Solvay Brussels School Economics & Management

ULB

Université Libre de Bruxelles
Programme 2011-2012

CORPORATE VALUATION AND FINANCING
GEST-S-408
Prof. H. Pirotte

LASTNAME :

FIRSTNAME :

STUDENT Id :

# Final Exam
## Form A

Tuesday 24 January 2012

**Indications**

Please follow these indications:

1. The exam lasts 3 hours.
2. Please verify that your document contains exactly 7 pages.
3. There are 20 questions. There are 24 points in total. The best 20 points will be considered for a total maximum grade of 20.
4. Please write your first name and last name on the first page.
5. MAKE SURE to always state your assumptions if necessary, and to describe your method, beyond the results.
6. Good work!!!

# Problems

## P1 A complete exercise on valuation…

We are on the 31st December 2011. You just finished your studies at the SBS and decide to start a new venture, to be financed by the renowned financial holding, Wedoall Holdings Inc. You have a meeting with their CEO, Matthew Mackenzie ("MattMack"), and CFO, Kevin Larsson ("KevLar").

The business model consists in a revolutionary data center for cloud computing. The initial investment requires €3 million (amount to be paid on the 31st December 2011, the initial WCR in the table below being included in this number as an investment). Here is some additional information that might help you for the definition of necessary cash flows:

| (in thousands €) | Year 0 2011 | Year 1 2012 | Year 2 2013 | Year 3 2014 |
|---|---|---|---|---|
| **Revenues** | | 1'000 | 1'500 | 2'000 |
| **Costs** | | 600 | 900 | 1'200 |
| **Depreciation** | | 400 | 500 | 500 |
| **Required reinvestment** | | 800 | 650 | 500 |

| | | | | |
|---|---|---|---|---|
| **Accounts payables** | | 400 | 450 | 600 |
| **Accounts receivables** | | 500 | 600 | 700 |
| **Inventory** | | 290 | 150 | 150 |
| **Amount of hedged interest rate exposure** | | 80% | 60% | 40% |
| **Initial WCR** | 250 | | | |

Since it is your own project, there is some information that is easily available:

- The target debt-to-equity ratio (D/E) will be kept at 2, and therefore rebalanced continuously.
- The structure of cash flows (the ratios of all categories vs. the EBITDA in the calculation) is assumed to be constant as from 2014 so that the Free Cash Flow of 2014 is taken as the basis for future years. On that basis, the free cash flows of years after 2014 are assumed to grow at 3%.
- The tax rate is 40%.
- Given the target D/E ratio and some support from Wedoall, the new venture is assumed to be able to obtain a kd of 5.9% per year (all rates are annual in the present problem, unless otherwise stated).

This information so far provides the necessary inputs for cash flows…the key question remains: what kind of cost of capital to use.

Fortunately, Kevin and Matt have identified a company that has the same activity, but with the only difference that they have no debt. The beta (against a broad index) of the equity of that company is 0.8. The risk-free rate is 4%. The equity market premium that analysts consider is currently 5.5%.

**Q1** Compute the cost of assets (ka) of the comparable company.

**Q2** Compute the WACC of your company and justify the formula you use.
*(if you did not manage to find an answer to the previous question use a ka of 9%).*

**Q3** Compute the free cash flows from 2011 to 2014 inclusive.

**Q4** Compute the terminal value of the company (FCF going from 2015 until infinity) at the end of 2014.
*(if you did not manage to find an answer to the second question on the WACC, please use a WACC of 7%).*

**Q5** Compute the total value of the firm today.

You want to be sure of your computation of the value of the company and decide to use another method where tax shields are **explicitly** modelled, the Capital Cash Flows method.

**Q6** Compute the value of debt from 2011 until 2014.

**Q7** Compute the terminal value of the company (FCF going from 2015 until infinity) at the end of 2014.

**Q8** Knowing that interest paid on debt is equal to the cost of debt, compute the total value of the firm today.

**Q9** Is this hypothesis – that interest paid on debt is equal to the cost of debt – important to ensure the coherence between the company's value in Q5 and Q8?

**[optional]** Kevin and Matt would like you to verify the pricing of the riskiness of the debt of your company, already present in the kd provided above, without any impact on what you calculated above (this is just an additional optional question). The aim is to use the Merton model to do so. For the purpose of this verification, the debt can be assimilated to a 20-years 0-coupon debt with a face value of 9'205, where the relative changes in asset value of the firm have an annual standard deviation of 17%.

**Q10** Compute the $\beta_e$ and $\beta_d$ using the Merton model, and the resulting WACC (3 results required).

## P2 Real Options

We are at the end of 2011, you join a movie company. Your new boss is very excited. He just bought the rights to make the sequel of a very successful comic strip (at any end of year during the next 3 years, i.e.: until 2014). However, the contract is a little bit special, the seller of the rights can buy back the rights at any end of year during the next 2 years (until 2013) for an amount of €20 million (e.g.: if you decide to produce the movie at the end of 2013, the seller can decide to buy back the rights just before you do so). Furthermore, each year you must pay an amount of €0.5 million if you want to go on with the contract (you will not pay this amount if the seller decides to rebuy the rights). The production cost of the movie is €17 million (the cost is independent from the year of the realization). Your new boss has done previous studies, which value the outcome of the film before production costs is estimated at a value of €20 million today with a volatility of 40%, the continuous risk free rate is equal to 5% (annual rate).

**Q11** Draw a binomial tree showing the evolution of the underlying (the outcome of the movie) from 2011 to 2014 (use a step of one year).

**Q12** Use a binomial tree to determine if your company will decide to produce the film before 2014.

**Q13** Would the seller of the rights decide to buy back the rights at any time between 2011 and 2013?

**Q14** What's the value of the rights today?

## P3 Risky debt

You have to find the value of a 2-year zero-coupon bond with a face value of €130 million issued by a company (this represents the only debt of the company). The total market value of the company is represented in the table below:

| 2011 | 2012 | 2013 |
|---|---|---|
| | | 267,06 |
| | 179,02 | |
| 120 | | 120 |
| | 80,44 | |
| | | 53,92 |

The risk-free rate is equal to 5% (annual rate), the probability of an up movement is 46.22% and a down movement is 53.78%.

**Q15** Compute the total default probability and the expected loss given default of this zero-coupon.

**Q16** Using the numbers you found in the previous question, compute the value of the debt.

**Q17** If the real probability of an up movement is 58%, compute the expected cost of debt of this zero coupon. What's the beta asset of this company?

