



Financial Projects

Justin Falk

Question #1

- Company continues to implement similar projects over the next five years, what would its projected statements be for the years 2007, 2008, 2009, 2010, and 2011?

Beginning Data

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006

(all amounts in \$ million)

Revenues	250	290	330	400	440	480	550	600	630	690	750
Change in Revenue		0.160	0.138	0.212	0.100	0.091	0.146	0.091	0.050	0.095	0.087
Cost of Revenues	100	120	125	150	185	200	225	245	280	295	310
Change in Cost of Revenue		0.200	0.042	0.200	0.233	0.081	0.125	0.089	0.143	0.054	0.051
Gross Profit	150	170	205	250	255	280	325	355	350	395	440
Operating Expenses	50	55	60	65	75	80	85	95	110	130	150
Change in Operating Expenses		0.100	0.091	0.083	0.154	0.067	0.063	0.118	0.158	0.182	0.154
Depreciation Cost	10	10	10	10	10	10	10	10	10	10	10
Interest Expense	8	8	8	8	8	8	8	8	8	8	8
Income Before Tax	82	97	127	167	162	182	222	242	222	247	272
Tax	20.5	24.25	31.75	41.75	40.5	45.5	55.5	60.5	55.5	61.75	68
Income After Tax	61.5	72.75	95.25	125.25	121.5	136.5	166.5	181.5	166.5	185.25	204
Non-Cash Expenses	20	20	20	20	20	20	20	20	20	20	20
Cashflow	81.5	92.75	115.25	145.25	141.5	156.5	186.5	201.5	186.5	205.25	224
Implemented Costs	60	70	70	75	80	85	95	105	110	115	125
Change in Implemented Costs		0.167	0.000	0.071	0.067	0.063	0.118	0.105	0.048	0.045	0.087

Calculations

	2006	2007	2008	2009	2010
Rev Mean Change	0.117	0.111	0.105	0.099	0.102
Rev Standard Deviation	0.046764	0.049154	0.050582	0.053237	0.052239
Cost of Rev Mean Change	0.122	0.130	0.140	0.142	0.138
Cost of Rev Std Dev	0.069901	0.071384	0.076912	0.073992	0.072848
Operating Expense Mean Change	0.117	0.114	0.123	0.124	0.124
Operating Expense Std Dev	0.042421	0.041383	0.050139	0.048193	0.046304
Implemented Costs Mean Change	0.077	0.071	0.068	0.070	0.075
Implemented Costs Std Dev	0.045614	0.047934	0.046721	0.045605	0.047082

Projected Statements – 5 years

	2007	2008	2009	2010	2011
Revenues	785.1	820.19	841.02	957.69	1048.64
Change in Revenue	0.047	0.045	0.025	0.139	0.095
Cost of Revenues	374.9	470.04	548.11	593.33	626.37
Change in Cost of Revenue	0.209	0.254	0.166	0.083	0.056
Gross Profit	410.2	350.15	292.91	364.36	422.27
Operating Expenses	162.73	198.71	226.18	254.52	286.66
Change in Operating Expenses	0.085	0.221	0.138	0.125	0.126
Depreciation Cost	10	10	10	10	10
Interest Expense	8	8	8	8	8
Income Before Tax	229.47	133.44	48.73	91.84	117.61
Tax	57.3675	33.36	12.1825	22.96	29.4025
Income After Tax	172.1025	100.08	36.5475	68.88	88.2075
Non-Cash Expenses	20	20	20	20	20
Cashflow	192.1025	120.08	56.5475	88.88	108.2075
Implemented Costs	126.08	130.77	143.85	163.26	183.8
Change in Implemented Costs	0.009	0.037	0.100	0.135	0.126

Question #2

- Assume that in the beginning of year 2008 the company has the following options
- A) Double its expected implementation costs with a resulting doubling of its revenues
- B) Reduce its expected implementation costs by 50%, resulting in a single-time cash inflow of \$200 million and a 10% reduction of its revenues
- What is the value of each of these two options at the beginning of 2007 (now)?

