## Appendix

Proof of Proposition 1

**Case 1:** when *d*i is smaller than *t*i, the closest S/R aisle to dock door *i* is located to the left of dock door *i*. Therefore, the distance between dock door *i* and the nearest S/R aisle is *a* / 2 – *t*i + *d*i. Because there are *t*i / *a* S/R aisles to the left of dock door *i*, the distance between dock door *i* and S/R aisle *j* located to the left of dock door *i* equals (*t*i / *a* – *j*) *a* + *a* / 2 – *t*i + *d*i = *d*i – (*j* – 1 / 2) *a* for *j* = 1, 2, …, *t*i / *a*. Similarly, the distance between dock door *i* and the nearest S/R aisle located to the right of dock door *i* equals   
*a* / 2 + *t*i – *d*i. Because there are *n* – *t*i / *a* S/R aisles to the right of dock door *i*, the distance between dock door *i* and S/R aisle *j* located to the right of dock door *i* equals (*j* – *t*i / *a* – 1) *a* + *a* / 2 + *t*i – *d*i   
= (*j* – 1 / 2) *a* – *d*i for *j* = *t*i / *a* + 1, *t*i / *a* +2, …, *n*. Therefore, the distance between dock door *i* and the S/R aisle *j* equals |*d*i – (*j* – 1 / 2) *a*| for *j* = 1, 2, …, *n*.

**Case 2:** dock door *i* coincides with a back-to-back rack location. Therefore, in traveling to the S/R aisle nearest dock door *i*, the distances to the right and to the left of dock door *i* are identical and equal one half of the distance between two adjacent S/R aisles (*a* / 2). As before, there are *n* – *t*i / *a* and *t*i / *a* S/R aisles to the right and to the left of dock door *i*, respectively. Therefore, the equations given for Case 1 are valid, because *t*i – *d*i equals zero.

**Case 3:** when *d*i is greater than *t*i, the closest S/R aisle to dock door *i* is located to the right of dock door *i*. Even though the closest S/R aisle is located to the right of dock door *i*; the distance between dock door *i* and the nearest S/R aisle located to the right of dock door *i* still equals *a* / 2 + *t*i – *d*i, and the distance between dock door *i* and the nearest S/R aisle located to the left of dock door *i* still equals *a* / 2 – *t*i + *d*i. Again, there exist *t*i / *a* S/R aisles to the left of dock door *i* and *n* – *t*i / *a* aisles to the right of dock door *i*. Therefore, the equations given for Case 1 apply for Case 3.

**Case 4:** the absolute value of *d*i minus *t*iequals one-half the distance between two adjacent S/R aisles; movement does not exist in the parallel direction to reach the closest S/R aisle to dock door *i* because dock door *i* coincides with an S/R aisle. Therefore, equations derived for Case 1 apply for Case 4 with the absolute difference between *d*i and *t*i equaling *a* / 2.

Proof of Lemma 1

Suppose expected distance is expressed as

|  |  |  |
| --- | --- | --- |
|  | *E* [*SC*] ≈ *c*1 *W* + *c*2 *W* – 1 + *c*3 | (A.) |

Taking the first derivative of Equation (A.1) with respect to the warehouse’s width

|  |  |  |
| --- | --- | --- |
|  | ∂ *E* [*SC*] / ∂ *W* ≈ *c*1 + *c*2 *W* – 2 | (A.) |

Setting Equation (A.2) equal to zero and solving for the warehouse’s width, the stationary point is   
*W* ≈ (*c*2 / *c*1) 1/2.

Taking the second derivative of Equation (A.1) with respect to the warehouse’s width gives

|  |  |  |
| --- | --- | --- |
|  | ∂ 2 *E* [*SC*] / ∂ *W* 2 ≈ 2*c*2 *W* – 3, | (A.) |

which is greater than zero for values of c2 greater than zero. Because c2 is greater than zero, Equation (A.3) is positive for all values of *W*. Therefore, expected single-command roundtrip-distance is a convex function of the warehouse’s width and the stationary point, *W* ≈ (*c*2 / *c*1) 1/2, is the optimal width.

Proof of Corollary 1

From Equation 12, the expected single-command distance for a single-dock-door is

|  |  |  |
| --- | --- | --- |
|  | *E* [*SC*] ≈ *W* / 2 + A / *W*. | (A.) |

Therefore, from Lemma 1, *E* [*SC*] is a convex function of *W* with stationary point *W* ≈ (2 *A*) 1/2.By definition, *S* = *W* / *D* and *A* = *W D*. Therefore, *S* = *W* 2 / *A*. Hence, the shape factor for the optimal warehouse width is *S* ≈ 2.0.

Proof of Corollary 2

Equations (13), (14), and (15) have the form

|  |  |  |
| --- | --- | --- |
|  | *E* [*SC*] ≈ *c*1 *W* + *c*2 *W* – 1 + c3 | (A.) |

Therefore, from Lemma 1 they are convex functions of *W* (c2 is greater than zero for all scenarios) with stationary points *W* ≈ [3*A* (*k* + 1) / (2*k* + 1)] 1/2, *W* ≈ [2*A* + [*δ* 2 (*k* 2 – 1)] / 3] 1/2 and *W* ≈ {[3*A* + 6*ϕ* 2 + 6*ϕ δ* (*k* – 1) + (2*k* 2 – 3*k* + 1) *δ* 2] / 3} 1/2, respectively. Therefore, the shape factors for the optimal warehouse widths are *S* ≈ 3(*k*+1) / (2*k*+1), *S* ≈ 2 + [*δ* 2 (*k* 2 – 1)] / 3*A* and *S* ≈ 1 + [6*ϕ* 2 + 6*ϕ δ* (*k* – 1) + (2*k* 2 – 3*k* + 1) *δ* 2] / 3*A*, respectively.

Proof of Proposition 2

When *S* ≥ [(*k* + 1) 2 (*ω* + *ѱ*) 2] / *A*, the warehouse width constraint is satisfied. From Lemma 1,   
*c*1 = (2*k* + 1) / [3 (*k* + 1)] and *c*2 = *A* and *c*2 = 0. Because expected roundtrip-distance is a convex function of *W* (from Corollary 1), the stationary point *S*\**SC* ≈ *c2* / (*c*1 *A*) ≈ 3(*k*+1) / (2*k*+1) is the optimal shape factor. When *S* < [(*k* + 1) 2 (*ω* + *ѱ*) 2] / *A*, the width constraint is violated. Therefore, the optimum shape factor is determined by the width constraint: *S*\**SC* ≈ [(*k* + 1) 2 (*ω* + *ѱ*) 2] / *A*.

The proof provided for Scenario 1 can be applied for Scenarios 2 and 3.

Proof of Lemma 2

Suppose expected distance is expressed as

|  |  |  |
| --- | --- | --- |
|  | *E* [*DC*] ≈ (*c*1 *W* 3 + *c*2 *W* 2 + *c*3 *W* + *c*4) / (*c*5 *W* 2) | (A.) |

Taking the first derivative of Equation (A.7) with respect to the warehouse’s width

|  |  |  |
| --- | --- | --- |
|  | ∂ *E* [*DC*] / ∂ *W* ≈ (*c*1 *W* 3 – *c*3 *W* – 2*c*4) / (*c*5 *W* 3) | (A.) |

Equation (A.7) is an irreducible polynomial. Therefore, depressing the cubic equation and using *Viète's trigonometric solution*, the stationary point is *W* ≈ 2 (*c*3 / 3*c*1) 1/2 cos {arccos [*c*4 *c*1 1/2 (3 / *c*3) 3/2]   
/ 3}.

Taking the second derivative of Equation (A.6) with respect to the warehouse’s width gives

|  |  |  |
| --- | --- | --- |
|  | ∂ 2 *E* [*DC*] / ∂ *W* 2 ≈ (2*c*3 *W* + 6*c*4) / (*c*5 *W* 4) | (A.) |

Evaluating Equation (A.8) yields a value greater than zero for reasonable parameter values (necessary conditions are provided in the proofs of Corollaries 3 and 4). Therefore, expected roundtrip-distance is a convex function of the warehouse’s width and the stationary point, *W* ≈ 2 (*c*3 / 3*c*1) 1/2 cos {arccos [*c*4 *c*1 1/2 (3 / *c*3) 3/2] / 3}, is the optimal width.

Proof of Corollary 3

From Equation 17, the expected dual-command distance for a single dock-door is

|  |  |  |
| --- | --- | --- |
|  |  | (A.) |

Therefore, from Lemma 2, *E* [*DC*] is a convex function of *W* with stationary point *W* ≈ 2 (*c*3 / 3*c*1) 1/2 cos {arccos [*c*4 *c*1 1/2 (3 / *c*3) 3/2] / 3} where *c*1 = 5, *c*3 = 10*A* – 2*a* 2 – 4*av* and *c*4 = – 2 *a A*. By definition, *S* = *W* / *D* and *A* = *W D*. Therefore, *S* = *W* 2 / *A*. Hence, the shape factor for the optimal warehouse width is *S* ≈4*c*3 (cos {arccos [*c*4 *c*1 1/2 (3 / *c*3) 3/2] / 3}) 2 / (3*A* *c*1) where *c*1 = 5, *c*3 = 10 *A* – 2 *a* 2 – 4 *a v* and   
*c*4 = – 2 *a A*.

Taking the second derivative of Equation (A.9) with respect to the width of the warehouse gives

|  |  |  |
| --- | --- | --- |
|  | ∂ 2 *E* [*DC*] / ∂ *W* 2 ≈ (10*A W* – 2*a* 2 *W* – 4*a v W* – 6*a A*) / (3*W* 4) | (A.) |

Evaluating (A.10) yields a value which is greater than zero for all *W* > (3*a A*) / (5*A* – *a*2 – 2*a v*) with reasonable parameter values (e.g., 10*A W* – 2*a* 2 *W* – 4*a v W* – 6*a A* > 0 for all *W* > 12.0062 ft when *A* = 250,000 ft2, *a* =20 ft and *v* = 6 ft).