**Q18** Compute the yield of this bond, can you explain why it is different from the cost of debt?

**Q19** If the capital of the company is represented by 10 shares, and if there are 10 bonds issued, compute the value of debt if it was convertible (conversion rate = 1 share for 1 bond)?

## P4 Specialized questions on financing

In a second round of interviews for your company, Matthew Mackenzie concentrates on the problems linked to the capital structure dilemma. He says he has been reading a paper by Patrick (1998), "The Balanced Capital Structure" and this has quite attracted his attention to some problems and challenges in this subject. He asks you your opinion about some of these elements:

**Q20** What problems can you face in calculating the Weighted Average Cost of Capital (WACC)? Cite five (5) of them (max 12 lines).

**Q21** How do companies gauge their target leverage? What are the key ratios used to do so? Mention and comment at least three (3) of them (max 9 lines).

But Kevin Larsson is more interested by the exit opportunity through an IPO in the future, even more after reading the paper of Ritter & Welch (2002), "A Review of IPO Activity, Pricing, and Allocations". Here are his questions:

**Q22** Cite 3 types of explanations of the underpricing phenomena of IPOs (max 12 lines).

**Q23** What can we say about the long-run performance of IPOs?

**Q24** But in the first place, why would a firm like yours go public? Cite at least 4 reasons (max 12 lines).

**N(x) & N(-x)=1-N(x)** H. Pirotte - SBS/ULB Juin 2007

| | 0.000 | 0.005 | 0.010 | 0.015 | 0.020 | 0.025 | 0.030 | 0.035 | 0.040 | 0.045 | 0.050 | 0.055 | 0.060 | 0.065 | 0.070 | 0.075 | 0.080 | 0.085 | 0.090 | 0.095 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0.0** | 0.5000 | 0.5020 | 0.5040 | 0.5060 | 0.5080 | 0.5100 | 0.5120 | 0.5140 | 0.5160 | 0.5179 | 0.5199 | 0.5219 | 0.5239 | 0.5259 | 0.5279 | 0.5299 | 0.5319 | 0.5339 | 0.5359 | 0.5378 |
| **0.1** | 0.5398 | 0.5418 | 0.5438 | 0.5458 | 0.5478 | 0.5497 | 0.5517 | 0.5537 | 0.5557 | 0.5576 | 0.5596 | 0.5616 | 0.5636 | 0.5655 | 0.5675 | 0.5695 | 0.5714 | 0.5734 | 0.5753 | 0.5773 |
| **0.2** | 0.5793 | 0.5812 | 0.5832 | 0.5851 | 0.5871 | 0.5890 | 0.5910 | 0.5929 | 0.5948 | 0.5968 | 0.5987 | 0.6006 | 0.6026 | 0.6045 | 0.6064 | 0.6083 | 0.6103 | 0.6122 | 0.6141 | 0.6160 |
| **0.3** | 0.6179 | 0.6198 | 0.6217 | 0.6236 | 0.6255 | 0.6274 | 0.6293 | 0.6312 | 0.6331 | 0.6350 | 0.6368 | 0.6387 | 0.6406 | 0.6424 | 0.6443 | 0.6462 | 0.6480 | 0.6499 | 0.6517 | 0.6536 |
| **0.4** | 0.6554 | 0.6573 | 0.6591 | 0.6609 | 0.6628 | 0.6646 | 0.6664 | 0.6682 | 0.6700 | 0.6718 | 0.6736 | 0.6754 | 0.6772 | 0.6790 | 0.6808 | 0.6826 | 0.6844 | 0.6862 | 0.6879 | 0.6897 |
| **0.5** | 0.6915 | 0.6932 | 0.6950 | 0.6967 | 0.6985 | 0.7002 | 0.7019 | 0.7037 | 0.7054 | 0.7071 | 0.7088 | 0.7106 | 0.7123 | 0.7140 | 0.7157 | 0.7174 | 0.7190 | 0.7207 | 0.7224 | 0.7241 |
| **0.6** | 0.7257 | 0.7274 | 0.7291 | 0.7307 | 0.7324 | 0.7340 | 0.7357 | 0.7373 | 0.7389 | 0.7405 | 0.7422 | 0.7438 | 0.7454 | 0.7470 | 0.7486 | 0.7502 | 0.7517 | 0.7533 | 0.7549 | 0.7565 |
| **0.7** | 0.7580 | 0.7596 | 0.7611 | 0.7627 | 0.7642 | 0.7658 | 0.7673 | 0.7688 | 0.7704 | 0.7719 | 0.7734 | 0.7749 | 0.7764 | 0.7779 | 0.7794 | 0.7808 | 0.7823 | 0.7838 | 0.7852 | 0.7867 |
| **0.8** | 0.7881 | 0.7896 | 0.7910 | 0.7925 | 0.7939 | 0.7953 | 0.7967 | 0.7981 | 0.7995 | 0.8009 | 0.8023 | 0.8037 | 0.8051 | 0.8065 | 0.8078 | 0.8092 | 0.8106 | 0.8119 | 0.8133 | 0.8146 |
| **0.9** | 0.8159 | 0.8173 | 0.8186 | 0.8199 | 0.8212 | 0.8225 | 0.8238 | 0.8251 | 0.8264 | 0.8277 | 0.8289 | 0.8302 | 0.8315 | 0.8327 | 0.8340 | 0.8352 | 0.8365 | 0.8377 | 0.8389 | 0.8401 |
| **1.0** | 0.8413 | 0.8426 | 0.8438 | 0.8449 | 0.8461 | 0.8473 | 0.8485 | 0.8497 | 0.8508 | 0.8520 | 0.8531 | 0.8543 | 0.8554 | 0.8566 | 0.8577 | 0.8588 | 0.8599 | 0.8610 | 0.8621 | 0.8632 |
| **1.1** | 0.8643 | 0.8654 | 0.8665 | 0.8676 | 0.8686 | 0.8697 | 0.8708 | 0.8718 | 0.8729 | 0.8739 | 0.8749 | 0.8760 | 0.8770 | 0.8780 | 0.8790 | 0.8800 | 0.8810 | 0.8820 | 0.8830 | 0.8840 |
| **1.2** | 0.8849 | 0.8859 | 0.8869 | 0.8878 | 0.8888 | 0.8897 | 0.8907 | 0.8916 | 0.8925 | 0.8934 | 0.8944 | 0.8953 | 0.8962 | 0.8971 | 0.8980 | 0.8988 | 0.8997 | 0.9006 | 0.9015 | 0.9023 |