Project A

NPV of Cashflow in 2007 845.0833

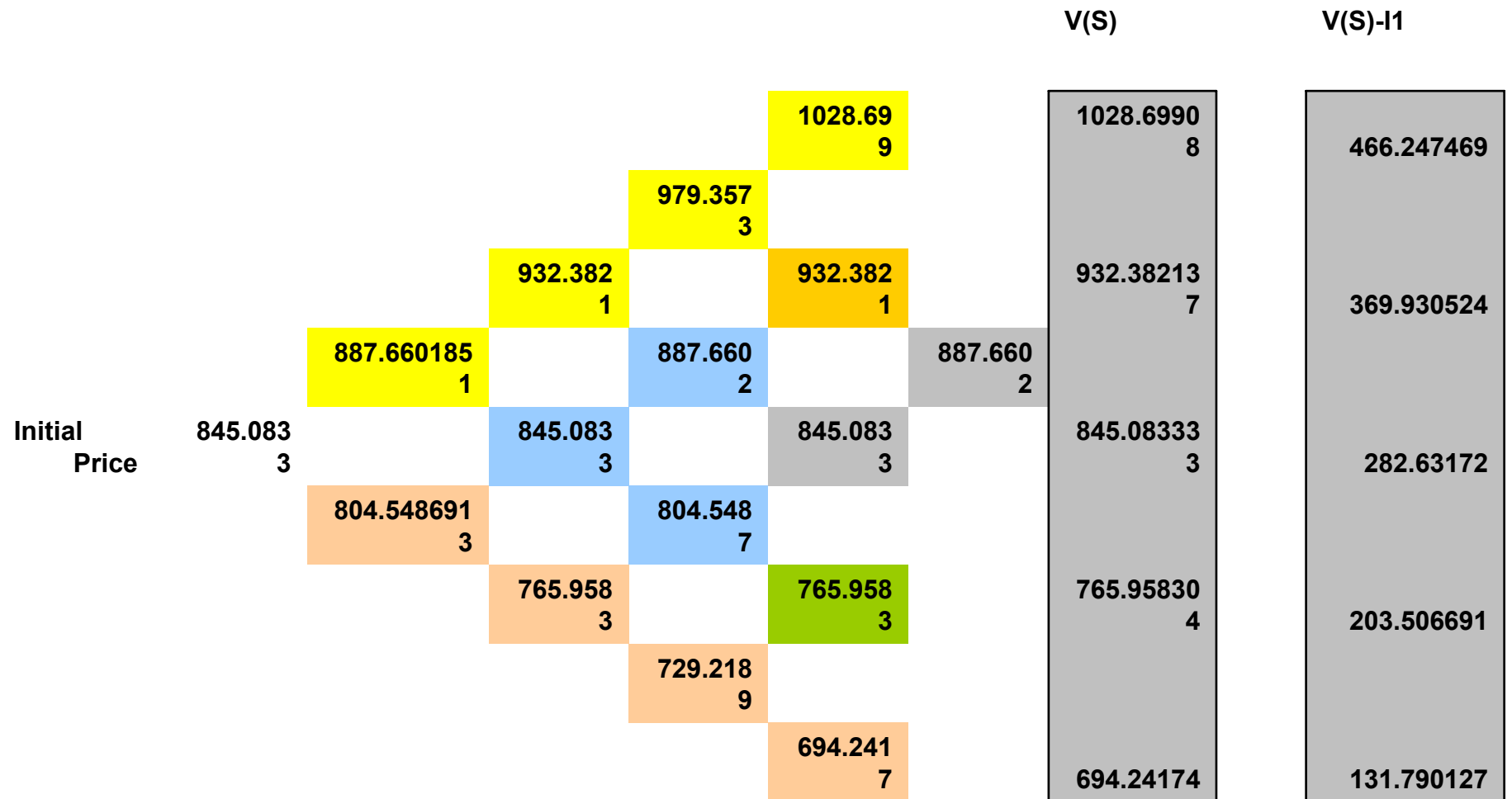
NPV of Imp. Costs in 2007 562.4516

	2006	2007	2008	2008 Opt A
Revenues	750	785.1	820.19	1640.38
Change in Revenue	0.087	0.047	0.045	
Cost of Revenues	310	374.9	470.04	470.04
Change in Cost of Revenue	0.051	0.209	0.254	
Gross Profit	440	410.2	350.15	1170.34
Operating Expenses	150	162.73	198.71	198.71
Change in Operating Expenses		0.154	0.085	0.221
Depreciation Cost	10	10	10	10
Interest Expense	8	8	8	8
Income Before Tax	272	229.47	133.44	953.63
Tax	68	57.3675	33.36	238.4075
Income After Tax	204	172.1025	100.08	715.2225
Non-Cash Expenses	20	20	20	20
Cashflow	224	192.1025	120.08	735.2225
Implemented Costs	125	126.08	261.54	523.08
Change in Implemented Costs	0.087	0.009	1.074	

Project A Option Tree Building

Cashflow	S_0	845.083333	3	u	1.050382
Return	r	0.10511611		d	0.952035
Std Deviation	st dev	0.04915375	4	p	1.574738
Time	T_1		1	$(1-p)$	-0.57474
Investment	I_1	562.451612	9	ΔT	1
steps	n step		1		
random factor that affects	a		1		
random factor that affects	b		0		

