples (regional benchmark: 6× EBITDA)
6. Board concerns:
    - Integration complexity
    - Operational risk
    - Impact of financing cost on gearing
    - Strategic fit with long-term expansion plans

Required:

a) Value BNC using:

i. FCF valuation incorporating maintainable cash flows, synergy benefits, and required capital upgrades.

ii. Market-multiple valuation using the EV/EBITDA comparable multiple.

Comment on reliability, assumptions, and limitations given Sudan's inflationary and FX-volatile environment.

(9 marks)

Professional marks will be awarded in part (a) for the structure, clarity, and presentation.

(3 marks)

b) Assess the strategic rationale for acquiring BNC, with reference to:

- **Competitive dynamics in Sudan's commodity sector**
- **Horizontal and vertical integration opportunities**
- **Economies of scale, cost efficiencies, supply-chain stability**
- **Exposure to inflation and FX volatility post-acquisition**

(7 marks)

Professional marks will be awarded in part (b) for the structure, commercial acumen, clarity, and presentation.

(2 marks)

c) Recommend whether NHM should proceed with the acquisition, integrating:

- **Valuation findings**
- **Financing implications and impact on gearing**
- **Integration and operational risks**
- **Alignment with NHM's long-term strategic objectives**

Provide a justified recommendation suitable for senior management.

(4 marks)

(Total = 25 marks)

Question 2:

Background

NileTech Financial Solutions (NTFS) is a Sudanese non-bank financial institution specialising in corporate lending, SME financing, and investment advisory services. The finance function relies heavily on manual spreadsheets, fragmented systems, and labour-intensive processes, resulting in slow reporting cycles, limited analytical capability, and repeated compliance issues.

To strengthen competitiveness and meet tightening regulatory requirements, the Board plans a comprehensive digital transformation of the finance function—including AI-enabled analytics, automated reporting, integrated ERP implementation, and advanced data-governance frameworks.

Additional Information

1. Recent regulatory reviews flagged significant financial-reporting errors.
2. Some senior finance staff are resistant to automation, fearing job displacement.
3. NTFS handles highly confidential client data—cybersecurity and ethical data management are critical.
4. The transformation aims to:
    - Reduce manual work by 40%
    - Improve forecasting accuracy
    - Enable data-driven decision support within 12 months
5. The CEO stresses that success requires both technical capability and strong soft skills across finance teams.

Required:

a) Critically evaluate the role of technology in transforming NTFS's finance function, addressing:

- Benefits and risks of automation and AI in financial decision-making
- Integration challenges with legacy systems and ERP adoption
- Implications for regulatory compliance, cybersecurity, and data governance
- Impact on finance-staff roles, organisational culture, and workforce structure

(8 marks)

Professional marks will be awarded in part (a) for the structure, commercial acumen, clarity, and presentation. **(2 marks)**

b) Critically discuss the employability skills required for finance staff to support digital transformation, including:

- Adaptability, continuous learning, problem-solving
- Communication, collaboration, and leadership during change
- Ethical awareness in data-driven environments
- Strategic thinking and sound professional judgement

(6 marks)

(c) Recommend a strategic implementation roadmap for NTFS's digital-finance transformation, addressing:

- Technical and behavioural training programmes
- Phased technology adoption and process re-engineering
- Change-management and communication strategies
- Monitoring, evaluation, and adjustment mechanisms

(6 marks)

Professional marks will be awarded in part (c) for the strategic thinking, project management, professional communication

(3 marks)

(Total = 25 marks)

Question 3:

Background

Blue Nile Telecom Ltd (BNT) is a leading Sudanese telecom operator planning a major expansion of its 5G network across major cities. The business has a stable customer base and a record of steady profitability. To finance the expansion, the Board is evaluating alternative capital-raising options and their impact on shareholder value.