| **1.3** | 0.9032 | 0.9041 | 0.9049 | 0.9057 | 0.9066 | 0.9074 | 0.9082 | 0.9091 | 0.9099 | 0.9107 | 0.9115 | 0.9123 | 0.9131 | 0.9139 | 0.9147 | 0.9154 | 0.9162 | 0.9170 | 0.9177 | 0.9185 |
| **1.4** | 0.9192 | 0.9200 | 0.9207 | 0.9215 | 0.9222 | 0.9229 | 0.9236 | 0.9244 | 0.9251 | 0.9258 | 0.9265 | 0.9272 | 0.9279 | 0.9285 | 0.9292 | 0.9299 | 0.9306 | 0.9312 | 0.9319 | 0.9325 |
| **1.5** | 0.9332 | 0.9338 | 0.9345 | 0.9351 | 0.9357 | 0.9364 | 0.9370 | 0.9376 | 0.9382 | 0.9388 | 0.9394 | 0.9400 | 0.9406 | 0.9412 | 0.9418 | 0.9424 | 0.9429 | 0.9435 | 0.9441 | 0.9446 |
| **1.6** | 0.9452 | 0.9458 | 0.9463 | 0.9468 | 0.9474 | 0.9479 | 0.9484 | 0.9490 | 0.9495 | 0.9500 | 0.9505 | 0.9510 | 0.9515 | 0.9520 | 0.9525 | 0.9530 | 0.9535 | 0.9540 | 0.9545 | 0.9550 |
| **1.7** | 0.9554 | 0.9559 | 0.9564 | 0.9568 | 0.9573 | 0.9577 | 0.9582 | 0.9586 | 0.9591 | 0.9595 | 0.9599 | 0.9604 | 0.9608 | 0.9612 | 0.9616 | 0.9621 | 0.9625 | 0.9629 | 0.9633 | 0.9637 |
| **1.8** | 0.9641 | 0.9645 | 0.9649 | 0.9652 | 0.9656 | 0.9660 | 0.9664 | 0.9667 | 0.9671 | 0.9675 | 0.9678 | 0.9682 | 0.9686 | 0.9689 | 0.9693 | 0.9696 | 0.9699 | 0.9703 | 0.9706 | 0.9710 |
| **1.9** | 0.9713 | 0.9716 | 0.9719 | 0.9723 | 0.9726 | 0.9729 | 0.9732 | 0.9735 | 0.9738 | 0.9741 | 0.9744 | 0.9747 | 0.9750 | 0.9753 | 0.9756 | 0.9759 | 0.9761 | 0.9764 | 0.9767 | 0.9770 |
| **2.0** | 0.9772 | 0.9775 | 0.9778 | 0.9780 | 0.9783 | 0.9786 | 0.9788 | 0.9791 | 0.9793 | 0.9796 | 0.9798 | 0.9801 | 0.9803 | 0.9805 | 0.9808 | 0.9810 | 0.9812 | 0.9815 | 0.9817 | 0.9819 |
| **2.1** | 0.9821 | 0.9824 | 0.9826 | 0.9828 | 0.9830 | 0.9832 | 0.9834 | 0.9836 | 0.9838 | 0.9840 | 0.9842 | 0.9844 | 0.9846 | 0.9848 | 0.9850 | 0.9852 | 0.9854 | 0.9856 | 0.9857 | 0.9859 |
| **2.2** | 0.9861 | 0.9863 | 0.9864 | 0.9866 | 0.9868 | 0.9870 | 0.9871 | 0.9873 | 0.9875 | 0.9876 | 0.9878 | 0.9879 | 0.9881 | 0.9882 | 0.9884 | 0.9885 | 0.9887 | 0.9888 | 0.9890 | 0.9891 |
| **2.3** | 0.9893 | 0.9894 | 0.9896 | 0.9897 | 0.9898 | 0.9900 | 0.9901 | 0.9902 | 0.9904 | 0.9905 | 0.9906 | 0.9907 | 0.9909 | 0.9910 | 0.9911 | 0.9912 | 0.9913 | 0.9915 | 0.9916 | 0.9917 |
| **2.4** | 0.9918 | 0.9919 | 0.9920 | 0.9921 | 0.9922 | 0.9923 | 0.9925 | 0.9926 | 0.9927 | 0.9928 | 0.9929 | 0.9930 | 0.9931 | 0.9931 | 0.9932 | 0.9933 | 0.9934 | 0.9935 | 0.9936 | 0.9937 |
| **2.5** | 0.9938 | 0.9939 | 0.9940 | 0.9940 | 0.9941 | 0.9942 | 0.9943 | 0.9944 | 0.9945 | 0.9945 | 0.9946 | 0.9947 | 0.9948 | 0.9948 | 0.9949 | 0.9950 | 0.9951 | 0.9951 | 0.9952 | 0.9953 |
| **2.6** | 0.9953 | 0.9954 | 0.9955 | 0.9955 | 0.9956 | 0.9957 | 0.9957 | 0.9958 | 0.9959 | 0.9959 | 0.9960 | 0.9960 | 0.9961 | 0.9962 | 0.9962 | 0.9963 | 0.9963 | 0.9964 | 0.9964 | 0.9965 |
| **2.7** | 0.9965 | 0.9966 | 0.9966 | 0.9967 | 0.9967 | 0.9968 | 0.9968 | 0.9969 | 0.9969 | 0.9970 | 0.9970 | 0.9971 | 0.9971 | 0.9972 | 0.9972 | 0.9972 | 0.9973 | 0.9973 | 0.9974 | 0.9974 |
| **2.8** | 0.9974 | 0.9975 | 0.9975 | 0.9976 | 0.9976 | 0.9976 | 0.9977 | 0.9977 | 0.9977 | 0.9978 | 0.9978 | 0.9978 | 0.9979 | 0.9979 | 0.9979 | 0.9980 | 0.9980 | 0.9980 | 0.9981 | 0.9981 |
| **2.9** | 0.9981 | 0.9982 | 0.9982 | 0.9982 | 0.9982 | 0.9983 | 0.9983 | 0.9983 | 0.9984 | 0.9984 | 0.9984 | 0.9984 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9986 | 0.9986 | 0.9986 | 0.9986 |
| **3.0** | 0.9987 | 0.9987 | 0.9987 | 0.9987 | 0.9987 | 0.9988 | 0.9988 | 0.9988 | 0.9988 | 0.9988 | 0.9989 | 0.9989 | 0.9989 | 0.9989 | 0.9989 | 0.9989 | 0.9990 | 0.9990 | 0.9990 | 0.9990 |
| **3.1** | 0.9990 | 0.9990 | 0.9991 | 0.9991 | 0.9991 | 0.9991 | 0.9991 | 0.9991 | 0.9992 | 0.9992 | 0.9992 | 0.9992 | 0.9992 | 0.9992 | 0.9992 | 0.9993 | 0.9993 | 0.9993 | 0.9993 | 0.9993 |
| **3.2** | 0.9993 | 0.9993 | 0.9993 | 0.9993 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9995 | 0.9995 | 0.9995 | 0.9995 | 0.9995 | 0.9995 | 0.9995 |
| **3.3** | 0.9995 | 0.9995 | 0.9995 | 0.9995 | 0.9995 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9997 | 0.9997 |
| **3.4** | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9998 | 0.9998 | 0.9998 |
| **3.5** | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 |
| **3.6** | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| **3.7** | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| **3.8** | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 1.0000 |
| **3.9** | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| **4.0** | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