Proof of Corollary 4

Equations (18), (19) and (20) have the form

|  |  |  |
| --- | --- | --- |
|  | *E* [*DC*] ≈ (*c*1 *W* 3 + *c*2 *W* 2 + *c*3 *W* + *c*4) / (*c*5 *W* 2) | (A.) |

Therefore, from Lemma 2 they are convex functions of *W* with stationary points *W* ≈ 2 (*c*3 / 3*c*1) 1/2 cos {arccos [*c*4 *c*1 1/2 (3 / *c*3) 3/2] / 3}3})2 / (3*A* *c*1) where *c*1 = (2 + 3*k*), *c*3 = (1 + *k*) (5*A* – *a* 2 – 2*a v*) and   
*c*4 = – (1 + *k*) *a A* for Scenario 1; *c*1 = 5, *c*3 = 10*A* – 2*a* 2 – 4*a v* + *δ* 2 (*k* 2 – 1) and *c*4 = – 2*a A* for Scenario 2; and *c*1 = 4, *c*3 = 5*A* – *a* 2 – 2*a v* + 6*ϕ* 2 + 6*ϕ δ* (*k* – 1) + (2*k* 2 – 3*k* + 1) *δ* 2 and *c*4 = – *a A* for Scenario 3.

The second derivatives of Equations (18), (19) and (20) with respect to the warehouse width are

Scenario 1: (10*A W* – 2*a* 2 *W* – 4*a v W* – 6*a A*) / (3*W* 4)

Scenario 2: [10*A W* – 2*a* 2 *W* – 4*a v W* – 6*a A* + (*k*2 – 1) *δ* 2 *W*] / (3*W* 4)

Scenario 3: [10*A* *W* – 2*a* 2 *W* – 4*a v W* – 6*a A* + 2(2*k* 2 – 3*k* + 1) *δ* 2 *W* + 12*ϕ δ* (*k* – 1) *W*+ 12*ϕ* 2 *W*) / (3*W* 4)

Finding the second derivative is greater than zero, the necessary condition for each scenario is

Scenario 1: *W* > (3*a A*) / (5*A* – *a*2 – 2*a v*).

(e.g. 10*A W* – 2*a* 2 *W* – 4*a v W* – 6*a A* > 0 for all *W* > 12.0062 ft when *A* = 250,000 ft2, *a* =20 ft and   
*v* = 6 ft)

Scenario 2: *W* > (6*a A*) / [10*A* – 2*a* 2 – 4*a v* + (*k*2 – 1) *δ* 2]

(e.g. 10*A* *W* – 2*a* 2 *W* – 4*a v W* – 6*a A* + 2(2*k* 2 – 3*k* + 1) *δ* 2 *W* + 12*ϕ δ* (*k* – 1) *W*+ 12*ϕ* 2 *W* > 0 for all   
*W* > 12.01 ft when *A* = 250,000 ft2, *a* =20 ft, *v* = 6 ft, *δ* = 12 ft and *k* = 1). Increasing the value *k* decreases the lower bound for *W*.

Scenario 3: *W* > (3*a A*) / [5*A* – *a* 2 – 2*a v* + (2*k* 2 – 3*k* + 1) *δ* 2 + 6*ϕ δ* (*k* – 1) + 6*ϕ* 2]

(e.g. 10*A W* – 2*a* 2 *W* – 4*a v W* – 6*a A* + (*k*2 – 1) *δ* 2 *W* > 0 for all *W* > 11.96 ft when *A* = 250,000 ft2,   
*a* =20 ft, *v* = 6 ft, *δ* = 12 ft, *ϕ* = 30 ft and *k* = 1). Increasing the value *k* decreases the lower bound for *W*.

Proof of Proposition 3

Using Lemma 2 and Corollary 3, the proof of Proposition 2 can be applied to Proposition 3.

Proof of Proposition 4

When dock doors are equally spaced along the wall containing dock doors, the expected single-command distance (Equation (14)) for *k* dock doors is given by

|  |  |  |
| --- | --- | --- |
|  | *E* [*SC*] ≈ [(2*k* + 1) *W*] / [3(*k* + 1)] + *D.* | (A.) |

Using the relationship between a given area (*A* = *W*\* *D*\*) and the optimal shape factor   
(*S*\* = *W*\* / *D*\*), the width and depth of an optimally designed warehouse as functions of shape factor and a given area are  and , respectively. Rewriting Equation (A.14) as a function of the optimal shape factor and a given area, the expected roundtrip single-command distance for Scenario 1 is

|  |  |  |
| --- | --- | --- |
|  | *E* [*SC*] ≈ [(2*k* + 1)] / [3(*k* + 1)] +. | (A.) |

Substituting the optimal shape factor expression for Scenario 1, *S*\*SC ≈ 3(*k*+1) / (2*k*+1), into Equation (A.15), the minimum expected single-command distance is {[*A* (2*k* + 1)] / [3 (*k* + 1)]} 1/2 + {[*A* (2*k* + 1)] /   
[3 (*k* + 1)]} 1/2. Therefore, the expected horizontal roundtrip-distance equals the expected vertical roundtrip-distance when *S* ≥ [(*k* + 1) 2 (*ω* + *ѱ*) 2] / *A*.

Following similar steps, we can show the expected horizontal distance also equals the expected vertical distance for dual-command travel.

Using the appropriate Equations, the proof for Scenario 1 can be applied to Scenarios 2 and 3.

Table A.1: Discrete formulation results for *SC* with Scenario 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 1 | 708.00 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 2 | 745.65 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 3 | 764.47 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 4 | 775.87 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 5 | 782.75 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 6 | 787.69 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 7 | 791.37 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 8 | 794.25 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 9 | 796.54 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 10 | 798.43 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 11 | 799.99 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 12 | 801.32 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 13 | 802.45 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 14 | 803.44 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 15 | 804.30 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 16 | 805.06 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 17 | 805.74 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 18 | 806.34 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 19 | 806.89 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 20 | 807.38 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 21 | 807.83 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 22 | 808.24 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 23 | 808.61 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 24 | 808.95 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 25 | 809.27 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 26 | 809.57 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 27 | 809.84 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 28 | 810.10 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 29 | 810.33 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 30 | 810.67 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 31 | 810.76 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 32 | 810.96 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 33 | 811.14 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 34 | 811.32 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 35 | 811.48 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 36 | 811.64 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 37 | 811.78 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 38 | 811.92 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 39 | 812.06 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 40 | 812.18 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 41 | 812.30 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 42 | 812.42 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 43 | 812.53 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 44 | 812.63 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 45 | 812.73 | 31 | 95 | 620 | 404 | 250480 | 1.53 |

Table A.1: Discrete formulation results for *SC* with Scenario 1 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 46 | 812.83 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 47 | 812.92 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 48 | 813.01 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 49 | 813.09 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 50 | 813.17 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 51 | 814.46 | 32 | 92 | 640 | 392 | 250880 | 1.63 |
| 52 | 814.54 | 32 | 92 | 640 | 392 | 250880 | 1.63 |
| 53 | 815.82 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 54 | 815.90 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 55 | 817.19 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 56 | 822.48 | 35 | 84 | 700 | 360 | 252000 | 1.94 |
| 57 | 822.55 | 35 | 84 | 700 | 360 | 252000 | 1.94 |
| 58 | 823.84 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 59 | 823.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 60 | 829.20 | 37 | 79 | 740 | 340 | 251600 | 2.18 |

Table A.2: Discrete formulation results for *DC* with Scenario 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 1 | 1172.11 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 2 | 1209.76 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 3 | 1228.58 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 4 | 1240.00 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 5 | 1247.56 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 6 | 1252.95 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 7 | 1256.99 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 8 | 1260.15 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 9 | 1262.67 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 10 | 1264.73 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 11 | 1266.44 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 12 | 1267.90 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 13 | 1269.15 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 14 | 1270.23 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 15 | 1271.17 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 16 | 1272.11 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 17 | 1272.75 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 18 | 1273.41 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 19 | 1274.01 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 20 | 1274.55 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 21 | 1275.04 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 22 | 1275.49 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 23 | 1275.90 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 24 | 1276.28 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 25 | 1276.62 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 26 | 1276.91 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 27 | 1277.19 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 28 | 1277.44 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 29 | 1277.68 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 30 | 1277.96 | 32 | 92 | 640 | 392 | 250880 | 1.63 |
| 31 | 1278.11 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 32 | 1278.31 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 33 | 1278.49 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 34 | 1278.66 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 35 | 1278.83 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 36 | 1278.98 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 37 | 1279.13 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 38 | 1279.27 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 39 | 1279.40 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 40 | 1279.53 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 41 | 1279.65 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 42 | 1279.76 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 43 | 1279.87 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 44 | 1279.98 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 45 | 1280.08 | 31 | 95 | 620 | 404 | 250480 | 1.53 |

Table A.2: Discrete formulation results for *DC* with Scenario 1 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 46 | 1280.17 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 47 | 1280.26 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 48 | 1280.35 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 49 | 1280.44 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 50 | 1280.52 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 51 | 1280.74 | 32 | 92 | 640 | 392 | 250880 | 1.63 |
| 52 | 1280.82 | 32 | 92 | 640 | 392 | 250880 | 1.63 |
| 53 | 1281.03 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 54 | 1281.11 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 55 | 1281.30 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 56 | 1288.11 | 35 | 84 | 700 | 360 | 252000 | 1.94 |
| 57 | 1288.18 | 35 | 84 | 700 | 360 | 252000 | 1.94 |
| 58 | 1288.35 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 59 | 1288.43 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 60 | 1295.21 | 37 | 79 | 740 | 340 | 251600 | 2.18 |