Current Financial Position (SDG million)

Statement of Financial Position (SDG million)

Item	Amount
Non-current assets	250
Current assets	80
Total assets	330
Equity	200
Debt (10% interest)	100
Retained earnings	30
Total equity & liabilities	330

Statement of Income (Most Recent Year) (SDG million)

Item	Amount
Revenue	150
Operating expenses	80
Depreciation	20
EBIT	50
Interest	10
EBT	40
Tax (30%)	12
Net income	28

Additional Information

1. BNT plans to raise SDG 50 million through either:
    - New debt at 10%, or
    - New equity issuance.
2. Planned 5G capital expenditure: SDG 50 million.
3. Current shares outstanding: 10 million.
4. Current dividends: SDG 5 million; management is considering increasing this to SDG 8 million.
5. Target EBIT next year: SDG 60 million after expansion.
6. Cost of equity: 15%
7. Corporate tax rate: 30%
8. Management requires an analysis of:
    - EPS
    - ROE
    - WACC
    - Impact of gearing on financial risk
9. Management also wants comment on dividend policy and shareholder perception.

Required

a) For each financing option (debt vs. equity), calculate:

i. Earnings per share (EPS)

ii. Return on equity (ROE)

iii. Weighted average cost of capital (WACC)

(6 marks)

b) Advise the management on:

i. The optimal capital structure, balancing financial risk and shareholder return

ii. Implications of dividend-policy decisions, including trade-offs between:

- Dividend payouts
- Retained earnings
- Future financing flexibility

(8 marks)

Professional marks will be awarded in part (b) for the structure, commercial acumen, clarity, and presentation.

(2 marks)

c) Discuss broader strategic and professional considerations, including:

- Financial risk and gearing
- Market perception and investor confidence
- Impact of financing choices on strategic expansion capacity

(6 marks)

Professional marks will be awarded in part (c) for the structure, commercial acumen, clarity, and presentation.

(3 marks)

(Total = 25 marks)

End of the Exam

Formulae

Modigliani and Miller Proposition 2 (with tax)

$$k_e = k_e^i + (1-T)(k_e^i - k_d)\frac{V_d}{V_e}$$

Or rearranged

$$k_e + (1-T)k_d\left(\frac{V_d}{V_e}\right) = k_e^i + (1-T)k_e^i\left(\frac{V_d}{V_e}\right)$$

The Capital Asset Pricing Model

$$E(r_i) = R_f + \beta_i(E(r_m) - R_f)$$

The asset beta formula

$$\beta_a = \left[\frac{V_e}{(V_e + V_d(1-T))}\beta_e\right] + \left[\frac{V_d(1-T)}{(V_e + V_d(1-T))}\beta_d\right]$$

The Growth Model

$$P_o = \frac{D_o(1+g)}{(r_e - g)}$$

Gordon's growth approximation

$$g = br_e$$

The weighted average cost of capital

$$WACC = \left[\frac{V_e}{V_e + V_d}\right]k_e + \left[\frac{V_d}{V_e + V_d}\right]k_d(1-T)$$

The Fisher formula

$$(1+i) = (1+r)(1+h)$$

Purchasing power parity and interest rate parity

$$S_1 = S_0 x \frac{(1+h_c)}{(1+h_b)} \qquad F_0 = S_0 x \frac{(1+i_c)}{(1+i_b)}$$

Modified Internal Rate of Return

$$MIRR = \left[\frac{PV_R}{PV_I} \right]^{\frac{1}{n}} (1 + r_e) - 1$$

The Black-Scholes option pricing model

$$c = P_a N(d_1) - P_e N(d_2) e^{-rt}$$

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where r = discount rate
n = number of periods until payment

Discount rate (r)