## Call Prices with Black & Scholes Option Pricing

Price of a B&Sch call option where result=C/S

| Cumulative Volatility: | Moneyness: S/K*exp(-rT) | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sigma*SQRT(T) | 0.40 | 0.45 | 0.50 | 0.55 | 0.60 | 0.65 | 0.70 | 0.75 | 0.80 | 0.85 | 0.90 | 0.95 | 1.00 | 1.05 | 1.10 | 1.15 | 1.20 | 1.25 | 1.30 | 1.35 | 1.40 | 1.45 | 1.50 | 1.55 |
| **0.00** | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 4.76% | 9.09% | 13.04% | 16.67% | 20.00% | 23.08% | 25.93% | 28.57% | 31.03% | 33.33% | 35.48% |
| **0.05** | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.03% | 0.41% | 1.99% | 5.19% | 9.14% | 13.05% | 16.67% | 20.00% | 23.08% | 25.93% | 28.57% | 31.03% | 33.33% | 35.48% |
| **0.10** | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.01% | 0.05% | 0.24% | 0.79% | 1.99% | 3.99% | 6.73% | 9.96% | 13.39% | 16.79% | 20.04% | 23.09% | 25.93% | 28.57% | 31.03% | 33.33% | 35.48% |
| **0.15** | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.01% | 0.05% | 0.18% | 0.50% | 1.15% | 2.25% | 3.86% | 5.98% | 8.52% | 11.36% | 14.37% | 17.41% | 20.40% | 23.29% | 26.04% | 28.63% | 31.06% | 33.35% | 35.49% |
| **0.20** | 0.00% | 0.00% | 0.00% | 0.01% | 0.04% | 0.14% | 0.35% | 0.77% | 1.48% | 2.54% | 3.99% | 5.81% | 7.97% | 10.39% | 12.99% | 15.71% | 18.46% | 21.19% | 23.85% | 26.43% | 28.89% | 31.24% | 33.46% | 35.56% |
| **0.25** | 0.00% | 0.01% | 0.03% | 0.09% | 0.24% | 0.53% | 1.03% | 1.78% | 2.83% | 4.19% | 5.86% | 7.79% | 9.95% | 12.28% | 14.72% | 17.23% | 19.75% | 22.27% | 24.73% | 27.13% | 29.44% | 31.66% | 33.78% | 35.80% |
| **0.30** | 0.01% | 0.05% | 0.15% | 0.35% | 0.70% | 1.25% | 2.04% | 3.10% | 4.42% | 5.99% | 7.79% | 9.78% | 11.92% | 14.17% | 16.49% | 18.84% | 21.20% | 23.53% | 25.83% | 28.06% | 30.23% | 32.32% | 34.32% | 36.25% |
| **0.35** | 0.08% | 0.20% | 0.44% | 0.84% | 1.44% | 2.26% | 3.33% | 4.63% | 6.15% | 7.87% | 9.76% | 11.78% | 13.89% | 16.07% | 18.29% | 20.52% | 22.73% | 24.92% | 27.07% | 29.16% | 31.20% | 33.16% | 35.06% | 36.88% |
| **0.40** | 0.23% | 0.50% | 0.94% | 1.58% | 2.43% | 3.52% | 4.82% | 6.31% | 7.99% | 9.81% | 11.75% | 13.77% | 15.85% | 17.97% | 20.10% | 22.22% | 24.32% | 26.39% | 28.42% | 30.39% | 32.30% | 34.16% | 35.95% | 37.68% |
| **0.45** | 0.54% | 1.00% | 1.67% | 2.55% | 3.66% | 4.96% | 6.45% | 8.10% | 9.89% | 11.77% | 13.74% | 15.76% | 17.80% | 19.86% | 21.91% | 23.94% | 25.95% | 27.91% | 29.83% | 31.69% | 33.51% | 35.26% | 36.96% | 38.60% |
| **0.50** | 1.01% | 1.70% | 2.61% | 3.74% | 5.06% | 6.55% | 8.20% | 9.97% | 11.83% | 13.76% | 15.73% | 17.73% | 19.74% | 21.74% | 23.72% | 25.68% | 27.59% | 29.46% | 31.29% | 33.06% | 34.78% | 36.45% | 38.06% | 39.61% |
| **0.55** | 1.68% | 2.61% | 3.75% | 5.09% | 6.61% | 8.26% | 10.03% | 11.88% | 13.80% | 15.75% | 17.72% | 19.70% | 21.67% | 23.61% | 25.53% | 27.41% | 29.25% | 31.04% | 32.78% | 34.47% | 36.11% | 37.69% | 39.23% | 40.71% |
| **0.60** | 2.53% | 3.69% | 5.06% | 6.60% | 8.27% | 10.05% | 11.91% | 13.83% | 15.78% | 17.75% | 19.71% | 21.66% | 23.58% | 25.48% | 27.33% | 29.14% | 30.91% | 32.62% | 34.29% | 35.91% | 37.47% | 38.98% | 40.44% | 41.86% |
| **0.65** | 3.55% | 4.95% | 6.51% | 8.22% | 10.03% | 11.91% | 13.84% | 15.80% | 17.77% | 19.74% | 21.68% | 23.60% | 25.48% | 27.32% | 29.12% | 30.87% | 32.57% | 34.22% | 35.82% | 37.36% | 38.86% | 40.30% | 41.70% | 43.05% |
| **0.70** | 4.74% | 6.34% | 8.08% | 9.93% | 11.85% | 13.82% | 15.80% | 17.79% | 19.77% | 21.72% | 23.64% | 25.53% | 27.37% | 29.16% | 30.90% | 32.59% | 34.23% | 35.81% | 37.35% | 38.83% | 40.26% | 41.65% | 42.98% | 44.27% |
| **0.75** | 6.07% | 7.86% | 9.76% | 11.72% | 13.73% | 15.76% | 17.78% | 19.78% | 21.76% | 23.70% | 25.59% | 27.44% | 29.23% | 30.98% | 32.67% | 34.30% | 35.88% | 37.41% | 38.88% | 40.31% | 41.68% | 43.01% | 44.29% | 45.52% |
| **0.80** | 7.52% | 9.48% | 11.51% | 13.58% | 15.65% | 17.72% | 19.77% | 21.78% | 23.74% | 25.66% | 27.52% | 29.33% | 31.08% | 32.78% | 34.42% | 36.00% | 37.52% | 39.00% | 40.42% | 41.78% | 43.11% | 44.38% | 45.61% | 46.79% |
| **0.85** | 9.08% | 11.19% | 13.33% | 15.48% | 17.61% | 19.71% | 21.76% | 23.77% | 25.72% | 27.61% | 29.44% | 31.21% | 32.92% | 34.56% | 36.15% | 37.68% | 39.16% | 40.58% | 41.94% | 43.26% | 44.53% | 45.75% | 46.93% | 48.07% |
| **0.90** | 10.74% | 12.97% | 15.20% | 17.41% | 19.58% | 21.70% | 23.76% | 25.75% | 27.68% | 29.54% | 31.34% | 33.07% | 34.73% | 36.33% | 37.87% | 39.35% | 40.77% | 42.14% | 43.46% | 44.73% | 45.95% | 47.13% | 48.26% | 49.35% |
| **0.95** | 12.47% | 14.81% | 17.12% | 19.37% | 21.57% | 23.69% | 25.75% | 27.72% | 29.63% | 31.46% | 33.21% | 34.90% | 36.52% | 38.08% | 39.57% | 41.00% | 42.38% | 43.70% | 44.97% | 46.19% | 47.37% | 48.50% | 49.59% | 50.64% |