Table A.3: Continuous approximation results for *SC* with Scenario 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 1 | 707.11 | 35.36 | 82.39 | 707.11 | 353.55 | 250000 | 2.00 |
| 2 | 745.36 | 33.54 | 87.17 | 670.82 | 372.68 | 250000 | 1.80 |
| 3 | 763.76 | 32.73 | 89.47 | 654.65 | 381.88 | 250000 | 1.71 |
| 4 | 774.60 | 32.27 | 90.82 | 645.50 | 387.30 | 250000 | 1.67 |
| 5 | 781.74 | 31.98 | 91.72 | 639.60 | 390.87 | 250000 | 1.64 |
| 6 | 786.80 | 31.77 | 92.35 | 635.49 | 393.40 | 250000 | 1.62 |
| 7 | 790.57 | 31.62 | 92.82 | 632.46 | 395.28 | 250000 | 1.60 |
| 8 | 793.49 | 31.51 | 93.19 | 630.13 | 396.75 | 250000 | 1.59 |
| 9 | 795.82 | 31.41 | 93.48 | 628.28 | 397.91 | 250000 | 1.58 |
| 10 | 797.72 | 31.34 | 93.72 | 626.78 | 398.86 | 250000 | 1.57 |
| 11 | 799.31 | 31.28 | 93.91 | 625.54 | 399.65 | 250000 | 1.57 |
| 12 | 800.64 | 31.22 | 94.08 | 624.50 | 400.32 | 250000 | 1.56 |
| 13 | 801.78 | 31.18 | 94.22 | 623.61 | 400.89 | 250000 | 1.56 |
| 14 | 802.77 | 31.14 | 94.35 | 622.84 | 401.39 | 250000 | 1.55 |
| 15 | 803.64 | 31.11 | 94.45 | 622.17 | 401.82 | 250000 | 1.55 |
| 16 | 804.40 | 31.08 | 94.55 | 621.58 | 402.20 | 250000 | 1.55 |
| 17 | 805.08 | 31.05 | 94.63 | 621.06 | 402.54 | 250000 | 1.54 |
| 18 | 805.68 | 31.03 | 94.71 | 620.59 | 402.84 | 250000 | 1.54 |
| 19 | 806.23 | 31.01 | 94.78 | 620.17 | 403.11 | 250000 | 1.54 |
| 20 | 806.72 | 30.99 | 94.84 | 619.80 | 403.36 | 250000 | 1.54 |
| 21 | 807.16 | 30.97 | 94.90 | 619.45 | 403.58 | 250000 | 1.53 |
| 22 | 807.57 | 30.96 | 94.95 | 619.14 | 403.79 | 250000 | 1.53 |
| 23 | 807.95 | 30.94 | 94.99 | 618.85 | 403.97 | 250000 | 1.53 |
| 24 | 808.29 | 30.93 | 95.04 | 618.59 | 404.15 | 250000 | 1.53 |
| 25 | 808.61 | 30.92 | 95.08 | 618.35 | 404.30 | 250000 | 1.53 |
| 26 | 808.90 | 30.91 | 95.11 | 618.12 | 404.45 | 250000 | 1.53 |
| 27 | 809.17 | 30.90 | 95.15 | 617.91 | 404.59 | 250000 | 1.53 |
| 28 | 809.43 | 30.89 | 95.18 | 617.72 | 404.71 | 250000 | 1.53 |
| 29 | 809.66 | 30.88 | 95.21 | 617.54 | 404.83 | 250000 | 1.53 |
| 30 | 809.89 | 30.87 | 95.24 | 617.37 | 404.94 | 250000 | 1.52 |
| 31 | 810.09 | 30.86 | 95.26 | 617.21 | 405.05 | 250000 | 1.52 |
| 32 | 810.29 | 30.85 | 95.29 | 617.07 | 405.14 | 250000 | 1.52 |
| 33 | 810.47 | 30.85 | 95.31 | 616.93 | 405.24 | 250000 | 1.52 |
| 34 | 810.64 | 30.84 | 95.33 | 616.79 | 405.32 | 250000 | 1.52 |
| 35 | 810.81 | 30.83 | 95.35 | 616.67 | 405.40 | 250000 | 1.52 |
| 36 | 810.96 | 30.83 | 95.37 | 616.55 | 405.48 | 250000 | 1.52 |
| 37 | 811.11 | 30.82 | 95.39 | 616.44 | 405.55 | 250000 | 1.52 |
| 38 | 811.25 | 30.82 | 95.41 | 616.34 | 405.62 | 250000 | 1.52 |
| 39 | 811.38 | 30.81 | 95.42 | 616.24 | 405.69 | 250000 | 1.52 |
| 40 | 811.50 | 30.81 | 95.44 | 616.14 | 405.75 | 250000 | 1.52 |
| 41 | 811.62 | 30.80 | 95.45 | 616.05 | 405.81 | 250000 | 1.52 |
| 42 | 811.74 | 30.80 | 95.47 | 615.96 | 405.87 | 250000 | 1.52 |
| 43 | 811.84 | 30.79 | 95.48 | 615.88 | 405.92 | 250000 | 1.52 |
| 44 | 811.95 | 30.79 | 95.49 | 615.80 | 405.97 | 250000 | 1.52 |
| 45 | 812.05 | 30.79 | 95.51 | 615.73 | 406.02 | 250000 | 1.52 |

Table A.3: Continuous approximation results for *SC* with Scenario 1 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 46 | 812.14 | 30.78 | 95.52 | 615.66 | 406.07 | 250000 | 1.52 |
| 47 | 812.23 | 30.78 | 95.53 | 615.59 | 406.12 | 250000 | 1.52 |
| 48 | 812.32 | 30.78 | 95.54 | 615.52 | 406.16 | 250000 | 1.52 |
| 49 | 812.40 | 30.77 | 95.55 | 615.46 | 406.20 | 250000 | 1.52 |
| 50 | 812.48 | 30.77 | 95.56 | 615.40 | 406.24 | 250000 | 1.51 |
| 51 | 812.64 | 31.20 | 94.16 | 624.00 | 400.64 | 250000 | 1.56 |
| 52 | 813.08 | 31.80 | 92.27 | 636.00 | 393.08 | 250000 | 1.62 |
| 53 | 813.80 | 32.40 | 90.45 | 648.00 | 385.80 | 250000 | 1.68 |
| 54 | 814.79 | 33.00 | 88.70 | 660.00 | 378.79 | 250000 | 1.74 |
| 55 | 816.02 | 33.60 | 87.01 | 672.00 | 372.02 | 250000 | 1.81 |
| 56 | 817.50 | 34.20 | 85.37 | 684.00 | 365.50 | 250000 | 1.87 |
| 57 | 819.20 | 34.80 | 83.80 | 696.00 | 359.20 | 250000 | 1.94 |
| 58 | 821.11 | 35.40 | 82.28 | 708.00 | 353.11 | 250000 | 2.01 |
| 59 | 823.22 | 36.00 | 80.81 | 720.00 | 347.22 | 250000 | 2.07 |
| 60 | 825.53 | 36.60 | 79.38 | 732.00 | 341.53 | 250000 | 2.14 |

Table A.4: Continuous approximation results for *DC* with Scenario 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 1 | 1170.86 | 35.14 | 82.92 | 702.89 | 355.67 | 250000 | 1.98 |
| 2 | 1209.27 | 34.02 | 85.85 | 680.44 | 367.41 | 250000 | 1.85 |
| 3 | 1228.03 | 33.50 | 87.29 | 669.99 | 373.14 | 250000 | 1.80 |
| 4 | 1239.14 | 33.20 | 88.13 | 663.94 | 376.54 | 250000 | 1.76 |
| 5 | 1246.50 | 33.00 | 88.70 | 660.00 | 378.79 | 250000 | 1.74 |
| 6 | 1251.72 | 32.86 | 89.10 | 657.23 | 380.38 | 250000 | 1.73 |
| 7 | 1255.63 | 32.76 | 89.39 | 655.17 | 381.58 | 250000 | 1.72 |
| 8 | 1258.66 | 32.68 | 89.63 | 653.59 | 382.51 | 250000 | 1.71 |
| 9 | 1261.08 | 32.62 | 89.81 | 652.32 | 383.24 | 250000 | 1.70 |
| 10 | 1263.05 | 32.56 | 89.96 | 651.30 | 383.85 | 250000 | 1.70 |
| 11 | 1264.70 | 32.52 | 90.09 | 650.45 | 384.35 | 250000 | 1.69 |
| 12 | 1266.09 | 32.49 | 90.19 | 649.73 | 384.78 | 250000 | 1.69 |
| 13 | 1267.28 | 32.46 | 90.28 | 649.12 | 385.14 | 250000 | 1.69 |
| 14 | 1268.31 | 32.43 | 90.36 | 648.58 | 385.45 | 250000 | 1.68 |
| 15 | 1269.21 | 32.41 | 90.43 | 648.12 | 385.73 | 250000 | 1.68 |
| 16 | 1270.00 | 32.39 | 90.49 | 647.71 | 385.97 | 250000 | 1.68 |
| 17 | 1270.71 | 32.37 | 90.55 | 647.35 | 386.19 | 250000 | 1.68 |
| 18 | 1271.34 | 32.35 | 90.60 | 647.03 | 386.38 | 250000 | 1.67 |
| 19 | 1271.90 | 32.34 | 90.64 | 646.74 | 386.56 | 250000 | 1.67 |
| 20 | 1272.42 | 32.32 | 90.68 | 646.48 | 386.71 | 250000 | 1.67 |
| 21 | 1272.88 | 32.31 | 90.71 | 646.24 | 386.85 | 250000 | 1.67 |
| 22 | 1273.31 | 32.30 | 90.75 | 646.02 | 386.98 | 250000 | 1.67 |
| 23 | 1273.70 | 32.29 | 90.78 | 645.82 | 387.10 | 250000 | 1.67 |
| 24 | 1274.06 | 32.28 | 90.80 | 645.64 | 387.21 | 250000 | 1.67 |
| 25 | 1274.39 | 32.27 | 90.83 | 645.47 | 387.32 | 250000 | 1.67 |
| 26 | 1274.69 | 32.27 | 90.85 | 645.31 | 387.41 | 250000 | 1.67 |
| 27 | 1274.98 | 32.26 | 90.87 | 645.17 | 387.50 | 250000 | 1.66 |
| 28 | 1275.24 | 32.25 | 90.89 | 645.03 | 387.58 | 250000 | 1.66 |
| 29 | 1275.49 | 32.25 | 90.91 | 644.91 | 387.65 | 250000 | 1.66 |
| 30 | 1275.72 | 32.24 | 90.93 | 644.79 | 387.72 | 250000 | 1.66 |
| 31 | 1275.94 | 32.23 | 90.95 | 644.68 | 387.79 | 250000 | 1.66 |
| 32 | 1276.14 | 32.23 | 90.96 | 644.58 | 387.85 | 250000 | 1.66 |
| 33 | 1276.33 | 32.22 | 90.98 | 644.48 | 387.91 | 250000 | 1.66 |
| 34 | 1276.51 | 32.22 | 90.99 | 644.39 | 387.97 | 250000 | 1.66 |
| 35 | 1276.68 | 32.22 | 91.00 | 644.30 | 388.02 | 250000 | 1.66 |
| 36 | 1276.85 | 32.21 | 91.02 | 644.22 | 388.07 | 250000 | 1.66 |
| 37 | 1277.00 | 32.21 | 91.03 | 644.14 | 388.11 | 250000 | 1.66 |
| 38 | 1277.14 | 32.20 | 91.04 | 644.07 | 388.16 | 250000 | 1.66 |
| 39 | 1277.28 | 32.20 | 91.05 | 644.00 | 388.20 | 250000 | 1.66 |
| 40 | 1277.41 | 32.20 | 91.06 | 643.93 | 388.24 | 250000 | 1.66 |
| 41 | 1277.54 | 32.19 | 91.07 | 643.87 | 388.28 | 250000 | 1.66 |
| 42 | 1277.66 | 32.19 | 91.08 | 643.81 | 388.31 | 250000 | 1.66 |
| 43 | 1277.77 | 32.19 | 91.09 | 643.75 | 388.35 | 250000 | 1.66 |
| 44 | 1277.88 | 32.18 | 91.10 | 643.70 | 388.38 | 250000 | 1.66 |
| 45 | 1277.98 | 32.18 | 91.10 | 643.64 | 388.41 | 250000 | 1.66 |