Periods (n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	0·980	0·961	0·943	0·925	0·907	0·890	0·873	0·857	0·842	0·826	2
3	0·971	0·942	0·915	0·889	0·864	0·840	0·816	0·794	0·772	0·751	3
4	0·961	0·924	0·888	0·855	0·823	0·792	0·763	0·735	0·708	0·683	4
5	0·951	0·906	0·863	0·822	0·784	0·747	0·713	0·681	0·650	0·621	5
6	0·942	0·888	0·837	0·790	0·746	0·705	0·666	0·630	0·596	0·564	6
7	0·933	0·871	0·813	0·760	0·711	0·665	0·623	0·583	0·547	0·513	7
8	0·923	0·853	0·789	0·731	0·677	0·627	0·582	0·540	0·502	0·467	8
9	0·914	0·837	0·766	0·703	0·645	0·592	0·544	0·500	0·460	0·424	9
10	0·905	0·820	0·744	0·676	0·614	0·558	0·508	0·463	0·422	0·386	10
11	0·896	0·804	0·722	0·650	0·585	0·527	0·475	0·429	0·388	0·350	11
12	0·887	0·788	0·701	0·625	0·557	0·497	0·444	0·397	0·356	0·319	12
13	0·879	0·773	0·681	0·601	0·530	0·469	0·415	0·368	0·326	0·290	13
14	0·870	0·758	0·661	0·577	0·505	0·442	0·388	0·340	0·299	0·263	14
15	0·861	0·743	0·642	0·555	0·481	0·417	0·362	0·315	0·275	0·239	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	0·812	0·797	0·783	0·769	0·756	0·743	0·731	0·718	0·706	0·694	2
3	0·731	0·712	0·693	0·675	0·658	0·641	0·624	0·609	0·593	0·579	3
4	0·659	0·636	0·613	0·592	0·572	0·552	0·534	0·516	0·499	0·482	4
5	0·593	0·567	0·543	0·519	0·497	0·476	0·456	0·437	0·419	0·402	5
6	0·535	0·507	0·480	0·456	0·432	0·410	0·390	0·370	0·352	0·335	6
7	0·482	0·452	0·425	0·400	0·376	0·354	0·333	0·314	0·296	0·279	7
8	0·434	0·404	0·376	0·351	0·327	0·305	0·285	0·266	0·249	0·233	8
9	0·391	0·361	0·333	0·308	0·284	0·263	0·243	0·225	0·209	0·194	9
10	0·352	0·322	0·295	0·270	0·247	0·227	0·208	0·191	0·176	0·162	10
11	0·317	0·287	0·261	0·237	0·215	0·195	0·178	0·162	0·148	0·135	11
12	0·286	0·257	0·231	0·208	0·187	0·168	0·152	0·137	0·124	0·112	12
13	0·258	0·229	0·204	0·182	0·163	0·145	0·130	0·116	0·104	0·093	13
14	0·232	0·205	0·181	0·160	0·141	0·125	0·111	0·099	0·088	0·078	14
15	0·209	0·183	0·160	0·140	0·123	0·108	0·095	0·084	0·074	0·065	15

Annuity Table

Present value of an annuity of 1 i.e. $\frac{1-(1+r)^{-n}}{r}$

Where r = discount rate
n = number of periods

Discount rate (r)