| **1.00** | 14.27% | 16.70% | 19.06% | 21.35% | 23.56% | 25.68% | 27.73% | 29.68% | 31.56% | 33.35% | 35.07% | 36.72% | 38.29% | 39.80% | 41.25% | 42.64% | 43.97% | 45.24% | 46.47% | 47.65% | 48.78% | 49.87% | 50.92% | 51.92% |
| **1.05** | 16.13% | 18.62% | 21.03% | 23.34% | 25.55% | 27.67% | 29.69% | 31.62% | 33.47% | 35.22% | 36.90% | 38.51% | 40.04% | 41.51% | 42.91% | 44.25% | 45.54% | 46.77% | 47.96% | 49.09% | 50.18% | 51.23% | 52.24% | 53.21% |
| **1.10** | 18.03% | 20.58% | 23.01% | 25.33% | 27.54% | 29.65% | 31.65% | 33.55% | 35.35% | 37.08% | 38.72% | 40.28% | 41.77% | 43.19% | 44.55% | 45.85% | 47.09% | 48.28% | 49.43% | 50.52% | 51.57% | 52.58% | 53.55% | 54.48% |
| **1.15** | 19.96% | 22.55% | 25.00% | 27.33% | 29.53% | 31.61% | 33.58% | 35.45% | 37.22% | 38.90% | 40.50% | 42.02% | 43.47% | 44.85% | 46.17% | 47.43% | 48.63% | 49.78% | 50.88% | 51.93% | 52.95% | 53.92% | 54.85% | 55.75% |
| **1.20** | 21.92% | 24.53% | 27.00% | 29.32% | 31.50% | 33.56% | 35.50% | 37.33% | 39.06% | 40.71% | 42.26% | 43.74% | 45.15% | 46.49% | 47.76% | 48.98% | 50.14% | 51.25% | 52.31% | 53.33% | 54.31% | 55.24% | 56.14% | 57.01% |
| **1.25** | 23.89% | 26.53% | 28.99% | 31.30% | 33.46% | 35.48% | 37.39% | 39.19% | 40.88% | 42.48% | 44.00% | 45.44% | 46.80% | 48.10% | 49.33% | 50.51% | 51.63% | 52.71% | 53.73% | 54.71% | 55.65% | 56.56% | 57.42% | 58.25% |
| **1.30** | 25.88% | 28.52% | 30.98% | 33.26% | 35.40% | 37.39% | 39.26% | 41.02% | 42.68% | 44.24% | 45.71% | 47.11% | 48.43% | 49.69% | 50.88% | 52.02% | 53.10% | 54.14% | 55.13% | 56.08% | 56.98% | 57.85% | 58.69% | 59.49% |
| **1.35** | 27.87% | 30.51% | 32.95% | 35.21% | 37.31% | 39.28% | 41.11% | 42.83% | 44.44% | 45.96% | 47.39% | 48.75% | 50.03% | 51.25% | 52.41% | 53.51% | 54.55% | 55.55% | 56.51% | 57.42% | 58.29% | 59.13% | 59.93% | 60.70% |
| **1.40** | 29.87% | 32.50% | 34.91% | 37.14% | 39.21% | 41.14% | 42.93% | 44.61% | 46.18% | 47.66% | 49.05% | 50.36% | 51.61% | 52.79% | 53.90% | 54.97% | 55.98% | 56.94% | 57.86% | 58.74% | 59.58% | 60.39% | 61.16% | 61.91% |
| **1.45** | 31.86% | 34.47% | 36.86% | 39.06% | 41.09% | 42.97% | 44.72% | 46.36% | 47.89% | 49.32% | 50.68% | 51.95% | 53.15% | 54.29% | 55.38% | 56.40% | 57.38% | 58.31% | 59.20% | 60.05% | 60.86% | 61.63% | 62.38% | 63.09% |
| **1.50** | 33.84% | 36.42% | 38.78% | 40.94% | 42.93% | 44.78% | 46.49% | 48.08% | 49.57% | 50.96% | 52.27% | 53.51% | 54.67% | 55.78% | 56.82% | 57.81% | 58.76% | 59.65% | 60.51% | 61.33% | 62.11% | 62.86% | 63.57% | 64.26% |
| **1.55** | 35.81% | 38.36% | 40.68% | 42.81% | 44.75% | 46.55% | 48.22% | 49.77% | 51.22% | 52.57% | 53.84% | 55.04% | 56.17% | 57.23% | 58.24% | 59.20% | 60.11% | 60.97% | 61.80% | 62.59% | 63.34% | 64.06% | 64.75% | 65.41% |
| **1.60** | 37.76% | 40.28% | 42.56% | 44.64% | 46.55% | 48.30% | 49.92% | 51.43% | 52.84% | 54.15% | 55.38% | 56.54% | 57.63% | 58.66% | 59.63% | 60.56% | 61.43% | 62.27% | 63.06% | 63.82% | 64.55% | 65.24% | 65.90% | 66.54% |
| **1.65** | 39.69% | 42.17% | 44.41% | 46.45% | 48.31% | 50.02% | 51.60% | 53.06% | 54.42% | 55.70% | 56.89% | 58.01% | 59.06% | 60.06% | 61.00% | 61.89% | 62.74% | 63.54% | 64.31% | 65.04% | 65.73% | 66.40% | 67.04% | 67.65% |
| **1.70** | 41.61% | 44.04% | 46.24% | 48.22% | 50.04% | 51.70% | 53.24% | 54.66% | 55.98% | 57.21% | 58.37% | 59.45% | 60.47% | 61.43% | 62.34% | 63.19% | 64.01% | 64.78% | 65.52% | 66.23% | 66.90% | 67.54% | 68.15% | 68.74% |
| **1.75** | 43.49% | 45.88% | 48.03% | 49.97% | 51.74% | 53.36% | 54.85% | 56.23% | 57.51% | 58.70% | 59.81% | 60.86% | 61.84% | 62.77% | 63.64% | 64.47% | 65.26% | 66.00% | 66.71% | 67.39% | 68.04% | 68.65% | 69.24% | 69.81% |
| **1.80** | 45.36% | 47.70% | 49.79% | 51.68% | 53.40% | 54.98% | 56.42% | 57.76% | 59.00% | 60.15% | 61.23% | 62.24% | 63.19% | 64.08% | 64.93% | 65.72% | 66.48% | 67.20% | 67.88% | 68.53% | 69.15% | 69.75% | 70.31% | 70.86% |
| **1.85** | 47.19% | 49.48% | 51.52% | 53.37% | 55.04% | 56.56% | 57.97% | 59.26% | 60.46% | 61.57% | 62.61% | 63.59% | 64.50% | 65.36% | 66.18% | 66.95% | 67.67% | 68.37% | 69.02% | 69.65% | 70.25% | 70.82% | 71.36% | 71.88% |
| **1.90** | 48.99% | 51.23% | 53.22% | 55.01% | 56.64% | 58.12% | 59.47% | 60.73% | 61.88% | 62.96% | 63.97% | 64.91% | 65.79% | 66.62% | 67.40% | 68.14% | 68.84% | 69.51% | 70.14% | 70.74% | 71.32% | 71.86% | 72.39% | 72.89% |
| **1.95** | 50.76% | 52.95% | 54.89% | 56.63% | 58.20% | 59.63% | 60.95% | 62.16% | 63.28% | 64.32% | 65.29% | 66.19% | 67.04% | 67.84% | 68.60% | 69.31% | 69.98% | 70.62% | 71.23% | 71.81% | 72.36% | 72.89% | 73.39% | 73.87% |
| **2.00** | 52.50% | 54.63% | 56.51% | 58.20% | 59.73% | 61.12% | 62.39% | 63.56% | 64.64% | 65.64% | 66.58% | 67.45% | 68.27% | 69.04% | 69.76% | 70.45% | 71.10% | 71.71% | 72.30% | 72.85% | 73.38% | 73.89% | 74.37% | 74.83% |