Project A Risk Factor Tree



Project A Option Tree

1081.136

881.0908

720.7234

716.033627

581.81267

465.243284

579.419

466.0303

365.5861

272.961

466.247469

369.930524

283.63172

204.506691

132.790127

Project B

NPV of Cashflow in 2007 229.8851

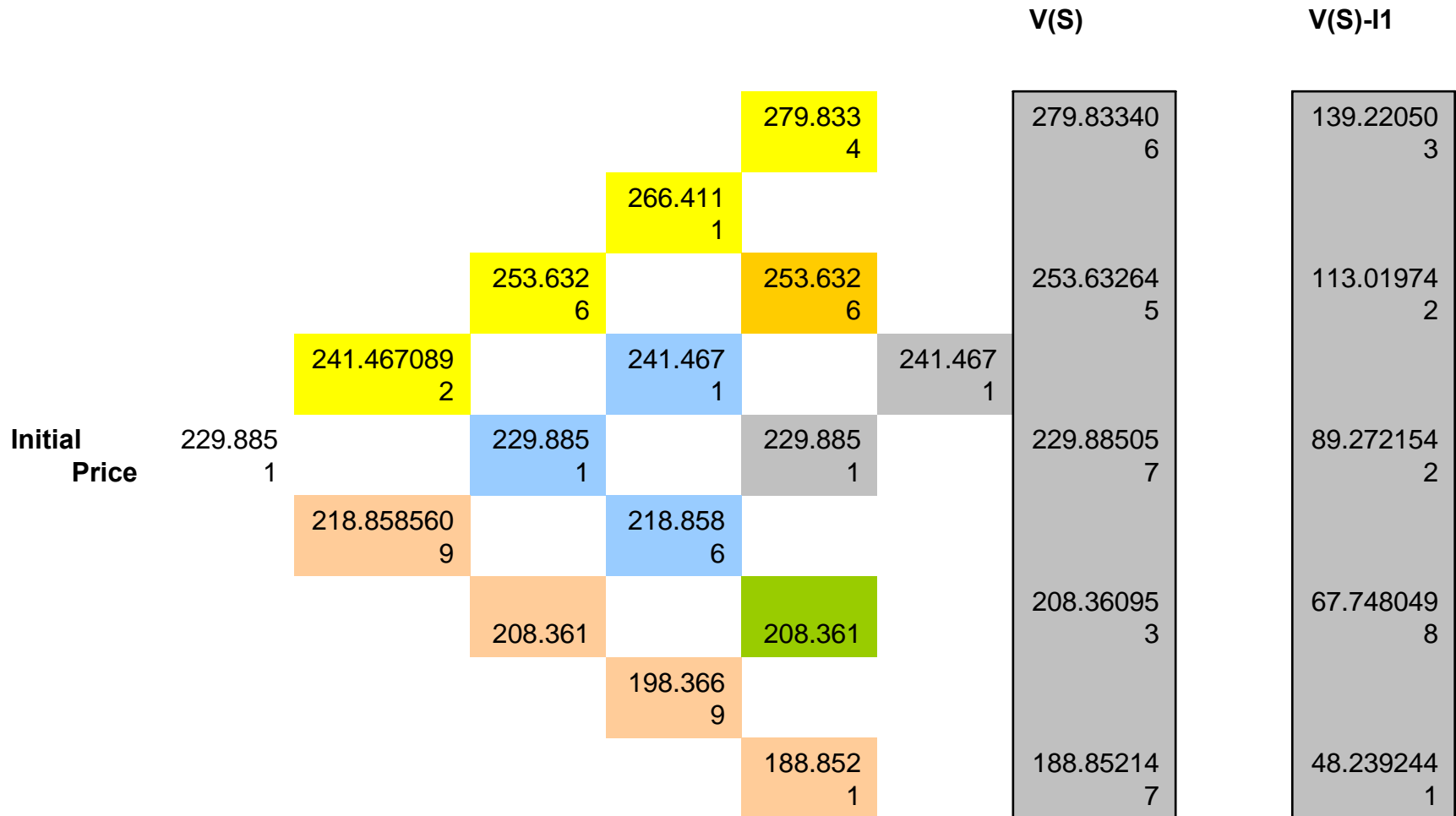
NPV of Imp. Costs in 2007 140.6129

	2006	2007	2008	2008 Opt B
Revenues	750	785.1	820.19	738.171
Change in Revenue	0.087	0.047	0.045	
Cost of Revenues	310	374.9	470.04	470.04
Change in Cost of Revenue	0.051	0.209	0.254	
Gross Profit	440	410.2	350.15	268.131
Operating Expenses	150	162.73	198.71	198.71
Change in Operating Expenses		0.154	0.085	0.221
Depreciation Cost	10	10	10	10
Interest Expense	8	8	8	8
Income Before Tax	272	229.47	133.44	51.421
Tax	68	57.3675	33.36	12.85525
Income After Tax	204	172.1025	100.08	38.56575
Non-Cash Expenses	20	20	20	20
Cashflow	224	192.1025	120.08	200
Implemented Costs	125	126.08	261.54	130.77
Change in Implemented Costs	0.087	0.009	1.074	

Project B Option Tree Building

Cashflow	S_0	229.885057 5	u	1.050382
Return	r	0.10511611	d	0.952035
Std Deviation	st dev	0.04915375 4	p	1.574738
Time	T_1	1	(1-p)	-0.57474
Investment	I_1	140.612903 2	ΔT	1
steps	n step	1		
random factor that affects	a	1		
random factor that affects	b	0		

Project B Risk Factor Tree



Project B Option Tree

				139.220503
			171.3793	0
		209.956625		113.019742
	256.1508		140.7083	0
311.3761		174.052575		89.2721542
	214.1209		112.9089	0
		141.510216		67.7480498
			87.71246	0
				48.2392441

Question #3

- Perform A sensitivity analysis of your answers in (2) with respect to changes in the parameters of the provided statement.
- Changes in Mean Change
- Changes in Sigma
- What happens to the added value, valuation of the company?

