



RESILIENCE MONITOR

Prepared for the Boeing Company companion graphic report on January 11, 2024

Summary of Observations and Recommendations

Headline Assessment. Data indicate a **potentially critical** level of reputation risk for Boeing Company. Increased pre-emptive reputation risk and crisis management as of December 8, 2023 are **strongly indicated**.

*This section is organized for quick orientation, observations, decisions, and actions. The data are current as of **December 8, 2023**. Detailed contents and chart references are in the Appendix beginning on page 4.*

Strategic Risk Management and Governance Environment. “Reading the room,” stakeholders’ mood appears significantly agitated making the likelihood that a shock would trigger an outsized reaction high. The Boeing Company-specific “Fear Index” peaked in value on March 16, 2023.

Increased reputation risk mitigation actions, *when indicated*, would typically include consultation within the enterprise to determine: (1) what decision, policy, or statement from officers and directors; operational incident, or third-party actions that became public around the peak date precipitated stakeholders’ agitation; (2) what stakeholder expectations preceded the above; and (3) a course of action centered on meeting those expectations through operational changes to pre-empt a similar event from disappointing the same stakeholders; shaping expectations to current reality; or planning for the costs of loss. Not taking reputation risk mitigation actions when indicated increases the likelihood that an adverse event will precipitate a costly reputation crisis.

Operational Enterprise Risk Management. Data indicate material expected changes in stakeholder behaviors or operations.

In addition to the general processes for enterprise reputation risk management, enhanced risk management resources and efforts including issue-specific collaboration and communication among potentially insular silos are indicated as shown below and may help protect or restore value in one or more of these four contributors to enterprise resilience, especially if a major adverse event occurred in the past year or if the strategic risk environment described in #1 is precarious.

- **Mitigating risks to revenue: maintain baseline effort; no surge indicated.** Enhanced risk management, if indicated, could focus on mitigating sources of customer disaffection, supply chain issues, cyber hacks, property (fire, EH&S), and the impact of political violence, natural catastrophes, and other perils leading to business interruption.
- **Mitigating risks of higher costs and expenses: surge indicated.** Enhanced risk management, if indicated, could focus on mitigating employee disengagement; operational losses; credit costs, compliance failures; social license holder protests; and the additional costs arising from mitigating any of the multiple risks to revenue.

- **Mitigating risks to investors' appreciation of future potential: surge indicated.** Enhanced risk management, if indicated, could focus on collaborating with investor relations to promote the active mitigation of risks to revenue and of higher costs and expenses.
- **Mitigating risks to enterprise resilience: maintain baseline effort; no surge indicated.** Enhanced risk management, if indicated, could focus on implementing and promoting an integration of risk management and governance by the entire risk management apparatus through better risk intelligence and threat prioritization.

Intelligence for Auditing Reputation Value and Risk Controls. Boeing Company's reputation value is not underperforming its historic range at some period this past year (see graphic).

Controls are established on the basis of the prior year's value and volatility or insurance parametric triggers, if applicable. Control discrepancies were observed for the following magnitudes and durations: 0 breach(es) of the first lower control bar over the trailing twelve months. There were 0, 0, 0, 0 and 0 breach(es) of the second, third, fourth, and fifth lower control bars, respectively.

Intelligence for Reputation Value and Risk Benchmarking. With one (1) being the highest rank, Boeing Company's reputation value benchmarked at 71 among 93 **Aerospace & Defense** industry peers. Named peers for a custom/bespoke benchmarking cohort are not available; in the absence of a bespoke cohort, empty data fields are marked 'N/A': the company ranked at 4980 out of 7983.

Historic Values. Aerospace & Defense industry historic rankings are available for 0 prior period(s). Over the past 1, 4, 8 and 13 weeks, the rankings were #N/A, #N/A, N/A, and #N/A respectively. Named peers for a custom/bespoke benchmarking cohort are not available. Over the past 1, 4 and 13 weeks, the rankings among peers were 0, 0, and 0 respectively. One year ago, the ranking was N/A.