## Call Prices with Black & Scholes Option Pricing

Price of a B&Sch call option where result=C/S

| Cumulative Volatility: | Moneyness: S/K*exp(-rT) | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sigma*SQRT(T) | 1.60 | 1.65 | 1.70 | 1.75 | 1.80 | 1.85 | 1.90 | 1.95 | 2.00 | 2.05 | 2.10 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 |
| 0.00 | 37.50% | 39.39% | 41.18% | 42.86% | 44.44% | 45.95% | 47.37% | 48.72% | 50.00% | 51.22% | 52.38% | 53.49% | 54.55% | 55.56% | 56.52% | 57.45% | 58.33% | 59.18% | 60.00% | 60.78% | 61.54% | 62.26% | 62.96% | 63.64% |
| 0.05 | 37.50% | 39.39% | 41.18% | 42.86% | 44.44% | 45.95% | 47.37% | 48.72% | 50.00% | 51.22% | 52.38% | 53.49% | 54.55% | 55.56% | 56.52% | 57.45% | 58.33% | 59.18% | 60.00% | 60.78% | 61.54% | 62.26% | 62.96% | 63.64% |
| 0.10 | 37.50% | 39.39% | 41.18% | 42.86% | 44.44% | 45.95% | 47.37% | 48.72% | 50.00% | 51.22% | 52.38% | 53.49% | 54.55% | 55.56% | 56.52% | 57.45% | 58.33% | 59.18% | 60.00% | 60.78% | 61.54% | 62.26% | 62.96% | 63.64% |
| 0.15 | 37.50% | 39.40% | 41.18% | 42.86% | 44.44% | 45.95% | 47.37% | 48.72% | 50.00% | 51.22% | 52.38% | 53.49% | 54.55% | 55.56% | 56.52% | 57.45% | 58.33% | 59.18% | 60.00% | 60.78% | 61.54% | 62.26% | 62.96% | 63.64% |
| 0.20 | 37.55% | 39.42% | 41.20% | 42.87% | 44.45% | 45.95% | 47.37% | 48.72% | 50.00% | 51.22% | 52.38% | 53.49% | 54.55% | 55.56% | 56.52% | 57.45% | 58.33% | 59.18% | 60.00% | 60.78% | 61.54% | 62.26% | 62.96% | 63.64% |
| 0.25 | 37.73% | 39.56% | 41.29% | 42.94% | 44.50% | 45.99% | 47.40% | 48.74% | 50.01% | 51.23% | 52.39% | 53.49% | 54.55% | 55.56% | 56.52% | 57.45% | 58.33% | 59.18% | 60.00% | 60.78% | 61.54% | 62.26% | 62.96% | 63.64% |
| 0.30 | 38.09% | 39.85% | 41.53% | 43.13% | 44.65% | 46.11% | 47.49% | 48.81% | 50.07% | 51.28% | 52.43% | 53.52% | 54.57% | 55.58% | 56.54% | 57.46% | 58.34% | 59.19% | 60.01% | 60.79% | 61.54% | 62.27% | 62.97% | 63.64% |
| 0.35 | 38.64% | 40.32% | 41.93% | 43.47% | 44.94% | 46.35% | 47.70% | 48.99% | 50.22% | 51.40% | 52.53% | 53.61% | 54.64% | 55.64% | 56.59% | 57.50% | 58.38% | 59.22% | 60.03% | 60.81% | 61.56% | 62.28% | 62.98% | 63.65% |
| 0.40 | 39.34% | 40.94% | 42.48% | 43.95% | 45.37% | 46.72% | 48.03% | 49.27% | 50.47% | 51.62% | 52.72% | 53.77% | 54.79% | 55.76% | 56.70% | 57.60% | 58.46% | 59.29% | 60.09% | 60.86% | 61.61% | 62.32% | 63.01% | 63.68% |
| 0.45 | 40.18% | 41.70% | 43.16% | 44.57% | 45.93% | 47.23% | 48.48% | 49.68% | 50.83% | 51.94% | 53.01% | 54.04% | 55.02% | 55.97% | 56.89% | 57.77% | 58.61% | 59.43% | 60.21% | 60.97% | 61.70% | 62.41% | 63.09% | 63.75% |
| 0.50 | 41.12% | 42.56% | 43.96% | 45.30% | 46.60% | 47.84% | 49.04% | 50.20% | 51.31% | 52.38% | 53.41% | 54.40% | 55.35% | 56.27% | 57.16% | 58.02% | 58.84% | 59.64% | 60.41% | 61.15% | 61.86% | 62.56% | 63.22% | 63.87% |
| 0.55 | 42.14% | 43.52% | 44.85% | 46.13% | 47.36% | 48.55% | 49.70% | 50.81% | 51.88% | 52.90% | 53.90% | 54.85% | 55.77% | 56.66% | 57.52% | 58.35% | 59.15% | 59.92% | 60.67% | 61.39% | 62.09% | 62.77% | 63.42% | 64.05% |
| 0.60 | 43.22% | 44.53% | 45.80% | 47.03% | 48.21% | 49.35% | 50.45% | 51.51% | 52.53% | 53.52% | 54.47% | 55.39% | 56.28% | 57.14% | 57.96% | 58.76% | 59.54% | 60.29% | 61.01% | 61.71% | 62.39% | 63.05% | 63.68% | 64.30% |