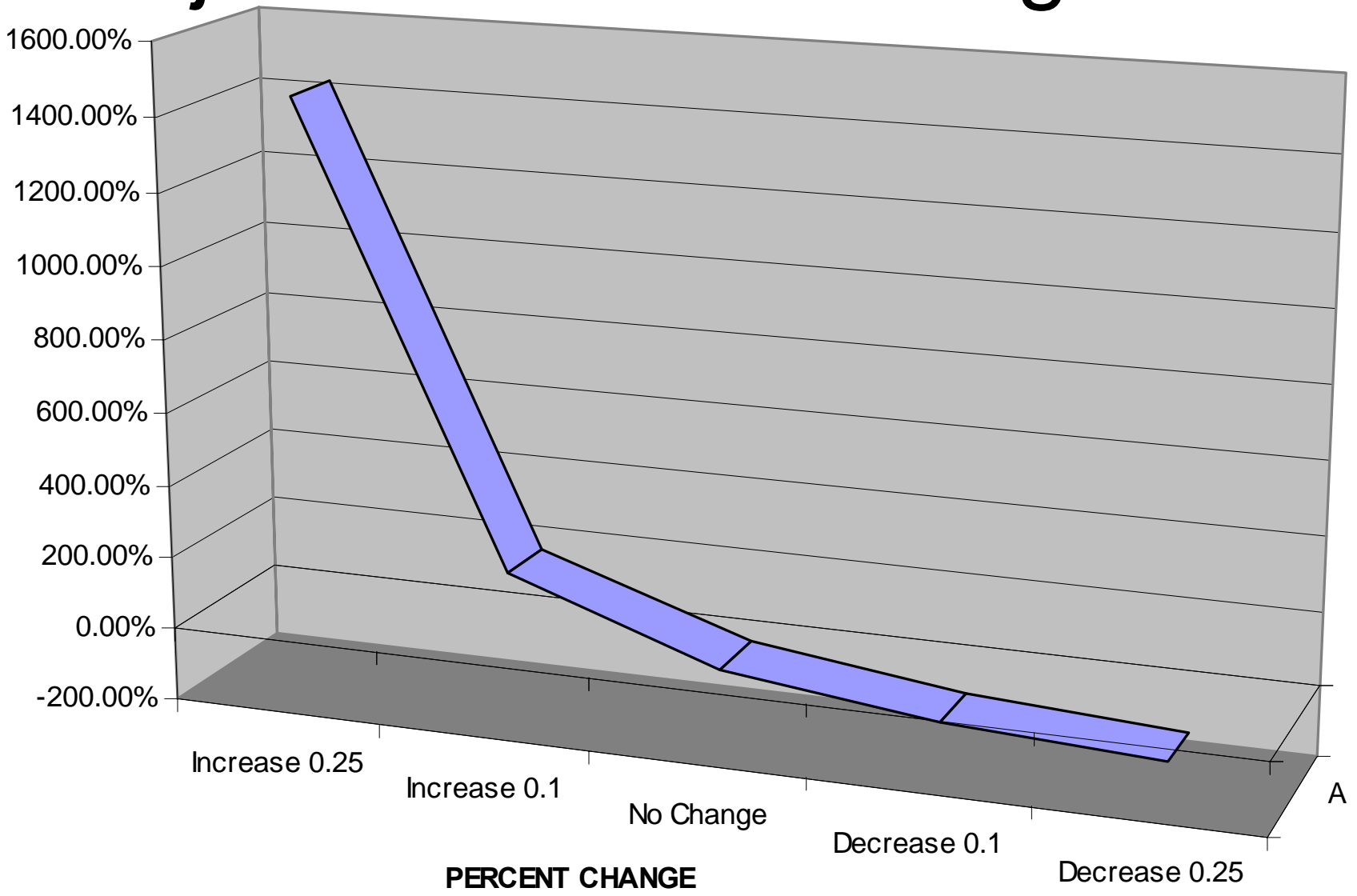
Sensitivity Analysis Data (Mean Change)

	A	B	% Change on A	% Change on B
Mean Change increase by 25%	16681	3313	1443.11%	965.27%
Mean Change increase by 10%	3235	851	199.26%	173.63%
Original	1081	311	0.00%	0.00%
Mean Change decrease by 10%	293	92	-72.90%	-70.42%
Mean Change decrease by 25%	-51	-8	-104.72%	-102.57%