Table A.4: Continuous approximation results for *DC* with Scenario 1 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 46 | 1278.08 | 32.18 | 91.11 | 643.59 | 388.44 | 250000 | 1.66 |
| 47 | 1278.18 | 32.18 | 91.12 | 643.54 | 388.47 | 250000 | 1.66 |
| 48 | 1278.27 | 32.17 | 91.13 | 643.50 | 388.50 | 250000 | 1.66 |
| 49 | 1278.35 | 32.17 | 91.13 | 643.45 | 388.53 | 250000 | 1.66 |
| 50 | 1278.44 | 32.17 | 91.14 | 643.41 | 388.55 | 250000 | 1.66 |
| 51 | 1278.52 | 32.17 | 91.14 | 643.37 | 388.58 | 250000 | 1.66 |
| 52 | 1278.60 | 32.17 | 91.15 | 643.33 | 388.60 | 250000 | 1.66 |
| 53 | 1278.71 | 32.40 | 90.45 | 648.00 | 385.80 | 250000 | 1.68 |
| 54 | 1279.16 | 33.00 | 88.70 | 660.00 | 378.79 | 250000 | 1.74 |
| 55 | 1280.03 | 33.60 | 87.01 | 672.00 | 372.02 | 250000 | 1.81 |
| 56 | 1281.29 | 34.20 | 85.37 | 684.00 | 365.50 | 250000 | 1.87 |
| 57 | 1282.91 | 34.80 | 83.80 | 696.00 | 359.20 | 250000 | 1.94 |
| 58 | 1284.89 | 35.40 | 82.28 | 708.00 | 353.11 | 250000 | 2.01 |
| 59 | 1287.19 | 36.00 | 80.81 | 720.00 | 347.22 | 250000 | 2.07 |
| 60 | 1289.81 | 36.60 | 79.38 | 732.00 | 341.53 | 250000 | 2.14 |

Table A.5: Discrete formulation results for *SC* with Scenario 2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 1 | 708.00 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 2 | 708.00 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 3 | 708.15 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 4 | 708.44 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 5 | 708.71 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 6 | 709.04 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 7 | 709.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 8 | 710.00 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 9 | 710.57 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 10 | 711.20 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 11 | 711.92 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 12 | 712.67 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 13 | 713.50 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 14 | 714.41 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 15 | 715.38 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 16 | 716.39 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 17 | 717.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 18 | 718.67 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 19 | 719.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 20 | 721.20 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 21 | 722.58 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 22 | 724.00 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 23 | 725.51 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 24 | 727.07 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 25 | 728.71 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 26 | 730.39 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 27 | 732.18 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 28 | 734.00 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 29 | 735.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 30 | 737.87 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 31 | 739.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 32 | 742.00 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 33 | 744.18 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 34 | 746.41 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 35 | 748.71 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 36 | 751.06 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 37 | 753.51 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 38 | 756.00 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 39 | 758.58 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 40 | 761.20 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 41 | 763.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 42 | 766.67 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 43 | 769.51 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 44 | 772.40 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 45 | 775.38 | 36 | 81 | 720 | 348 | 250560 | 2.07 |

Table A.5: Discrete formulation results for *SC* with Scenario 2 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 46 | 778.40 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 47 | 781.51 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 48 | 784.60 | 37 | 79 | 740 | 340 | 251600 | 2.18 |
| 49 | 787.70 | 38 | 77 | 760 | 332 | 252320 | 2.29 |
| 50 | 790.81 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 51 | 793.90 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 52 | 797.00 | 40 | 73 | 800 | 316 | 252800 | 2.53 |
| 53 | 800.10 | 41 | 71 | 820 | 308 | 252560 | 2.66 |
| 54 | 803.20 | 42 | 69 | 840 | 300 | 252000 | 2.80 |
| 55 | 806.31 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 56 | 809.42 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 57 | 812.56 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 58 | 815.78 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 59 | 819.04 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 60 | 822.36 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 61 | 825.73 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 62 | 829.17 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 63 | 832.65 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 64 | 836.20 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 65 | 839.80 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 66 | 843.46 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 67 | 847.16 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 68 | 850.94 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 69 | 854.76 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 70 | 858.64 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 71 | 862.57 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 72 | 867.13 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 73 | 870.92 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 74 | 874.75 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 75 | 878.64 | 46 | 62 | 920 | 272 | 250240 | 3.38 |

Table A.6: Discrete formulation results for *DC* with Scenario 2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 1 | 1172.11 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 2 | 1172.11 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 3 | 1172.27 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 4 | 1172.58 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 5 | 1172.87 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 6 | 1173.21 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 7 | 1173.73 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 8 | 1174.23 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 9 | 1174.83 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 10 | 1175.50 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 11 | 1176.26 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 12 | 1177.05 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 13 | 1177.94 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 14 | 1178.90 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 15 | 1179.89 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 16 | 1180.90 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 17 | 1182.03 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 18 | 1183.18 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 19 | 1184.42 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 20 | 1185.72 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 21 | 1187.10 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 22 | 1188.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 23 | 1190.02 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 24 | 1191.59 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 25 | 1193.23 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 26 | 1194.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 27 | 1196.70 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 28 | 1198.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 29 | 1200.42 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 30 | 1202.38 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 31 | 1204.43 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 32 | 1206.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 33 | 1208.69 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 34 | 1210.92 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 35 | 1213.23 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 36 | 1215.58 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 37 | 1218.03 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 38 | 1220.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 39 | 1223.09 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 40 | 1225.72 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 41 | 1228.43 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 42 | 1231.18 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 43 | 1234.02 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 44 | 1236.92 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 45 | 1239.89 | 36 | 81 | 720 | 348 | 250560 | 2.07 |

Table A.6: Discrete formulation results for *DC* with Scenario 2 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 46 | 1242.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 47 | 1246.03 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 48 | 1249.18 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 49 | 1252.42 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 50 | 1255.72 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 51 | 1259.10 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 52 | 1262.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 53 | 1266.03 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 54 | 1269.59 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 55 | 1273.23 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 56 | 1276.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 57 | 1280.69 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 58 | 1284.52 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 59 | 1288.43 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 60 | 1292.38 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 61 | 1296.56 | 37 | 79 | 740 | 340 | 251600 | 2.18 |
| 62 | 1300.77 | 38 | 77 | 760 | 332 | 252320 | 2.29 |
| 63 | 1304.73 | 38 | 77 | 760 | 332 | 252320 | 2.29 |
| 64 | 1308.91 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 65 | 1312.87 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 66 | 1317.03 | 40 | 73 | 800 | 316 | 252800 | 2.53 |
| 67 | 1321.20 | 41 | 71 | 820 | 308 | 252560 | 2.66 |
| 68 | 1325.16 | 41 | 71 | 820 | 308 | 252560 | 2.66 |
| 69 | 1329.32 | 42 | 69 | 840 | 300 | 252000 | 2.80 |
| 70 | 1333.29 | 42 | 69 | 840 | 300 | 252000 | 2.80 |
| 71 | 1337.42 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 72 | 1348.22 | 44 | 66 | 880 | 288 | 253440 | 3.06 |
| 73 | 1352.18 | 44 | 66 | 880 | 288 | 253440 | 3.06 |
| 74 | 1356.32 | 45 | 64 | 900 | 280 | 252000 | 3.21 |
| 75 | 1360.28 | 45 | 64 | 900 | 280 | 252000 | 3.21 |