Periods (n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	1·970	1·942	1·913	1·886	1·859	1·833	1·808	1·783	1·759	1·736	2
3	2·941	2·884	2·829	2·775	2·723	2·673	2·624	2·577	2·531	2·487	3
4	3·902	3·808	3·717	3·630	3·546	3·465	3·387	3·312	3·240	3·170	4
5	4·853	4·713	4·580	4·452	4·329	4·212	4·100	3·993	3·890	3·791	5
6	5·795	5·601	5·417	5·242	5·076	4·917	4·767	4·623	4·486	4·355	6
7	6·728	6·472	6·230	6·002	5·786	5·582	5·389	5·206	5·033	4·868	7
8	7·652	7·325	7·020	6·733	6·463	6·210	5·971	5·747	5·535	5·335	8
9	8·566	8·162	7·786	7·435	7·108	6·802	6·515	6·247	5·995	5·759	9
10	9·471	8·983	8·530	8·111	7·722	7·360	7·024	6·710	6·418	6·145	10
11	10·368	9·787	9·253	8·760	8·306	7·887	7·499	7·139	6·805	6·495	11
12	11·255	10·575	9·954	9·385	8·863	8·384	7·943	7·536	7·161	6·814	12
13	12·134	11·348	10·635	9·986	9·394	8·853	8·358	7·904	7·487	7·103	13
14	13·004	12·106	11·296	10·563	9·899	9·295	8·745	8·244	7·786	7·367	14
15	13·865	12·849	11·938	11·118	10·380	9·712	9·108	8·559	8·061	7·606	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	1·713	1·690	1·668	1·647	1·626	1·605	1·585	1·566	1·547	1·528	2
3	2·444	2·402	2·361	2·322	2·283	2·246	2·210	2·174	2·140	2·106	3
4	3·102	3·037	2·974	2·914	2·855	2·798	2·743	2·690	2·639	2·589	4
5	3·696	3·605	3·517	3·433	3·352	3·274	3·199	3·127	3·058	2·991	5
6	4·231	4·111	3·998	3·889	3·784	3·685	3·589	3·498	3·410	3·326	6
7	4·712	4·564	4·423	4·288	4·160	4·039	3·922	3·812	3·706	3·605	7
8	5·146	4·968	4·799	4·639	4·487	4·344	4·207	4·078	3·954	3·837	8
9	5·537	5·328	5·132	4·946	4·772	4·607	4·451	4·303	4·163	4·031	9
10	5·889	5·650	5·426	5·216	5·019	4·833	4·659	4·494	4·339	4·192	10
11	6·207	5·938	5·687	5·453	5·234	5·029	4·836	4·656	4·486	4·327	11
12	6·492	6·194	5·918	5·660	5·421	5·197	4·988	4·793	4·611	4·439	12
13	6·750	6·424	6·122	5·842	5·583	5·342	5·118	4·910	4·715	4·533	13
14	6·982	6·628	6·302	6·002	5·724	5·468	5·229	5·008	4·802	4·611	14
15	7·191	6·811	6·462	6·142	5·847	5·575	5·324	5·092	4·876	4·675	15

Years	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.8264	0.8197	0.8130	0.8065	0.8000	0.7937	0.7874	0.7813	0.7752	0.7692
2	0.6830	0.6719	0.6610	0.6504	0.6400	0.6299	0.6200	0.6104	0.6009	0.5917
3	0.5645	0.5507	0.5374	0.5245	0.5120	0.4999	0.4882	0.4768	0.4658	0.4552
4	0.4665	0.4514	0.4369	0.4230	0.4096	0.3968	0.3844	0.3725	0.3611	0.3501
5	0.3855	0.3700	0.3552	0.3411	0.3277	0.3149	0.3027	0.2910	0.2799	0.2693
6	0.3186	0.3033	0.2888	0.2751	0.2621	0.2499	0.2383	0.2274	0.2170	0.2072
7	0.2633	0.2486	0.2348	0.2218	0.2097	0.1983	0.1877	0.1776	0.1682	0.1594
8	0.2176	0.2038	0.1909	0.1789	0.1678	0.1574	0.1478	0.1388	0.1304	0.1226
9	0.1799	0.1670	0.1552	0.1443	0.1342	0.1249	0.1164	0.1084	0.1011	0.0943
10	0.1486	0.1369	0.1262	0.1164	0.1074	0.0992	0.0916	0.0847	0.0784	0.0725
11	0.1228	0.1122	0.1026	0.0938	0.0859	0.0787	0.0721	0.0662	0.0607	0.055B
12	0.1015	0.0920	0.0834	0.0757	0.0687	0.0625	0.0568	0.0517	0.0471	0.0429
13	0.0839	0.0754	0.0678	0.0610	0.0550	0.0496	0.0447	0.0404	0.0365	0.0330
14	0.0693	0.0618	0.0551	0.0492	0.0440	0.0393	0.0352	0.0316	0.0283	0.0254
15	0.0573	0.0507	0.0448	0.0397	0.0352	0.0312	0.0277	0.0247	0.0219	0.0195
16	0.0474	0.0415	0.0364	0.0320	0.0281	0.0248	0.0218	0.0193	0.0170	0.0150
17	0.0391	0.0340	0.0296	0.0258	0.0225	0.0197	0.0172	0.0150	0.0132	0.0116
18	0.0323	0.0279	0.0241	0.0208	0.0180	0.0156	0.0135	0.0118	0.0102	0.00B9
19	0.0267	0.0229	0.0196	0.0168	0.0144	0.0124	0.0107	0.0092	0.0079	0.0068
20	0.0221	0.0187	0.0159	0.0135	0.0115	0.0098	0.0084	0.0072	0.0061	0.0053