| 0.65 | 44.35% | 45.61% | 46.82% | 47.99% | 49.12% | 50.21% | 51.26% | 52.28% | 53.26% | 54.20% | 55.12% | 56.00% | 56.86% | 57.68% | 58.48% | 59.25% | 60.00% | 60.72% | 61.42% | 62.10% | 62.76% | 63.39% | 64.01% | 64.61% |
| 0.70 | 45.52% | 46.72% | 47.88% | 49.00% | 50.08% | 51.12% | 52.13% | 53.10% | 54.04% | 54.95% | 55.83% | 56.68% | 57.50% | 58.29% | 59.06% | 59.80% | 60.52% | 61.22% | 61.90% | 62.55% | 63.18% | 63.80% | 64.40% | 64.98% |
| 0.75 | 46.72% | 47.87% | 48.98% | 50.05% | 51.08% | 52.08% | 53.04% | 53.98% | 54.88% | 55.75% | 56.59% | 57.41% | 58.19% | 58.96% | 59.70% | 60.41% | 61.10% | 61.78% | 62.43% | 63.06% | 63.67% | 64.26% | 64.84% | 65.40% |
| 0.80 | 47.93% | 49.03% | 50.10% | 51.12% | 52.12% | 53.07% | 54.00% | 54.89% | 55.75% | 56.59% | 57.40% | 58.18% | 58.94% | 59.67% | 60.38% | 61.07% | 61.73% | 62.38% | 63.01% | 63.62% | 64.21% | 64.78% | 65.34% | 65.88% |
| 0.85 | 49.16% | 50.22% | 51.24% | 52.22% | 53.17% | 54.09% | 54.98% | 55.84% | 56.66% | 57.47% | 58.24% | 58.99% | 59.72% | 60.42% | 61.11% | 61.77% | 62.41% | 63.03% | 63.63% | 64.22% | 64.79% | 65.34% | 65.88% | 66.40% |
| 0.90 | 50.40% | 51.42% | 52.40% | 53.34% | 54.25% | 55.13% | 55.98% | 56.81% | 57.60% | 58.37% | 59.11% | 59.84% | 60.53% | 61.21% | 61.86% | 62.50% | 63.12% | 63.71% | 64.30% | 64.86% | 65.41% | 65.94% | 66.46% | 66.96% |
| 0.95 | 51.65% | 52.62% | 53.56% | 54.47% | 55.34% | 56.19% | 57.01% | 57.79% | 58.56% | 59.30% | 60.01% | 60.70% | 61.37% | 62.02% | 62.65% | 63.26% | 63.86% | 64.43% | 64.99% | 65.53% | 66.06% | 66.57% | 67.07% | 67.55% |
| 1.00 | 52.90% | 53.83% | 54.73% | 55.60% | 56.44% | 57.26% | 58.04% | 58.80% | 59.53% | 60.24% | 60.93% | 61.59% | 62.23% | 62.86% | 63.46% | 64.05% | 64.62% | 65.17% | 65.71% | 66.23% | 66.74% | 67.23% | 67.71% | 68.18% |
| 1.05 | 54.14% | 55.04% | 55.91% | 56.74% | 57.55% | 58.33% | 59.08% | 59.81% | 60.51% | 61.20% | 61.85% | 62.49% | 63.11% | 63.71% | 64.29% | 64.86% | 65.40% | 65.93% | 66.45% | 66.95% | 67.44% | 67.91% | 68.38% | 68.82% |
| 1.10 | 55.38% | 56.25% | 57.08% | 57.88% | 58.66% | 59.41% | 60.13% | 60.83% | 61.51% | 62.16% | 62.79% | 63.41% | 64.00% | 64.58% | 65.14% | 65.68% | 66.20% | 66.71% | 67.21% | 67.69% | 68.16% | 68.62% | 69.06% | 69.49% |
| 1.15 | 56.61% | 57.45% | 58.25% | 59.02% | 59.77% | 60.49% | 61.18% | 61.85% | 62.50% | 63.13% | 63.74% | 64.33% | 64.90% | 65.45% | 65.99% | 66.51% | 67.02% | 67.51% | 67.98% | 68.45% | 68.90% | 69.34% | 69.76% | 70.18% |
| 1.20 | 57.84% | 58.64% | 59.41% | 60.15% | 60.87% | 61.56% | 62.23% | 62.87% | 63.50% | 64.10% | 64.69% | 65.25% | 65.80% | 66.33% | 66.85% | 67.35% | 67.84% | 68.31% | 68.77% | 69.21% | 69.65% | 70.07% | 70.48% | 70.88% |
| 1.25 | 59.05% | 59.82% | 60.56% | 61.28% | 61.97% | 62.63% | 63.27% | 63.90% | 64.50% | 65.08% | 65.64% | 66.18% | 66.71% | 67.22% | 67.71% | 68.20% | 68.66% | 69.12% | 69.56% | 69.99% | 70.40% | 70.81% | 71.20% | 71.59% |
| 1.30 | 60.26% | 61.00% | 61.71% | 62.40% | 63.06% | 63.70% | 64.32% | 64.91% | 65.49% | 66.05% | 66.59% | 67.11% | 67.61% | 68.11% | 68.58% | 69.04% | 69.49% | 69.93% | 70.35% | 70.76% | 71.16% | 71.55% | 71.93% | 72.30% |