Table A.7: Continuous approximation results for *SC* with Scenario 2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 1 | 707.11 | 35.36 | 82.39 | 707.11 | 353.55 | 250000 | 2.00 |
| 2 | 707.21 | 35.36 | 82.38 | 707.21 | 353.50 | 250000 | 2.00 |
| 3 | 707.38 | 35.37 | 82.35 | 707.38 | 353.42 | 250000 | 2.00 |
| 4 | 707.62 | 35.38 | 82.32 | 707.62 | 353.30 | 250000 | 2.00 |
| 5 | 707.92 | 35.40 | 82.29 | 707.92 | 353.15 | 250000 | 2.00 |
| 6 | 708.29 | 35.41 | 82.24 | 708.29 | 352.96 | 250000 | 2.01 |
| 7 | 708.73 | 35.44 | 82.19 | 708.73 | 352.74 | 250000 | 2.01 |
| 8 | 709.24 | 35.46 | 82.12 | 709.24 | 352.49 | 250000 | 2.01 |
| 9 | 709.82 | 35.49 | 82.05 | 709.82 | 352.20 | 250000 | 2.02 |
| 10 | 710.46 | 35.52 | 81.97 | 710.46 | 351.89 | 250000 | 2.02 |
| 11 | 711.17 | 35.56 | 81.88 | 711.17 | 351.53 | 250000 | 2.02 |
| 12 | 711.94 | 35.60 | 81.79 | 711.94 | 351.15 | 250000 | 2.03 |
| 13 | 712.79 | 35.64 | 81.68 | 712.79 | 350.74 | 250000 | 2.03 |
| 14 | 713.69 | 35.68 | 81.57 | 713.69 | 350.29 | 250000 | 2.04 |
| 15 | 714.67 | 35.73 | 81.45 | 714.67 | 349.81 | 250000 | 2.04 |
| 16 | 715.71 | 35.79 | 81.33 | 715.71 | 349.30 | 250000 | 2.05 |
| 17 | 716.82 | 35.84 | 81.19 | 716.82 | 348.76 | 250000 | 2.06 |
| 18 | 717.99 | 35.90 | 81.05 | 717.99 | 348.20 | 250000 | 2.06 |
| 19 | 719.22 | 35.96 | 80.90 | 719.22 | 347.60 | 250000 | 2.07 |
| 20 | 720.52 | 36.03 | 80.74 | 720.52 | 346.97 | 250000 | 2.08 |
| 21 | 721.89 | 36.09 | 80.58 | 721.89 | 346.31 | 250000 | 2.08 |
| 22 | 723.31 | 36.17 | 80.41 | 723.31 | 345.63 | 250000 | 2.09 |
| 23 | 724.81 | 36.24 | 80.23 | 724.81 | 344.92 | 250000 | 2.10 |
| 24 | 726.36 | 36.32 | 80.05 | 726.36 | 344.18 | 250000 | 2.11 |
| 25 | 727.98 | 36.40 | 79.85 | 727.98 | 343.42 | 250000 | 2.12 |
| 26 | 729.66 | 36.48 | 79.66 | 729.66 | 342.63 | 250000 | 2.13 |
| 27 | 731.40 | 36.57 | 79.45 | 731.40 | 341.81 | 250000 | 2.14 |
| 28 | 733.20 | 36.66 | 79.24 | 733.20 | 340.97 | 250000 | 2.15 |
| 29 | 735.06 | 36.75 | 79.03 | 735.06 | 340.11 | 250000 | 2.16 |
| 30 | 736.99 | 36.85 | 78.80 | 736.99 | 339.22 | 250000 | 2.17 |
| 31 | 738.97 | 36.95 | 78.58 | 738.97 | 338.31 | 250000 | 2.18 |
| 32 | 741.02 | 37.05 | 78.34 | 741.02 | 337.37 | 250000 | 2.20 |
| 33 | 743.12 | 37.16 | 78.11 | 743.12 | 336.42 | 250000 | 2.21 |
| 34 | 745.28 | 37.26 | 77.86 | 745.28 | 335.45 | 250000 | 2.22 |
| 35 | 747.50 | 37.37 | 77.61 | 747.50 | 334.45 | 250000 | 2.24 |
| 36 | 749.77 | 37.49 | 77.36 | 749.77 | 333.43 | 250000 | 2.25 |
| 37 | 752.11 | 37.61 | 77.10 | 752.11 | 332.40 | 250000 | 2.26 |
| 38 | 754.50 | 37.72 | 76.84 | 754.50 | 331.35 | 250000 | 2.28 |
| 39 | 756.94 | 37.85 | 76.57 | 756.94 | 330.28 | 250000 | 2.29 |
| 40 | 759.44 | 37.97 | 76.30 | 759.44 | 329.19 | 250000 | 2.31 |
| 41 | 762.00 | 38.10 | 76.02 | 762.00 | 328.09 | 250000 | 2.32 |
| 42 | 764.61 | 38.23 | 75.74 | 764.61 | 326.97 | 250000 | 2.34 |
| 43 | 767.27 | 38.36 | 75.46 | 767.27 | 325.83 | 250000 | 2.35 |
| 44 | 769.99 | 38.50 | 75.17 | 769.99 | 324.68 | 250000 | 2.37 |
| 45 | 772.76 | 38.64 | 74.88 | 772.76 | 323.52 | 250000 | 2.39 |

Table A.7: Continuous approximation results for *SC* with Scenario 2 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 46 | 775.58 | 38.78 | 74.59 | 775.58 | 322.34 | 250000 | 2.41 |
| 47 | 778.45 | 38.92 | 74.29 | 778.45 | 321.15 | 250000 | 2.42 |
| 48 | 781.37 | 39.07 | 73.99 | 781.37 | 319.95 | 250000 | 2.44 |
| 49 | 784.35 | 39.22 | 73.68 | 784.35 | 318.74 | 250000 | 2.46 |
| 50 | 787.37 | 39.37 | 73.38 | 787.37 | 317.51 | 250000 | 2.48 |
| 51 | 790.44 | 39.52 | 73.07 | 790.44 | 316.28 | 250000 | 2.50 |
| 52 | 793.56 | 39.68 | 72.76 | 793.56 | 315.03 | 250000 | 2.52 |
| 53 | 796.73 | 39.84 | 72.45 | 796.73 | 313.78 | 250000 | 2.54 |
| 54 | 799.95 | 40.00 | 72.13 | 799.95 | 312.52 | 250000 | 2.56 |
| 55 | 803.21 | 40.16 | 71.81 | 803.21 | 311.25 | 250000 | 2.58 |
| 56 | 806.52 | 40.33 | 71.49 | 806.52 | 309.97 | 250000 | 2.60 |
| 57 | 809.88 | 40.49 | 71.17 | 809.88 | 308.69 | 250000 | 2.62 |
| 58 | 813.28 | 40.66 | 70.85 | 813.28 | 307.40 | 250000 | 2.65 |
| 59 | 816.73 | 40.84 | 70.53 | 816.73 | 306.10 | 250000 | 2.67 |
| 60 | 820.21 | 41.01 | 70.20 | 820.21 | 304.80 | 250000 | 2.69 |
| 61 | 823.75 | 41.19 | 69.87 | 823.75 | 303.49 | 250000 | 2.71 |
| 62 | 827.32 | 41.37 | 69.54 | 827.32 | 302.18 | 250000 | 2.74 |
| 63 | 830.94 | 41.55 | 69.22 | 830.94 | 300.86 | 250000 | 2.76 |
| 64 | 834.60 | 41.73 | 68.89 | 834.60 | 299.54 | 250000 | 2.79 |
| 65 | 838.30 | 41.92 | 68.56 | 838.30 | 298.22 | 250000 | 2.81 |
| 66 | 842.05 | 42.10 | 68.22 | 842.05 | 296.90 | 250000 | 2.84 |
| 67 | 845.83 | 42.29 | 67.89 | 845.83 | 295.57 | 250000 | 2.86 |
| 68 | 849.65 | 42.48 | 67.56 | 849.65 | 294.24 | 250000 | 2.89 |
| 69 | 853.51 | 42.68 | 67.23 | 853.51 | 292.91 | 250000 | 2.91 |
| 70 | 857.41 | 42.87 | 66.89 | 857.41 | 291.58 | 250000 | 2.94 |
| 71 | 861.35 | 43.07 | 66.56 | 861.35 | 290.24 | 250000 | 2.97 |
| 72 | 865.32 | 43.27 | 66.23 | 865.32 | 288.91 | 250000 | 3.00 |
| 73 | 869.36 | 43.80 | 65.35 | 876.00 | 285.39 | 250000 | 3.07 |
| 74 | 873.50 | 44.40 | 64.38 | 888.00 | 281.53 | 250000 | 3.15 |
| 75 | 877.75 | 45.00 | 63.44 | 900.00 | 277.78 | 250000 | 3.24 |

Table A.8: Continuous approximation results for *DC* with Scenario 2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 1 | 1170.86 | 35.14 | 82.92 | 702.89 | 355.67 | 250000 | 1.98 |
| 2 | 1170.96 | 35.15 | 82.91 | 702.95 | 355.64 | 250000 | 1.98 |
| 3 | 1171.13 | 35.15 | 82.90 | 703.05 | 355.59 | 250000 | 1.98 |
| 4 | 1171.37 | 35.16 | 82.88 | 703.20 | 355.52 | 250000 | 1.98 |
| 5 | 1171.67 | 35.17 | 82.86 | 703.38 | 355.42 | 250000 | 1.98 |
| 6 | 1172.05 | 35.18 | 82.83 | 703.61 | 355.31 | 250000 | 1.98 |
| 7 | 1172.49 | 35.19 | 82.79 | 703.88 | 355.18 | 250000 | 1.98 |
| 8 | 1173.00 | 35.21 | 82.75 | 704.19 | 355.02 | 250000 | 1.98 |
| 9 | 1173.58 | 35.23 | 82.71 | 704.54 | 354.84 | 250000 | 1.99 |
| 10 | 1174.23 | 35.25 | 82.66 | 704.93 | 354.65 | 250000 | 1.99 |
| 11 | 1174.95 | 35.27 | 82.61 | 705.36 | 354.43 | 250000 | 1.99 |
| 12 | 1175.73 | 35.29 | 82.55 | 705.83 | 354.19 | 250000 | 1.99 |
| 13 | 1176.58 | 35.32 | 82.48 | 706.34 | 353.94 | 250000 | 2.00 |
| 14 | 1177.49 | 35.34 | 82.41 | 706.90 | 353.66 | 250000 | 2.00 |
| 15 | 1178.48 | 35.37 | 82.34 | 707.49 | 353.36 | 250000 | 2.00 |
| 16 | 1179.53 | 35.41 | 82.26 | 708.12 | 353.05 | 250000 | 2.01 |
| 17 | 1180.65 | 35.44 | 82.18 | 708.80 | 352.71 | 250000 | 2.01 |
| 18 | 1181.83 | 35.48 | 82.09 | 709.51 | 352.35 | 250000 | 2.01 |
| 19 | 1183.08 | 35.51 | 81.99 | 710.27 | 351.98 | 250000 | 2.02 |
| 20 | 1184.40 | 35.55 | 81.90 | 711.06 | 351.59 | 250000 | 2.02 |
| 21 | 1185.78 | 35.59 | 81.79 | 711.90 | 351.17 | 250000 | 2.03 |
| 22 | 1187.23 | 35.64 | 81.69 | 712.77 | 350.74 | 250000 | 2.03 |
| 23 | 1188.75 | 35.68 | 81.57 | 713.68 | 350.29 | 250000 | 2.04 |
| 24 | 1190.33 | 35.73 | 81.46 | 714.64 | 349.83 | 250000 | 2.04 |
| 25 | 1191.97 | 35.78 | 81.34 | 715.63 | 349.34 | 250000 | 2.05 |
| 26 | 1193.68 | 35.83 | 81.21 | 716.66 | 348.84 | 250000 | 2.05 |
| 27 | 1195.45 | 35.89 | 81.08 | 717.73 | 348.32 | 250000 | 2.06 |
| 28 | 1197.29 | 35.94 | 80.95 | 718.84 | 347.78 | 250000 | 2.07 |
| 29 | 1199.19 | 36.00 | 80.81 | 719.99 | 347.23 | 250000 | 2.07 |
| 30 | 1201.16 | 36.06 | 80.66 | 721.17 | 346.66 | 250000 | 2.08 |
| 31 | 1203.19 | 36.12 | 80.52 | 722.40 | 346.07 | 250000 | 2.09 |
| 32 | 1205.28 | 36.18 | 80.37 | 723.66 | 345.47 | 250000 | 2.09 |
| 33 | 1207.43 | 36.25 | 80.21 | 724.96 | 344.85 | 250000 | 2.10 |
| 34 | 1209.65 | 36.31 | 80.05 | 726.29 | 344.21 | 250000 | 2.11 |
| 35 | 1211.92 | 36.38 | 79.89 | 727.67 | 343.56 | 250000 | 2.12 |
| 36 | 1214.26 | 36.45 | 79.72 | 729.08 | 342.90 | 250000 | 2.13 |
| 37 | 1216.66 | 36.53 | 79.55 | 730.53 | 342.22 | 250000 | 2.13 |
| 38 | 1219.13 | 36.60 | 79.38 | 732.01 | 341.53 | 250000 | 2.14 |
| 39 | 1221.65 | 36.68 | 79.20 | 733.53 | 340.82 | 250000 | 2.15 |
| 40 | 1224.23 | 36.75 | 79.02 | 735.09 | 340.10 | 250000 | 2.16 |
| 41 | 1226.87 | 36.83 | 78.84 | 736.68 | 339.36 | 250000 | 2.17 |
| 42 | 1229.57 | 36.92 | 78.65 | 738.31 | 338.61 | 250000 | 2.18 |
| 43 | 1232.33 | 37.00 | 78.46 | 739.97 | 337.85 | 250000 | 2.19 |
| 44 | 1235.15 | 37.08 | 78.27 | 741.67 | 337.08 | 250000 | 2.20 |
| 45 | 1238.03 | 37.17 | 78.07 | 743.41 | 336.29 | 250000 | 2.21 |