Note: N/A=Data not available.

This enterprise risk and reputation resilience report provides foresight for governance, recommended actions for risk management, and metrics for controls and benchmarking. Steel City Re's recommendations are based on Boeing Company stakeholders' mood and behaviors inferred from forward-looking data of financial expectations.

The Value of Reputation Risk Management

Reputation risk is the gap between your stakeholders' expectations and future reality. Its cost to Boeing Company depends on whether the expectations pertain to something that is mission-critical, the context of stakeholders' mood, and magnitude of the shock of disappointment. Every decision, policy, or statement from officers and directors can precipitate a crisis of disappointment. Any operational incident or any third-party action can too.

The key to efficient reputation risk management is to "read the room" and know when and where to best direct resources to mitigate the costs of shifting stakeholder expectations through risk operations, communications, and transfer.

Why it matters: Preventing stakeholder disappointment can mean the difference between customers buying or boycotting; employees working or fleeing; investors buying or selling; lenders adjusting interest rates down or up; regulators deferring or enforcing; and social license holders acquiescing or protesting.

The numbers make a compelling case for reputation risk management over crisis management. All things being equal, an insight-based reputation risk management approach yields, on average:

- **9.3%** stock price gain for firms that managed, validated and publicized reputation risk management strategies of mission-critical processes.
- **4.3%** stock price gain for firms that demonstrated reputation resilience in the setting of an adverse event.

Conversely, crisis management yields, on average:

- **9%** stock price loss after the first week.
- **13.2%** stock price underperformance of the market at seven-months
- **23.3%** stock price underperformance of peers at seven-months

The takeaway: Beginning with regular measurement and oversight through this report, reputation risk insurance can reinforce enterprise value resilience, protect Directors & Officers from liability and culpability, and promote the strategic value of risk management.

Appendix: Detailed Quantitative Measures and Chart Annotations

This Appendix provides the reasoning and evidence behind Steel City Re’s foresight and recommended action for reputation risk management and governance. Data are *inferred from forward-looking data of financial expectations* specific to Boeing Company— four derivative measures capturing the economic notion of stock price fused into a synthetic index of reputation value. The synthetic index has been validated for more than a decade by hedge funds and a public equity index, INDEXCME: REPUVAR. Boeing Company data are also presented graphically in the companion *Resilience Monitor* charts.

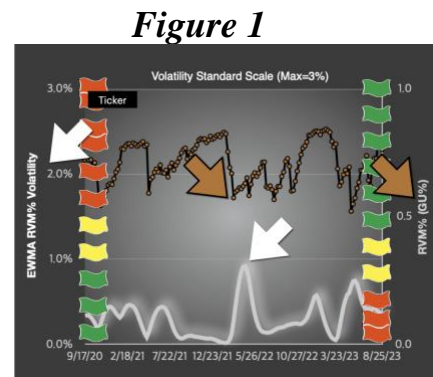
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Intelligence for Risk Strategy/Future Loss | Environment (Fear Index). Weekly data over the past year indicate a **a potentially critical** level of reputation risk for Boeing Company. Stakeholders’ mood appears significantly agitated making the likelihood that a shock would trigger an *outsized reaction* high. The metric for this assessment—the Fear Index—peaked in value on March 16, 2023. Increased *pre-emptive* reputation risk and crisis management as of December 8, 2023 are **strongly indicated**.

Figure 1. Please see the separate companion Boeing Company Resilience Monitor graphic report dated December 8, 2023, [key risk governance chart, page 5, left](#), for a graphical presentation of the above summary and details below.

The current exponentially weighted moving average reputation value metric percentile volatility is 0.162 . A value of around 0.02 (2%) or greater indicates an environment of generalized stakeholder agitation where an incident or adverse event is more likely to shift stakeholder expectations and generate outsized and longer-tailed consequences, all things being equal.

A [generic annotated](#) illustration of the [risk governance chart, page 5, left](#), of the separate companion graphic report is shown here.