| 1.35 | 61.44% | 62.16% | 62.84% | 63.50% | 64.14% | 64.76% | 65.35% | 65.92% | 66.48% | 67.01% | 67.53% | 68.03% | 68.52% | 68.99% | 69.45% | 69.89% | 70.32% | 70.74% | 71.15% | 71.54% | 71.93% | 72.30% | 72.67% | 73.02% |
| 1.40 | 62.62% | 63.30% | 63.96% | 64.60% | 65.21% | 65.80% | 66.37% | 66.92% | 67.46% | 67.97% | 68.47% | 68.95% | 69.42% | 69.87% | 70.31% | 70.74% | 71.15% | 71.56% | 71.95% | 72.33% | 72.70% | 73.06% | 73.41% | 73.75% |
| 1.45 | 63.78% | 64.44% | 65.07% | 65.68% | 66.27% | 66.84% | 67.39% | 67.92% | 68.43% | 68.92% | 69.40% | 69.87% | 70.32% | 70.75% | 71.17% | 71.58% | 71.98% | 72.37% | 72.74% | 73.11% | 73.46% | 73.81% | 74.15% | 74.47% |
| 1.50 | 64.92% | 65.55% | 66.16% | 66.75% | 67.32% | 67.86% | 68.39% | 68.90% | 69.39% | 69.87% | 70.33% | 70.77% | 71.20% | 71.62% | 72.03% | 72.42% | 72.80% | 73.17% | 73.54% | 73.89% | 74.23% | 74.56% | 74.88% | 75.20% |
| 1.55 | 66.04% | 66.65% | 67.24% | 67.81% | 68.35% | 68.87% | 69.38% | 69.87% | 70.34% | 70.80% | 71.24% | 71.67% | 72.08% | 72.48% | 72.87% | 73.25% | 73.62% | 73.98% | 74.32% | 74.66% | 74.99% | 75.31% | 75.62% | 75.92% |
| 1.60 | 67.15% | 67.74% | 68.30% | 68.84% | 69.37% | 69.87% | 70.36% | 70.83% | 71.28% | 71.72% | 72.14% | 72.55% | 72.95% | 73.34% | 73.71% | 74.08% | 74.43% | 74.77% | 75.10% | 75.43% | 75.74% | 76.05% | 76.35% | 76.64% |
| 1.65 | 68.24% | 68.80% | 69.34% | 69.87% | 70.37% | 70.85% | 71.32% | 71.77% | 72.21% | 72.63% | 73.04% | 73.43% | 73.81% | 74.18% | 74.54% | 74.89% | 75.23% | 75.56% | 75.88% | 76.19% | 76.49% | 76.78% | 77.07% | 77.35% |
| 1.70 | 69.31% | 69.85% | 70.37% | 70.87% | 71.35% | 71.82% | 72.27% | 72.70% | 73.12% | 73.52% | 73.91% | 74.29% | 74.66% | 75.02% | 75.36% | 75.70% | 76.02% | 76.34% | 76.64% | 76.94% | 77.23% | 77.51% | 77.79% | 78.05% |
| 1.75 | 70.35% | 70.87% | 71.37% | 71.86% | 72.32% | 72.77% | 73.20% | 73.61% | 74.02% | 74.40% | 74.78% | 75.14% | 75.50% | 75.84% | 76.17% | 76.49% | 76.80% | 77.10% | 77.40% | 77.68% | 77.96% | 78.23% | 78.50% | 78.75% |
| 1.80 | 71.38% | 71.88% | 72.36% | 72.82% | 73.27% | 73.70% | 74.11% | 74.51% | 74.90% | 75.27% | 75.63% | 75.98% | 76.32% | 76.64% | 76.96% | 77.27% | 77.57% | 77.86% | 78.14% | 78.42% | 78.68% | 78.94% | 79.20% | 79.44% |
| 1.85 | 72.39% | 72.87% | 73.33% | 73.77% | 74.20% | 74.61% | 75.01% | 75.39% | 75.76% | 76.12% | 76.47% | 76.80% | 77.12% | 77.44% | 77.74% | 78.04% | 78.33% | 78.60% | 78.88% | 79.14% | 79.40% | 79.64% | 79.89% | 80.12% |
| 1.90 | 73.37% | 73.83% | 74.28% | 74.70% | 75.11% | 75.51% | 75.89% | 76.26% | 76.61% | 76.95% | 77.29% | 77.61% | 77.92% | 78.22% | 78.51% | 78.80% | 79.07% | 79.34% | 79.60% | 79.85% | 80.10% | 80.33% | 80.57% | 80.79% |
| 1.95 | 74.33% | 74.78% | 75.20% | 75.61% | 76.00% | 76.38% | 76.75% | 77.10% | 77.44% | 77.77% | 78.09% | 78.40% | 78.70% | 78.99% | 79.27% | 79.54% | 79.80% | 80.06% | 80.31% | 80.55% | 80.78% | 81.01% | 81.24% | 81.45% |
| 2.00 | 75.27% | 75.70% | 76.11% | 76.50% | 76.88% | 77.24% | 77.59% | 77.93% | 78.26% | 78.57% | 78.88% | 79.17% | 79.46% | 79.74% | 80.00% | 80.26% | 80.52% | 80.76% | 81.00% | 81.23% | 81.46% | 81.68% | 81.89% | 82.10% |