Table A.8: Continuous approximation results for *DC* with Scenario 2 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 46 | 1240.96 | 37.26 | 77.87 | 745.18 | 335.49 | 250000 | 2.22 |
| 47 | 1243.95 | 37.35 | 77.67 | 746.98 | 334.68 | 250000 | 2.23 |
| 48 | 1247.00 | 37.44 | 77.46 | 748.82 | 333.86 | 250000 | 2.24 |
| 49 | 1250.11 | 37.53 | 77.26 | 750.69 | 333.03 | 250000 | 2.25 |
| 50 | 1253.27 | 37.63 | 77.05 | 752.60 | 332.18 | 250000 | 2.27 |
| 51 | 1256.49 | 37.73 | 76.83 | 754.53 | 331.33 | 250000 | 2.28 |
| 52 | 1259.76 | 37.83 | 76.62 | 756.51 | 330.47 | 250000 | 2.29 |
| 53 | 1263.08 | 37.93 | 76.40 | 758.51 | 329.59 | 250000 | 2.30 |
| 54 | 1266.47 | 38.03 | 76.18 | 760.55 | 328.71 | 250000 | 2.31 |
| 55 | 1269.90 | 38.13 | 75.95 | 762.62 | 327.82 | 250000 | 2.33 |
| 56 | 1273.39 | 38.24 | 75.73 | 764.72 | 326.92 | 250000 | 2.34 |
| 57 | 1276.93 | 38.34 | 75.50 | 766.86 | 326.01 | 250000 | 2.35 |
| 58 | 1280.52 | 38.45 | 75.27 | 769.02 | 325.09 | 250000 | 2.37 |
| 59 | 1284.17 | 38.56 | 75.04 | 771.22 | 324.16 | 250000 | 2.38 |
| 60 | 1287.87 | 38.67 | 74.81 | 773.45 | 323.23 | 250000 | 2.39 |
| 61 | 1291.62 | 38.79 | 74.57 | 775.71 | 322.29 | 250000 | 2.41 |
| 62 | 1295.42 | 38.90 | 74.33 | 778.00 | 321.34 | 250000 | 2.42 |
| 63 | 1299.27 | 39.02 | 74.10 | 780.32 | 320.38 | 250000 | 2.44 |
| 64 | 1303.17 | 39.13 | 73.86 | 782.67 | 319.42 | 250000 | 2.45 |
| 65 | 1307.12 | 39.25 | 73.61 | 785.05 | 318.45 | 250000 | 2.47 |
| 66 | 1311.14 | 39.60 | 72.91 | 792.00 | 315.66 | 250000 | 2.51 |
| 67 | 1315.37 | 40.20 | 71.74 | 804.00 | 310.95 | 250000 | 2.59 |
| 68 | 1319.83 | 40.80 | 70.59 | 816.00 | 306.37 | 250000 | 2.66 |
| 69 | 1324.50 | 41.40 | 69.48 | 828.00 | 301.93 | 250000 | 2.74 |
| 70 | 1329.39 | 42.00 | 68.40 | 840.00 | 297.62 | 250000 | 2.82 |
| 71 | 1334.47 | 42.60 | 67.36 | 852.00 | 293.43 | 250000 | 2.90 |
| 72 | 1339.75 | 43.20 | 66.34 | 864.00 | 289.35 | 250000 | 2.99 |
| 73 | 1345.20 | 43.80 | 65.35 | 876.00 | 285.39 | 250000 | 3.07 |
| 74 | 1350.84 | 44.40 | 64.38 | 888.00 | 281.53 | 250000 | 3.15 |
| 75 | 1356.64 | 45.00 | 63.44 | 900.00 | 277.78 | 250000 | 3.24 |

Table A.9: Discrete formulation results for *SC* with Scenario 3

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 1 | 943.20 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 2 | 933.12 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 3 | 923.25 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 4 | 913.76 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 5 | 904.67 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 6 | 895.89 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 7 | 887.57 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 8 | 879.60 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 9 | 872.02 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 10 | 864.83 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 11 | 857.99 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 12 | 851.57 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 13 | 845.53 | 25 | 119 | 500 | 500 | 250000 | 1.00 |
| 14 | 839.72 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 15 | 833.96 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 16 | 828.52 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 17 | 823.46 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 18 | 818.75 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 19 | 814.39 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 20 | 810.40 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 21 | 806.74 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 22 | 803.46 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 23 | 800.22 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 24 | 796.99 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 25 | 794.10 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 26 | 791.52 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 27 | 789.29 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 28 | 787.39 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 29 | 785.82 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 30 | 784.58 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 31 | 783.30 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 32 | 781.98 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 33 | 780.98 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 34 | 780.28 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 35 | 779.90 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 36 | 779.81 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 37 | 780.05 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 38 | 780.45 | 32 | 92 | 640 | 392 | 250880 | 1.63 |
| 39 | 780.87 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 40 | 781.24 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 41 | 781.60 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 42 | 782.16 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 43 | 783.01 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 44 | 784.14 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 45 | 785.55 | 34 | 86 | 680 | 368 | 250240 | 1.85 |

Table A.9: Discrete formulation results for *SC* with Scenario 3 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 46 | 787.24 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 47 | 789.22 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 48 | 791.06 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 49 | 792.80 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 50 | 794.80 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 51 | 797.06 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 52 | 799.60 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 53 | 802.40 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 54 | 805.47 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 55 | 808.67 | 37 | 79 | 740 | 340 | 251600 | 2.18 |
| 56 | 811.85 | 37 | 79 | 740 | 340 | 251600 | 2.18 |
| 57 | 814.99 | 38 | 77 | 760 | 332 | 252320 | 2.29 |
| 58 | 818.21 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 59 | 821.35 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 60 | 824.52 | 40 | 73 | 800 | 316 | 252800 | 2.53 |
| 61 | 827.76 | 40 | 73 | 800 | 316 | 252800 | 2.53 |
| 62 | 830.87 | 41 | 71 | 820 | 308 | 252560 | 2.66 |
| 63 | 834.06 | 42 | 69 | 840 | 300 | 252000 | 2.80 |
| 64 | 837.26 | 42 | 69 | 840 | 300 | 252000 | 2.80 |
| 65 | 840.39 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 66 | 843.68 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 67 | 847.20 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 68 | 850.94 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 69 | 854.90 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 70 | 860.28 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 71 | 863.62 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 72 | 867.16 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 73 | 870.92 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 74 | 874.89 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 75 | 881.55 | 47 | 61 | 940 | 268 | 251920 | 3.51 |

Table A.10: Discrete formulation results for *DC* with Scenario 3

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 1 | 1426.21 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 2 | 1415.99 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 3 | 1405.96 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 4 | 1396.28 | 27 | 110 | 540 | 464 | 250560 | 1.16 |
| 5 | 1386.96 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 6 | 1377.74 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 7 | 1368.90 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 8 | 1360.38 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 9 | 1352.19 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 10 | 1344.34 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 11 | 1336.79 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 12 | 1329.60 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 13 | 1322.73 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 14 | 1316.19 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 15 | 1309.99 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 16 | 1304.10 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 17 | 1298.57 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 18 | 1293.35 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 19 | 1288.47 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 20 | 1283.92 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 21 | 1279.69 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 22 | 1275.81 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 23 | 1272.25 | 29 | 102 | 580 | 432 | 250560 | 1.34 |
| 24 | 1268.53 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 25 | 1265.05 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 26 | 1261.87 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 27 | 1259.01 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 28 | 1256.45 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 29 | 1254.21 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 30 | 1252.28 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 31 | 1250.64 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 32 | 1249.33 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 33 | 1248.32 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 34 | 1247.63 | 31 | 95 | 620 | 404 | 250480 | 1.53 |
| 35 | 1247.18 | 32 | 92 | 640 | 392 | 250880 | 1.63 |
| 36 | 1246.73 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 37 | 1246.22 | 33 | 89 | 660 | 380 | 250800 | 1.74 |
| 38 | 1245.71 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 39 | 1245.43 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 40 | 1245.43 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 41 | 1245.71 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 42 | 1246.28 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 43 | 1247.12 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 44 | 1248.25 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 45 | 1249.67 | 34 | 86 | 680 | 368 | 250240 | 1.85 |