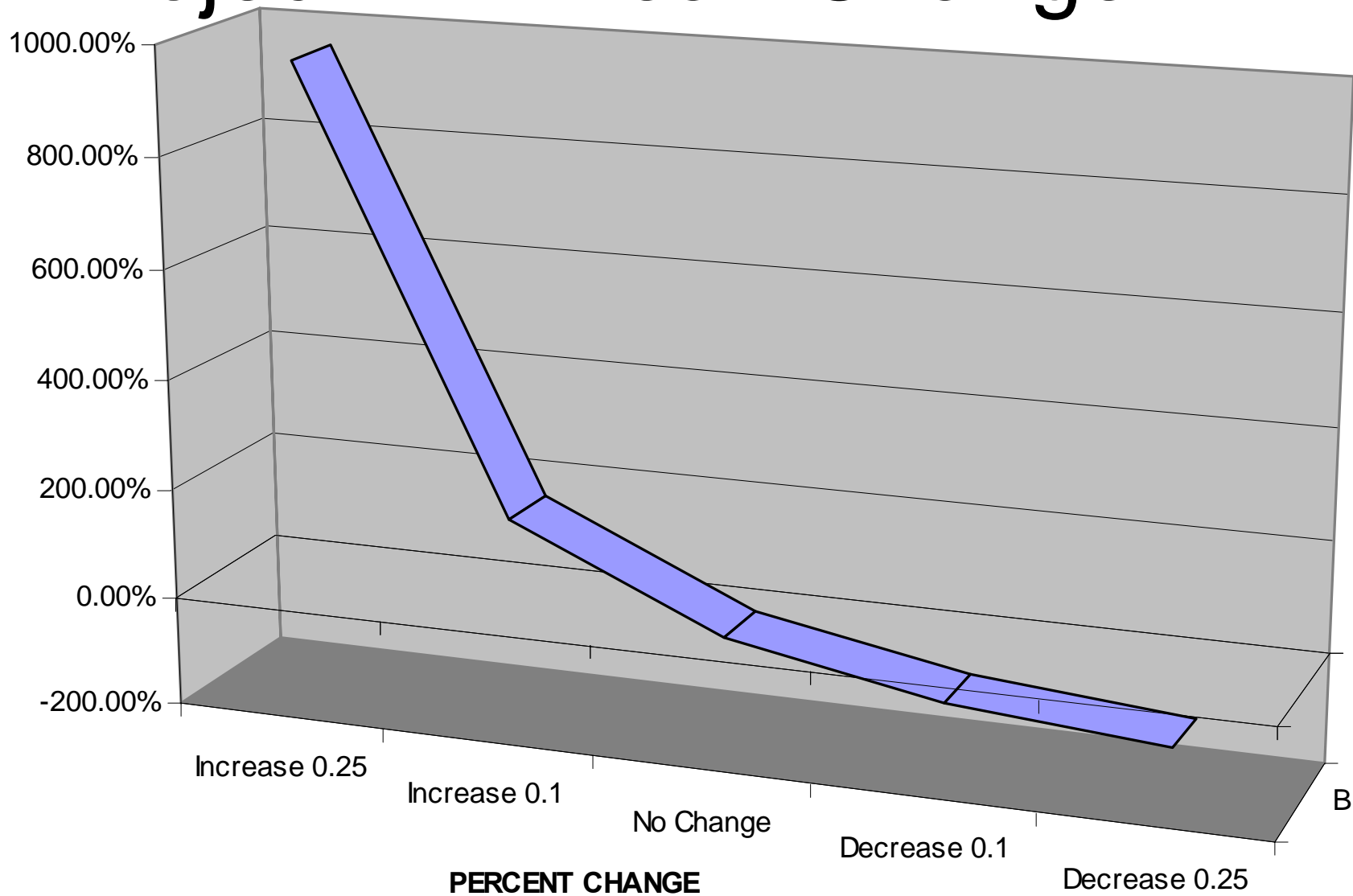
Sensitivity Analysis Data (Sigma Change)

	A	B	% Change on A	% Change on B
Sigma Change increase by 75%	1207	195	11.66%	-37.30%
Sigma Change increase by 50%	1140	236	5.46%	-24.12%
Sigma Change increase by 25%	1045	274	-3.33%	-11.90%
Sigma Change increase by 20%	1031	281	-4.63%	-9.65%
Sigma Change increase by 15%	1023	289	-5.37%	-7.07%
Sigma Change increase by 10%	1026	296	-5.09%	-4.82%
Sigma Change increase by 5%	1047	304	-3.15%	-2.25%
Original	1081	311	0.00%	0.00%
Sigma Change decrease by 3%	9851	316	811.29%	1.61%
Sigma Change decrease by 4%	262045	317	24140.98%	1.93%