Years	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%
1	0.7634	0.7576	0.7519	0.7463	0.7407	0.7353	0.7299	0.7246	0.7194	0.7143
2	0.5827	0.5739	0.5653	0.5569	0.5487	0.5407	0.5328	0.5251	0.5176	0.5102
3	0.4448	0.4348	0.4251	0.4156	0.4064	0.3975	0.3889	0.3805	0.3724	0.3644
4	0.3396	0.3294	0.3196	0.3102	0.3011	0.2923	0.2839	0.2757	0.2679	0.2603
5	0.2592	0.2495	0.2403	0.2315	0.2230	0.2149	0.2072	0.1998	0.1927	0.1859
6	0.1979	0.1890	0.1807	0.1727	0.1652	0.1580	0.1512	0.1448	0.1386	0.1328
7	0.1510	0.1432	0.1358	0.1289	0.1224	0.1162	0.1104	0.1049	0.0997	0.0949
8	0.1153	0.1085	0.1021	0.0962	0.0906	0.0854	0.0806	0.0760	0.0718	0.0678
9	0.0880	0.0822	0.0768	0.0718	0.0671	0.0628	0.0588	0.0551	0.0516	0.0484
10	0.0672	0.0623	0.0577	0.0536	0.0497	0.0462	0.0429	0.0399	0.0371	0.0346
11	0.0513	0.0472	0.0434	0.0400	0.0368	0.0340	0.0313	0.0289	0.0267	0.0247
12	0.0392	0.0357	0.0326	0.0298	0.0273	0.0250	0.0229	0.0210	0.0192	0.0176
13	0.0299	0.0271	0.0245	0.0223	0.0202	0.0184	0.0167	0.0152	0.0138	0.0126
14	0.0228	0.0205	0.0185	0.0166	0.0150	0.0135	0.0122	0.0110	0.0099	0.0090
15	0.0174	0.0155	0.0139	0.0124	0.0111	0.0099	0.0089	0.0080	0.0072	0.0064
16	0.0133	0.0118	0.0104	0.0093	0.0082	0.0073	0.0065	0.0058	0.0051	0.0046
17	0.0101	0.0089	0.0078	0.0069	0.0061	0.0054	0.0047	0.0042	0.0037	0.0033
18	0.0077	0.0068	0.0059	0.0052	0.0045	0.0039	0.0035	0.0030	0.0027	0.0023
19	0.0059	0.0051	0.0044	0.0038	0.0033	0.0029	0.0025	0.0022	0.0019	0.0017
20	0.0045	0.0039	0.0033	0.0029	0.0025	0.0021	0.0018	0.0016	0.0014	0.0012

