Key Equity Model Parameters

Field Test Runs

Key Equity Model Parameters – US Large Cap

Parameter	GEMS Parameters – Runs #5	12/31/2021 Start Date – Runs #1a and b	9/30/2021 Start Date – Runs #1a and b – 9/30/21	9/30/2019 + 200 bps – Runs #2, 3 and 4
Fixed Return	**0.051933**	**0.006932**	**0.006753**	**-0.005846**
Risk Premium Coeff	**0.092565**	**5.097080**	5.097080	5.097080
Volatility – Initial	**0.0089**	**0.0119**	0.0119	0.0119
Volatility – Alpha	**0.005564**	**0.005864**	0.005864	0.005864
Volatility – Beta	**0.397107**	**0.490805**	0.490805	0.490805
Volatility – Sigma	**0.081872**	**0.071598**	0.071598	0.071598

CONNING

US Large Cap – 12/31/2021 Calibration

Year 30 Gross Wealth Factors for the US Large Cap investment

Percentile	AIRG	Initial	Adjusted
1%	122.79%	157.41%	118.84%
5%	229.86%	283.68%	207.66%
25%	523.88%	691.23%	491.13%
50%	**896.98%**	**1316.02%**	**896.11%**
75%	1570.65%	2668.64%	1702.44%
95%	3480.18%	7998.30%	4634.93%
99%	5852.07%	18667.20%	10223.44%

US Large Cap – 9/30/2021 Calibration

Year 30 Gross Wealth Factors for the US Large Cap investment

Percentile	AIRG	Initial	Adjusted
1%	122.79%	118.10%	117.46%
5%	229.86%	212.04%	210.90%
25%	523.88%	491.09%	488.46%
50%	**896.98%**	**901.81%**	**896.98%**
75%	1570.65%	1698.37%	1689.27%
95%	3480.18%	4713.03%	4687.79%
99%	5852.07%	10086.79%	10032.76%

US Large Cap – 12/30/2019 + 200bps Calibration

Year 30 Gross Wealth Factors for the US Large Cap investment

Percentile	AIRG	Initial	Adjusted
1%	122.79%	157.41%	107.34%
5%	229.86%	283.68%	193.54%
25%	523.88%	691.23%	471.42%
50%	**896.98%**	**1316.02%**	**897.37%**
75%	1570.65%	2668.64%	1819.45%
95%	3480.18%	7998.30%	5452.56%
99%	5852.07%	18667.20%	12725.29%

Key Equity Model Parameters – US Mid Cap

Parameter	GEMS Parameters – Runs #5	12/31/2021 Start Date – Runs #1a and b	9/30/2021 Start Date – Runs #1a and b – 9/30/21	9/30/2019 + 200 bps – Runs #2, 3 and 4
Fixed Return	**0.054220**	**0.013990**	**0.013811**	**0.001212**
Risk Premium Coeff	**0.001977**	**3.429417**	3.429417	3.429417
Volatility – Initial	**0.0146**	**0.0159**	0.0159	0.0159
Volatility – Alpha	**0.004702**	**0.004863**	0.004863	0.004863
Volatility – Beta	**0.261911**	**0.305880**	0.305880	0.305880
Volatility – Sigma	**0.077046**	**0.018053**	0.018053	0.018053

CONNING

Key Equity Model Parameters – US Small Cap

Parameter	GEMS Parameters – Runs #5	12/31/2021 Start Date – Runs #1a and b	9/30/2021 Start Date – Runs #1a and b – 9/30/21	9/30/2019 + 200 bps – Runs #2, 3 and 4
Fixed Return	**0.058658**	**0.016074**	**0.015895**	**0.003296**
Risk Premium Coeff	**0.001216**	**3.771132**	3.771132	3.771132
Volatility – Initial	**0.0131**	**0.0157**	0.0157	0.0157
Volatility – Alpha	**0.004908**	**0.005159**	0.005159	0.005159
Volatility – Beta	**0.278360**	**0.329378**	0.329378	0.329378
Volatility – Sigma	**0.096470**	**0.032985**	0.032985	0.032985

CONNING

Key Equity Model Parameters – Aggressive US Equity

Parameter	GEMS Parameters – Runs #5	12/31/2021 Start Date – Runs #1a and b	9/30/2021 Start Date – Runs #1a and b – 9/30/21	9/30/2019 + 200 bps – Runs #2, 3 and 4
Fixed Return	**0.069542**	**0.032667**	**0.032488**	**0.019889**
Risk Premium Coeff	**0.018593**	**2.355380**	2.355380	2.355380
Volatility – Initial	**0.0126**	**0.0254**	0.0254	0.0254
Volatility – Alpha	**0.008587**	**0.008629**	0.008629	0.008629
Volatility – Beta	**0.307103**	**0.340231**	0.340231	0.340231
Volatility – Sigma	**0.090934**	**0.019327**	0.019327	0.019327

CONNING

Key Equity Model Parameters – International Diversified Equity

Parameter	GEMS Parameters – Runs #5	All Other Runs
Income Mean	-0.002400	-0.002400
Income St Dev	0.001039	0.001039
Price Mean	**0.001422**	**0.007160**
Price St Dev	0.110851	0.110851