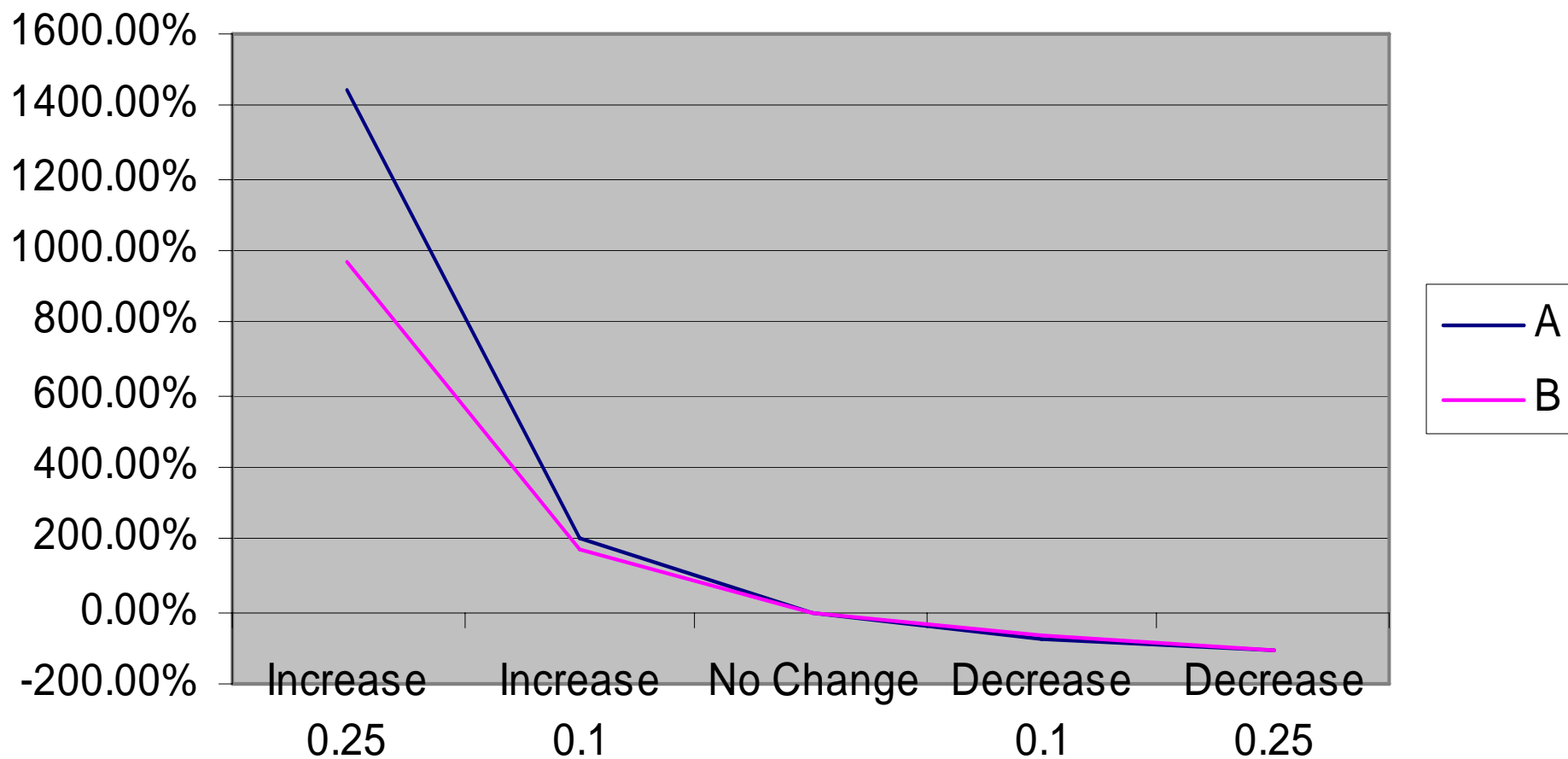
Project A – Mean Change



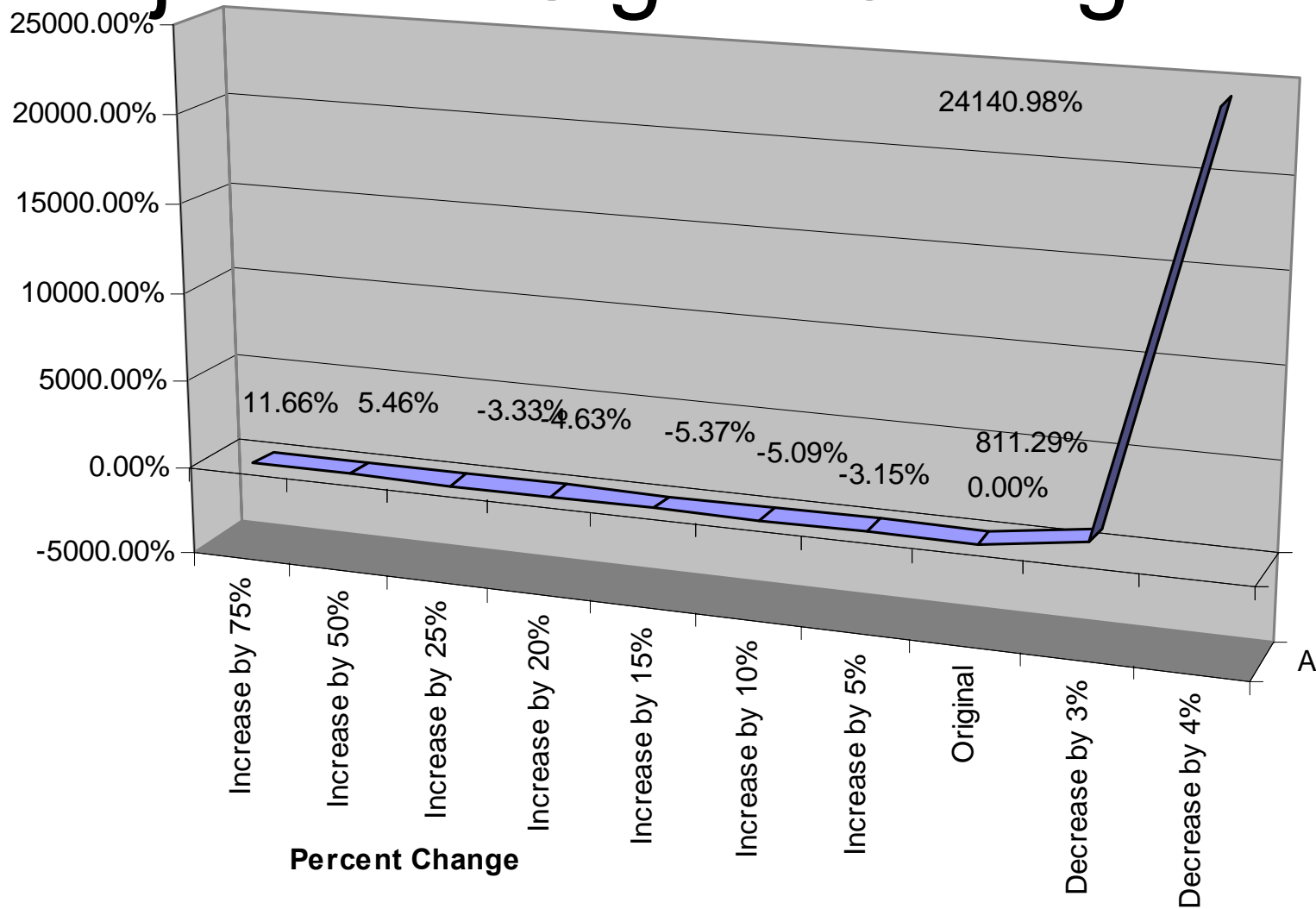
PROJECT B Project B – Mean Change



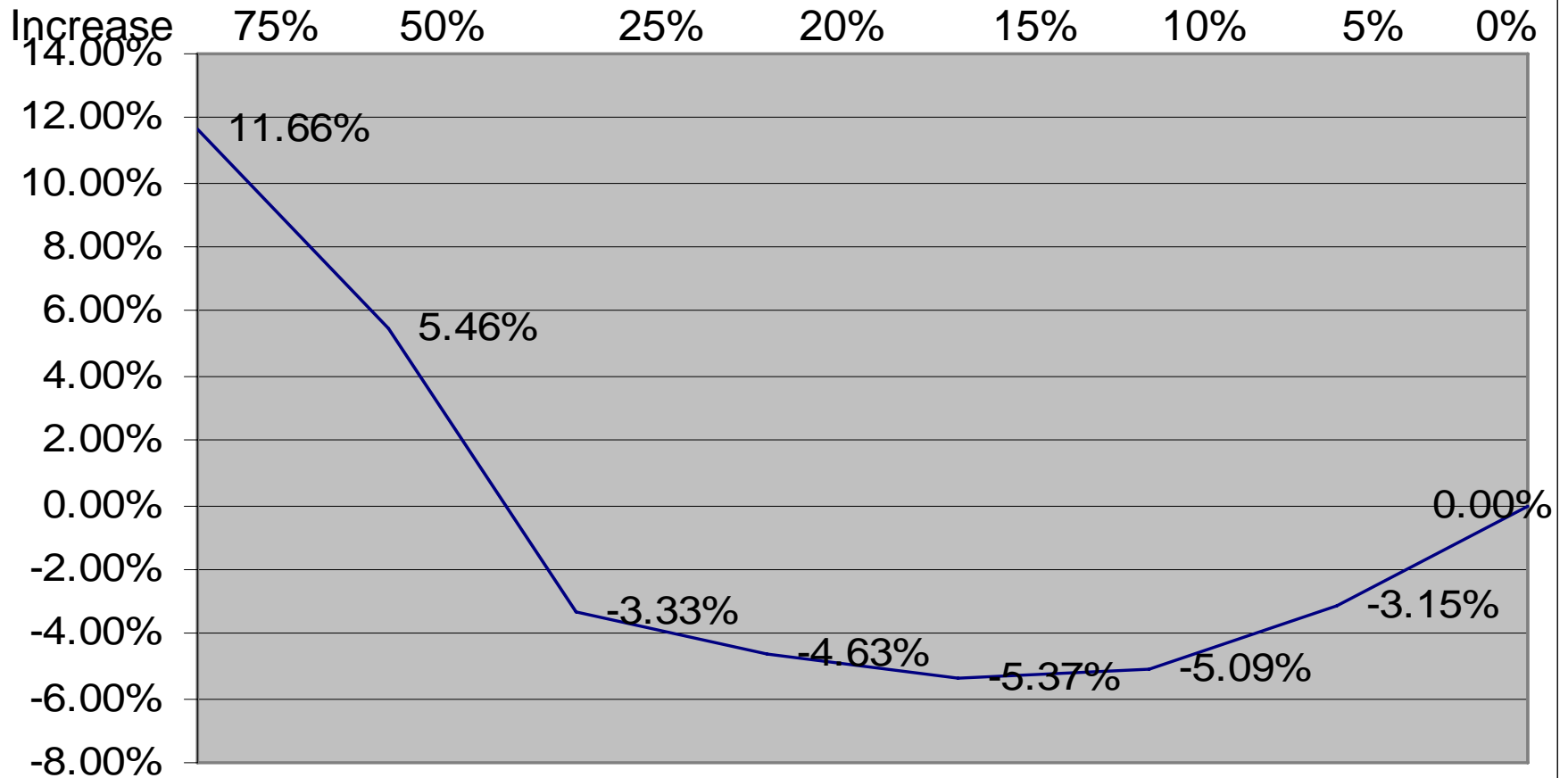
Mean Change Comparison



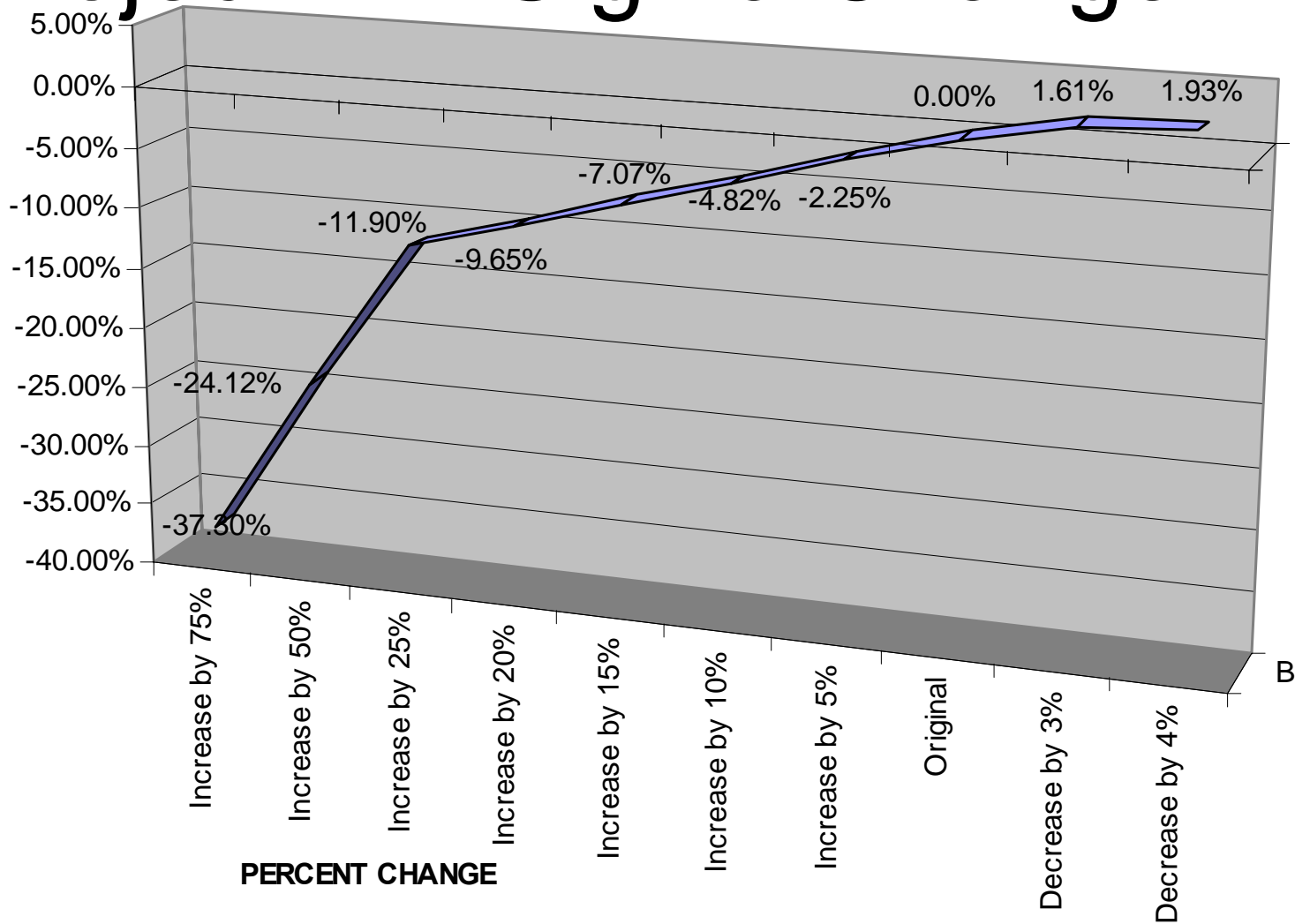
Project A – Sigma Change



Project A Sigma Increase Zoom



PROJECT B Project B – Sigma Change





Sensitivity Conclusions

■ Mean Change

- Project A is just slightly more sensitive towards mean change, both increase and decrease, compared to project B
- As the mean change increases project A is significantly more affected than Project B

Sensitivity Conclusions

■ Sigma Change - Increase

- Project B is more affected by a increase in sigma than project A
- As sigma increases the value option of project B is negatively affected at a steady rate
- As sigma increases in Project A the value option changes back and forth
- As sigma increases in Project A until about 15% it steadily affects the project negatively then changes and begins to affect the project in a positive manner as the sigma continues to increase

Sensitivity Analysis

■ Sigma Change – Decrease

- A decrease in sigma causes Project B to be slightly affected in a positive manner
- A decrease in sigma causes Project A to be affected nearly exponentially in a positive manner