Years 0 to:	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0 781	0.775	0.769
2	1.509	1.492	1.474	1.457	1.440	1.424	1.407	1.392	1.376	1.361
3	2.074	2.042	2.011	1.981	1.952	1.923	1.896	1.868	1.842	1.816
4	2.540	2.494	2.448	2.404	2.362	2.320	2.280	2.241	2.203	2.166
5	2.926	2.864	2.803	2.745	2.689	2.635	2.583	2.532	2.483	2.436
6	3.245	3.167	3.092	3.020	2.951	2.885	2.821	2.759	2.700	2.643
7	3.508	3.416	3.327	3.242	3.161	3.083	3.009	2.937	2.868	2.802
8	3.726	3.619	3.518	3.421	3.329	3.241	3.156	3.076	2.999	2.925
9	3.905	3.786	3.673	3.566	3.463	3.366	3.273	3.184	3.100	3.019
10	4.054	3.923	3.799	3.682	3.571	3.465	3.364	3.269	3.178	3.092
11	4.177	4.035	3.902	3.776	3.656	3.543	3.437	3.335	3.239	3.147
12	5.278	4.127	3.985	3.851	3.725	3.606	3.493	3.387	3.286	3.190
13	4.362	4.203	4.053	3.912	3.780	3.656	3.538	3.427	3.322	3.223
14	4.432	4.265	4.108	3.962	3.824	3.695	3.573	3.459	3.351	3.249
15	4.489	4.315	4.153	4.001	3.859	3.726	3.601	3.483	3.373	3.268
16	4.536	4.357	4.189	4.033	3.887	3.751	3.623	3.503	3.390	3.283
17	4.576	4.391	4.219	4.059	3.910	3.771	3.640	3.518	3.403	3.295
18	4.608	4.419	4.243	4.080	3.928	3.786	3.654	3.529	3.413	3.304
19	4.635	4.442	4.263	4.097	3.942	3.799	3.664	3.539	3.421	3.311
20	4.657	4.460	4.279	4.110	3.954	3.808	3.673	3.546	3.427	3.316

Years 0 to:	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%
1	0.763	0.758	0.752	0.746	0.741	0.735	0.730	0.725	Q.719	0.714
2	1.346	1.331	1.317	1.303	1.289	1.276	1.263	1.250	1.937	1.224
3	1.791	1.766	1.742	1.719	1.696	1.673	1.652	1.630	1.609	1.589
4	2.130	2.096	2.062	2.029	1.997	1.966	1.930	1.906	1.877	1.849
5	2.390	2.345	2.302	2.260	2.220	2.181	2.143	2.106	2.070	2.035
6	2.588	2.534	2.483	2.433	0.385	2.339	2.294	2.251	2.209	2.168
7	2.739	2.677	2.619	2.562	9.508	2.455	2.404	2.355	2.308	2.263
8	2.854	2.786	2.721	2.658	2.598	2.540	2.485	2.432	2.380	2.331
9	2.942	2.868	2.798	2.730	2.665	2.603	2.544	2.487	2.432	2.379
10	3.009	2.930	2.855	2.784	2.715	2.649	2.587	2.527	2.469	2.414
11	3.060	2.978	2.899	2.824	2.752	2.683	2.618	2.555	2.496	2.438
12	3.100	2.013	2.931	2.853	2.779	2.708	2.641	2.576	2.515	2.456
13	3.129	3.040	2.956	2.876	2.799	2.727	2.658	2.592	2.529	2.469
14	3.152	3.061	2.974	2.982	2.814	2.740	2.670	2.603	2.539	2.478
15	3.170	3.076	2.988	2.905	2.825	2.750	2.679	2.611	2.546	2.484
16	3.183	3.088	2.999	2.914	2.834	2.757	2.685	2.616	2.551	2.489
17	3.193	3.097	3.007	2.921	2.840	2.763	2.690	2.621	2.555	2.492
18	3.201	3.104	3.012	2.926	2.844	2.767	2.693	2.624	2.557	2.494
19	3.207	3.109	3.017	2.930	2.848	2.770	2.696	2.626	2.559	2.496
20	3.211	3.113	3.020	2.933	2.850	2.772	2.698	2.627	2.561	2.497