Key Equity Model Parameters – Aggressive Foreign Equity

Parameter	GEMS Parameters – Runs #5	All Other Runs
Income Mean	-0.003300	-0.003300
Income St Dev	0.001039	0.001039
Price Mean	**0.021149**	**0.028679**
Price St Dev	0.159349	0.159349

CONNING

GEMS Run calibration

Initial Results

Investment	Mean	St Dev	Sharpe Ratio	Pass?	Adj. Sharpe Ratio	Mean Delta	Alpha Impact
Large Cap	5.35%	16.41%	32.61%		32.61%	0.0000%	0.0000%
Mid Cap	5.58%	17.50%	31.86%	TRUE	31.86%	0.0000%	0.0000%
Small Cap	5.92%	18.93%	31.29%	TRUE	31.29%	0.0000%	0.0000%
Aggressive US Equity	6.82%	23.26%	29.32%	FALSE	30.98%	0.3887%	0.3879%
International Equity	1.94%	17.91%	10.85%	FALSE	30.98%	3.7422%	3.7422%
Aggressive Foreign Equity	4.63%	27.38%	16.90%	FALSE	30.98%	4.0102%	2.9549%

Final Results

Investment	Mean	St Dev	Sharpe Ratio	Pass?
Large Cap	5.35%	16.41%	32.61%	
Mid Cap	5.58%	17.50%	31.86%	TRUE
Small Cap	5.92%	18.93%	31.29%	TRUE
Aggressive US Equity	7.24%	23.35%	30.99%	TRUE
International Equity	5.82%	18.54%	31.39%	TRUE
Aggressive Foreign Equity	8.89%	28.40%	31.29%	TRUE

Alternative Equity Calibration – 12/31/2021 Start Date

Initial Results

Investment	Mean	St Dev	Sharpe Ratio	**Pass?**		Adj. Sharpe Ratio	Mean Delta	Alpha Impact
Large Cap	6.75%	15.69%	43.02%			43.02%	0.0000%	0.0000%
Mid Cap	5.45%	16.40%	33.20%	FALSE		40.87%	1.2725%	1.2645%
Small Cap	5.88%	17.94%	32.79%	FALSE		40.87%	1.4706%	1.4599%
Aggressive US Equity	7.06%	22.30%	31.66%	FALSE		40.87%	2.0965%	2.0749%
International Equity	6.99%	18.15%	38.53%	FALSE		40.87%	0.4267%	0.4267%
Aggressive Foreign Equity	10.76%	28.01%	38.41%	FALSE		40.87%	0.6915%	0.5711%

Final Results

Investment	Mean	St Dev	Sharpe Ratio	**Pass?**
Large Cap	6.75%	15.69%	43.02%	
Mid Cap	6.93%	16.63%	41.68%	TRUE
Small Cap	7.60%	18.24%	41.68%	TRUE
Aggressive US Equity	9.51%	22.81%	41.68%	TRUE
International Equity	7.60%	18.24%	41.68%	TRUE
Aggressive Foreign Equity	11.77%	28.24%	41.67%	TRUE

CONNING

Alternative Equity Calibration – 9/30/2021 Start Date

Initial Results				
Investment	Mean	St Dev	Sharpe Ratio	**Pass?**
Large Cap	6.76%	15.70%	43.04%	
Mid Cap	6.94%	16.64%	41.70%	TRUE
Small Cap	7.61%	18.24%	41.70%	TRUE
Aggressive US Equity	9.52%	22.82%	41.69%	TRUE
International Equity	7.60%	18.24%	41.67%	TRUE
Aggressive Foreign Equity	11.77%	28.25%	41.68%	TRUE

Final Results				
Investment	Mean	St Dev	Sharpe Ratio	**Pass?**
Large Cap	6.73%	15.69%	42.90%	
Mid Cap	6.91%	16.63%	41.57%	TRUE
Small Cap	7.58%	18.23%	41.58%	TRUE
Aggressive US Equity	9.49%	22.81%	41.60%	TRUE
International Equity	7.59%	18.24%	41.59%	TRUE
Aggressive Foreign Equity	11.75%	28.24%	41.60%	TRUE

Alternative Equity Calibration – 12/31/2019 + 200 bps

Initial Results				
Investment	Mean	St Dev	Sharpe Ratio	**Pass?**
Large Cap	6.76%	15.70%	43.04%	
Mid Cap	6.94%	16.64%	41.70%	TRUE
Small Cap	7.61%	18.24%	41.70%	TRUE
Aggressive US Equity	9.52%	22.82%	41.69%	TRUE
International Equity	7.54%	18.24%	41.34%	TRUE
Aggressive Foreign Equity	11.94%	28.30%	42.19%	TRUE

Final Results				
Investment	Mean	St Dev	Sharpe Ratio	**Pass?**
Large Cap	5.40%	15.50%	34.83%	
Mid Cap	5.58%	16.43%	33.96%	TRUE
Small Cap	6.24%	18.01%	34.64%	TRUE
Aggressive US Equity	8.12%	22.53%	36.05%	TRUE
International Equity	6.36%	18.04%	35.23%	TRUE
Aggressive Foreign Equity	10.11%	27.86%	36.30%	TRUE