Table A.10: Discrete formulation results for *DC* with Scenario 3 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 46 | 1251.36 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 47 | 1253.33 | 34 | 86 | 680 | 368 | 250240 | 1.85 |
| 48 | 1255.58 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 49 | 1257.31 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 50 | 1259.32 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 51 | 1261.58 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 52 | 1264.11 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 53 | 1266.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 54 | 1269.98 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 55 | 1273.32 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 56 | 1276.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 57 | 1280.78 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 58 | 1284.91 | 36 | 81 | 720 | 348 | 250560 | 2.07 |
| 59 | 1288.96 | 37 | 79 | 740 | 340 | 251600 | 2.18 |
| 60 | 1293.11 | 38 | 77 | 760 | 332 | 252320 | 2.29 |
| 61 | 1297.15 | 38 | 77 | 760 | 332 | 252320 | 2.29 |
| 62 | 1301.24 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 63 | 1305.36 | 39 | 75 | 780 | 324 | 252720 | 2.41 |
| 64 | 1309.39 | 40 | 73 | 800 | 316 | 252800 | 2.53 |
| 65 | 1313.52 | 41 | 71 | 820 | 308 | 252560 | 2.66 |
| 66 | 1317.55 | 41 | 71 | 820 | 308 | 252560 | 2.66 |
| 67 | 1321.63 | 42 | 69 | 840 | 300 | 252000 | 2.80 |
| 68 | 1325.74 | 42 | 69 | 840 | 300 | 252000 | 2.80 |
| 69 | 1329.76 | 43 | 67 | 860 | 292 | 251120 | 2.95 |
| 70 | 1340.51 | 44 | 66 | 880 | 288 | 253440 | 3.06 |
| 71 | 1344.54 | 44 | 66 | 880 | 288 | 253440 | 3.06 |
| 72 | 1348.60 | 45 | 64 | 900 | 280 | 252000 | 3.21 |
| 73 | 1352.71 | 45 | 64 | 900 | 280 | 252000 | 3.21 |
| 74 | 1356.72 | 46 | 62 | 920 | 272 | 250240 | 3.38 |
| 75 | 1367.46 | 47 | 61 | 940 | 268 | 251920 | 3.51 |

Table A.11: Continuous approximation results for *SC* with Scenario 3

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 1 | 943.59 | 25.09 | 118.55 | 501.80 | 498.21 | 250000 | 1.01 |
| 2 | 933.31 | 25.13 | 118.34 | 502.66 | 497.36 | 250000 | 1.01 |
| 3 | 923.41 | 25.19 | 118.08 | 503.71 | 496.32 | 250000 | 1.01 |
| 4 | 913.89 | 25.25 | 117.78 | 504.94 | 495.10 | 250000 | 1.02 |
| 5 | 904.73 | 25.32 | 117.43 | 506.37 | 493.71 | 250000 | 1.03 |
| 6 | 895.95 | 25.40 | 117.04 | 507.98 | 492.15 | 250000 | 1.03 |
| 7 | 887.54 | 25.49 | 116.60 | 509.77 | 490.42 | 250000 | 1.04 |
| 8 | 879.48 | 25.59 | 116.13 | 511.74 | 488.53 | 250000 | 1.05 |
| 9 | 871.79 | 25.69 | 115.62 | 513.89 | 486.48 | 250000 | 1.06 |
| 10 | 864.45 | 25.81 | 115.07 | 516.22 | 484.29 | 250000 | 1.07 |
| 11 | 857.46 | 25.94 | 114.49 | 518.73 | 481.95 | 250000 | 1.08 |
| 12 | 850.81 | 26.07 | 113.87 | 521.41 | 479.47 | 250000 | 1.09 |
| 13 | 844.50 | 26.21 | 113.22 | 524.25 | 476.87 | 250000 | 1.10 |
| 14 | 838.53 | 26.36 | 112.54 | 527.26 | 474.15 | 250000 | 1.11 |
| 15 | 832.88 | 26.52 | 111.83 | 530.44 | 471.31 | 250000 | 1.13 |
| 16 | 827.56 | 26.69 | 111.09 | 533.78 | 468.36 | 250000 | 1.14 |
| 17 | 822.55 | 26.86 | 110.33 | 537.27 | 465.31 | 250000 | 1.15 |
| 18 | 817.85 | 27.05 | 109.54 | 540.93 | 462.17 | 250000 | 1.17 |
| 19 | 813.45 | 27.24 | 108.74 | 544.73 | 458.95 | 250000 | 1.19 |
| 20 | 809.36 | 27.43 | 107.91 | 548.68 | 455.64 | 250000 | 1.20 |
| 21 | 805.55 | 27.64 | 107.07 | 552.77 | 452.26 | 250000 | 1.22 |
| 22 | 802.03 | 27.85 | 106.21 | 557.01 | 448.82 | 250000 | 1.24 |
| 23 | 798.78 | 28.07 | 105.33 | 561.39 | 445.32 | 250000 | 1.26 |
| 24 | 795.81 | 28.30 | 104.44 | 565.90 | 441.77 | 250000 | 1.28 |
| 25 | 793.10 | 28.53 | 103.54 | 570.55 | 438.17 | 250000 | 1.30 |
| 26 | 790.65 | 28.77 | 102.63 | 575.33 | 434.54 | 250000 | 1.32 |
| 27 | 788.46 | 29.01 | 101.72 | 580.23 | 430.87 | 250000 | 1.35 |
| 28 | 786.50 | 29.26 | 100.79 | 585.25 | 427.17 | 250000 | 1.37 |
| 29 | 784.79 | 29.52 | 99.86 | 590.40 | 423.44 | 250000 | 1.39 |
| 30 | 783.32 | 29.78 | 98.93 | 595.66 | 419.70 | 250000 | 1.42 |
| 31 | 782.06 | 30.05 | 97.99 | 601.03 | 415.95 | 250000 | 1.44 |
| 32 | 781.04 | 30.33 | 97.05 | 606.52 | 412.19 | 250000 | 1.47 |
| 33 | 780.22 | 30.61 | 96.11 | 612.11 | 408.42 | 250000 | 1.50 |
| 34 | 779.62 | 30.89 | 95.16 | 617.81 | 404.66 | 250000 | 1.53 |
| 35 | 779.22 | 31.18 | 94.22 | 623.61 | 400.89 | 250000 | 1.56 |
| 36 | 779.02 | 31.48 | 93.28 | 629.51 | 397.14 | 250000 | 1.59 |
| 37 | 779.01 | 31.78 | 92.35 | 635.50 | 393.39 | 250000 | 1.62 |
| 38 | 779.18 | 32.08 | 91.41 | 641.59 | 389.66 | 250000 | 1.65 |
| 39 | 779.54 | 32.39 | 90.48 | 647.77 | 385.94 | 250000 | 1.68 |
| 40 | 780.08 | 32.70 | 89.56 | 654.04 | 382.24 | 250000 | 1.71 |
| 41 | 780.79 | 33.02 | 88.64 | 660.39 | 378.56 | 250000 | 1.74 |
| 42 | 781.66 | 33.34 | 87.73 | 666.83 | 374.91 | 250000 | 1.78 |
| 43 | 782.70 | 33.67 | 86.82 | 673.35 | 371.28 | 250000 | 1.81 |
| 44 | 783.89 | 34.00 | 85.92 | 679.95 | 367.68 | 250000 | 1.85 |
| 45 | 785.24 | 34.33 | 85.03 | 686.62 | 364.10 | 250000 | 1.89 |

Table A.11: Continuous approximation results for *SC* with Scenario 3 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*SC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**SC*** |
| 46 | 786.74 | 34.67 | 84.14 | 693.37 | 360.56 | 250000 | 1.92 |
| 47 | 788.38 | 35.01 | 83.26 | 700.19 | 357.05 | 250000 | 1.96 |
| 48 | 790.16 | 35.35 | 82.39 | 707.08 | 353.57 | 250000 | 2.00 |
| 49 | 792.07 | 35.70 | 81.53 | 714.04 | 350.12 | 250000 | 2.04 |
| 50 | 794.12 | 36.05 | 80.68 | 721.06 | 346.71 | 250000 | 2.08 |
| 51 | 796.30 | 36.41 | 79.83 | 728.15 | 343.34 | 250000 | 2.12 |
| 52 | 798.60 | 36.76 | 79.00 | 735.30 | 340.00 | 250000 | 2.16 |
| 53 | 801.02 | 37.13 | 78.17 | 742.51 | 336.70 | 250000 | 2.21 |
| 54 | 803.56 | 37.49 | 77.36 | 749.78 | 333.43 | 250000 | 2.25 |
| 55 | 806.21 | 37.86 | 76.55 | 757.11 | 330.21 | 250000 | 2.29 |
| 56 | 808.97 | 38.22 | 75.75 | 764.49 | 327.02 | 250000 | 2.34 |
| 57 | 811.84 | 38.60 | 74.97 | 771.92 | 323.87 | 250000 | 2.38 |
| 58 | 814.82 | 38.97 | 74.19 | 779.41 | 320.76 | 250000 | 2.43 |
| 59 | 817.90 | 39.35 | 73.42 | 786.95 | 317.68 | 250000 | 2.48 |
| 60 | 821.07 | 39.73 | 72.66 | 794.54 | 314.65 | 250000 | 2.53 |
| 61 | 824.34 | 40.11 | 71.91 | 802.17 | 311.65 | 250000 | 2.57 |
| 62 | 827.71 | 40.49 | 71.17 | 809.85 | 308.70 | 250000 | 2.62 |
| 63 | 831.16 | 40.88 | 70.44 | 817.58 | 305.78 | 250000 | 2.67 |
| 64 | 834.71 | 41.27 | 69.73 | 825.35 | 302.90 | 250000 | 2.72 |
| 65 | 838.33 | 41.66 | 69.01 | 833.17 | 300.06 | 250000 | 2.78 |
| 66 | 842.05 | 42.05 | 68.31 | 841.02 | 297.26 | 250000 | 2.83 |
| 67 | 845.84 | 42.45 | 67.62 | 848.92 | 294.49 | 250000 | 2.88 |
| 68 | 849.71 | 42.84 | 66.94 | 856.85 | 291.76 | 250000 | 2.94 |
| 69 | 853.66 | 43.24 | 66.27 | 864.83 | 289.07 | 250000 | 2.99 |
| 70 | 857.68 | 43.64 | 65.61 | 872.84 | 286.42 | 250000 | 3.05 |
| 71 | 861.77 | 44.04 | 64.95 | 880.89 | 283.81 | 250000 | 3.10 |
| 72 | 865.94 | 44.45 | 64.31 | 888.97 | 281.22 | 250000 | 3.16 |
| 73 | 870.18 | 45.00 | 63.44 | 900.00 | 277.78 | 250000 | 3.24 |
| 74 | 874.52 | 45.60 | 62.53 | 912.00 | 274.12 | 250000 | 3.33 |
| 75 | 878.95 | 46.20 | 61.64 | 924.00 | 270.56 | 250000 | 3.42 |

Table A.12: Continuous approximation results for *DC* with Scenario 3

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 1 | 1424.20 | 27.80 | 106.40 | 556.05 | 449.60 | 250000 | 1.24 |
| 2 | 1413.75 | 27.83 | 106.28 | 556.64 | 449.12 | 250000 | 1.24 |
| 3 | 1403.65 | 27.87 | 106.14 | 557.35 | 448.55 | 250000 | 1.24 |
| 4 | 1393.88 | 27.91 | 105.97 | 558.20 | 447.87 | 250000 | 1.25 |
| 5 | 1384.46 | 27.96 | 105.77 | 559.17 | 447.09 | 250000 | 1.25 |
| 6 | 1375.38 | 28.01 | 105.55 | 560.27 | 446.21 | 250000 | 1.26 |
| 7 | 1366.63 | 28.08 | 105.31 | 561.50 | 445.23 | 250000 | 1.26 |
| 8 | 1358.21 | 28.14 | 105.04 | 562.86 | 444.16 | 250000 | 1.27 |
| 9 | 1350.13 | 28.22 | 104.75 | 564.34 | 443.00 | 250000 | 1.27 |
| 10 | 1342.38 | 28.30 | 104.44 | 565.94 | 441.74 | 250000 | 1.28 |
| 11 | 1334.95 | 28.38 | 104.10 | 567.67 | 440.40 | 250000 | 1.29 |
| 12 | 1327.85 | 28.48 | 103.74 | 569.52 | 438.97 | 250000 | 1.30 |
| 13 | 1321.06 | 28.57 | 103.36 | 571.49 | 437.46 | 250000 | 1.31 |
| 14 | 1314.60 | 28.68 | 102.97 | 573.57 | 435.86 | 250000 | 1.32 |
| 15 | 1308.44 | 28.79 | 102.55 | 575.78 | 434.19 | 250000 | 1.33 |
| 16 | 1302.60 | 28.91 | 102.11 | 578.11 | 432.45 | 250000 | 1.34 |
| 17 | 1297.06 | 29.03 | 101.66 | 580.54 | 430.63 | 250000 | 1.35 |
| 18 | 1291.83 | 29.15 | 101.19 | 583.10 | 428.74 | 250000 | 1.36 |
| 19 | 1286.89 | 29.29 | 100.70 | 585.76 | 426.79 | 250000 | 1.37 |
| 20 | 1282.25 | 29.43 | 100.20 | 588.54 | 424.78 | 250000 | 1.39 |
| 21 | 1277.90 | 29.57 | 99.68 | 591.42 | 422.71 | 250000 | 1.40 |
| 22 | 1273.83 | 29.72 | 99.14 | 594.42 | 420.58 | 250000 | 1.41 |
| 23 | 1270.05 | 29.88 | 98.60 | 597.52 | 418.40 | 250000 | 1.43 |
| 24 | 1266.54 | 30.04 | 98.04 | 600.72 | 416.17 | 250000 | 1.44 |
| 25 | 1263.30 | 30.20 | 97.47 | 604.03 | 413.89 | 250000 | 1.46 |
| 26 | 1260.34 | 30.37 | 96.89 | 607.43 | 411.57 | 250000 | 1.48 |
| 27 | 1257.63 | 30.55 | 96.30 | 610.94 | 409.21 | 250000 | 1.49 |
| 28 | 1255.19 | 30.73 | 95.70 | 614.54 | 406.81 | 250000 | 1.51 |
| 29 | 1253.00 | 30.91 | 95.09 | 618.24 | 404.37 | 250000 | 1.53 |
| 30 | 1251.07 | 31.10 | 94.48 | 622.03 | 401.91 | 250000 | 1.55 |
| 31 | 1249.37 | 31.30 | 93.85 | 625.92 | 399.41 | 250000 | 1.57 |
| 32 | 1247.92 | 31.49 | 93.22 | 629.90 | 396.89 | 250000 | 1.59 |
| 33 | 1246.71 | 31.70 | 92.59 | 633.96 | 394.35 | 250000 | 1.61 |
| 34 | 1245.73 | 31.91 | 91.95 | 638.11 | 391.78 | 250000 | 1.63 |
| 35 | 1244.97 | 32.12 | 91.30 | 642.35 | 389.20 | 250000 | 1.65 |
| 36 | 1244.44 | 32.33 | 90.65 | 646.67 | 386.60 | 250000 | 1.67 |
| 37 | 1244.13 | 32.55 | 90.00 | 651.07 | 383.98 | 250000 | 1.70 |
| 38 | 1244.03 | 32.78 | 89.34 | 655.56 | 381.35 | 250000 | 1.72 |
| 39 | 1244.15 | 33.01 | 88.68 | 660.12 | 378.72 | 250000 | 1.74 |
| 40 | 1244.46 | 33.24 | 88.02 | 664.76 | 376.08 | 250000 | 1.77 |
| 41 | 1244.98 | 33.47 | 87.36 | 669.47 | 373.43 | 250000 | 1.79 |
| 42 | 1245.70 | 33.71 | 86.69 | 674.26 | 370.78 | 250000 | 1.82 |
| 43 | 1246.61 | 33.96 | 86.03 | 679.12 | 368.12 | 250000 | 1.84 |
| 44 | 1247.71 | 34.20 | 85.37 | 684.06 | 365.47 | 250000 | 1.87 |
| 45 | 1248.99 | 34.45 | 84.70 | 689.06 | 362.82 | 250000 | 1.90 |

Table A.12: Continuous approximation results for *DC* with Scenario 3 (Cont.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***k*** | ***E\**[*DC*]** | ***n\**** | ***m\**** | ***W\**** | ***D\**** | ***A*** | ***S*\**DC*** |
| 46 | 1250.46 | 34.71 | 84.04 | 694.12 | 360.17 | 250000 | 1.93 |
| 47 | 1252.10 | 34.96 | 83.38 | 699.26 | 357.52 | 250000 | 1.96 |
| 48 | 1253.91 | 35.22 | 82.72 | 704.46 | 354.88 | 250000 | 1.99 |
| 49 | 1255.90 | 35.49 | 82.06 | 709.72 | 352.25 | 250000 | 2.01 |
| 50 | 1258.05 | 35.75 | 81.41 | 715.05 | 349.63 | 250000 | 2.05 |
| 51 | 1260.36 | 36.02 | 80.75 | 720.43 | 347.01 | 250000 | 2.08 |
| 52 | 1262.83 | 36.29 | 80.10 | 725.87 | 344.41 | 250000 | 2.11 |
| 53 | 1265.45 | 36.57 | 79.46 | 731.38 | 341.82 | 250000 | 2.14 |
| 54 | 1268.23 | 36.85 | 78.81 | 736.94 | 339.24 | 250000 | 2.17 |
| 55 | 1271.15 | 37.13 | 78.17 | 742.55 | 336.68 | 250000 | 2.21 |
| 56 | 1274.22 | 37.41 | 77.53 | 748.22 | 334.13 | 250000 | 2.24 |
| 57 | 1277.43 | 37.70 | 76.90 | 753.94 | 331.59 | 250000 | 2.27 |
| 58 | 1280.78 | 37.99 | 76.27 | 759.71 | 329.07 | 250000 | 2.31 |
| 59 | 1284.26 | 38.28 | 75.64 | 765.53 | 326.57 | 250000 | 2.34 |
| 60 | 1287.88 | 38.57 | 75.02 | 771.40 | 324.08 | 250000 | 2.38 |
| 61 | 1291.62 | 38.87 | 74.40 | 777.32 | 321.62 | 250000 | 2.42 |
| 62 | 1295.50 | 39.16 | 73.79 | 783.29 | 319.17 | 250000 | 2.45 |
| 63 | 1299.49 | 39.47 | 73.18 | 789.31 | 316.73 | 250000 | 2.49 |
| 64 | 1303.60 | 39.77 | 72.58 | 795.36 | 314.32 | 250000 | 2.53 |
| 65 | 1307.85 | 40.20 | 71.74 | 804.00 | 310.95 | 250000 | 2.59 |
| 66 | 1312.30 | 40.80 | 70.59 | 816.00 | 306.37 | 250000 | 2.66 |
| 67 | 1316.97 | 41.40 | 69.48 | 828.00 | 301.93 | 250000 | 2.74 |
| 68 | 1321.84 | 42.00 | 68.40 | 840.00 | 297.62 | 250000 | 2.82 |
| 69 | 1326.92 | 42.60 | 67.36 | 852.00 | 293.43 | 250000 | 2.90 |
| 70 | 1332.19 | 43.20 | 66.34 | 864.00 | 289.35 | 250000 | 2.99 |
| 71 | 1337.64 | 43.80 | 65.35 | 876.00 | 285.39 | 250000 | 3.07 |
| 72 | 1343.27 | 44.40 | 64.38 | 888.00 | 281.53 | 250000 | 3.15 |
| 73 | 1349.07 | 45.00 | 63.44 | 900.00 | 277.78 | 250000 | 3.24 |
| 74 | 1355.03 | 45.60 | 62.53 | 912.00 | 274.12 | 250000 | 3.33 |
| 75 | 1361.14 | 46.20 | 61.64 | 924.00 | 270.56 | 250000 | 3.42 |