Reasoning and Evidence:

This Steel City Re measure of emotional agitation is similar in design and purpose to the Chicago Board of Options Exchange (CBOE) VIX or “fear” index. It is suggested that the risk executive correlate the quantitative measures in this report with newsworthy quantitative and qualitative information that may be known by stakeholders whose expected behavior is reflected in these metrics.

Underlying Expectation Risk from Historic Events

Boeing Company’s stakeholders’ measured level of expectation agitation over the trailing twelve months peaked at 0.109¹ on the week ending March 16, 2023. Values near 0.02 (2%) or greater indicate stakeholder uncertainty implying exaggerated emotions, especially fear.

The spanning eight-week average change in reputational value of (-0.003) GU%² at that time suggests the net emotion was uncertain emotional directionality. Material shifts in expectation³ in either direction are associated with outsized reactions to incidents, events, or adverse news over the next year.

Its magnitude was likely to shift stakeholders’ expectations with uncertain directionality.

Current Expectation Risk from Recent Events

The current reputation value volatility is 0.162. It is compared to the peak 0.612 on September 29, 2023 and an average of 0.161 over the trailing 12 months. The difference between the current and average volatilities is 0.000; the ratio is 100%.⁴ The one (1) and four (4)-week measures of reputation value have moved 0.011 GU% and 0.024 GU%.⁵

These data suggest net stakeholder emotion at this time is uncertain emotional directionality.

¹ This unitless metric of volatility is the higher of either the unweighted or exponentially- weighted moving average of the trailing ten-week variance of the reputation value metric.

² GU% is the Gerken Unit percentile, which ranges from a low of 0.0 to a high of 1.0.

³ Nobel Prize-winning insight, Economics, 2022, gleaned from studying how banks suddenly collapse, and what triggers a run (and by analogy, an equity share dump).

https://en.wikipedia.org/wiki/2022_Nobel_Memorial_Prize_in_Economic_Sciences

⁴ Values may not appear to sum exactly due to rounding errors.

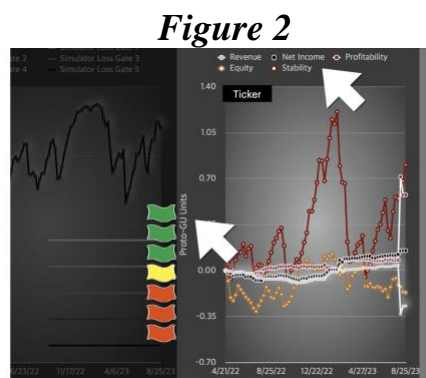
⁵ GU% change data are measured on a scale of -1.0 to +1.0.

Intelligence for Strategic Risk Operations/Current Loss (Risk Metric Subcomponents). Weekly data reflecting recent financial expectations indicate material changes in stakeholder behaviors or operations. Additional, focused risk management resources and efforts are indicated as shown below and may help protect or restore value. There are three major opportunities for integrating reputation risk management into enterprise risk management: risk intelligence; gamified prioritization; and risk communications.⁶

- maintain baseline effort; no surge indicated: *mitigating risks to revenue.*
- surge indicated: *mitigating risks of higher costs and expenses.*
- surge indicated: *mitigating risks to investors' appreciation of future potential.*⁷
- maintain baseline effort; no surge indicated: *mitigating risks to enterprise resilience.*

Figure 2. Please see the separate companion Boeing Company Resilience Monitor graphic report December 8, 2023, [key risk management chart, page 4, right](#), for a graphical presentation of the above summary and details below.

A [generic annotated illustration of the risk management chart, page 4, right](#) of the separate companion graphic report is shown [here](#).



Reasoning and Evidence:

The directional change over the trailing twelve months with respect to expectations of stakeholder behaviors relevant to resilience that would impact the following areas—revenue, net income, and future growth, as well as their respective stabilities—are 0.12 , (-0.30), 0.00 , and 0.44⁸. Negative twelve-month changes in values reflect areas of expected net value-eroding behaviors.

Over the past 1, 4 and 13 weeks, respectively, changes in expectations as well as peak and trough values all arising from expected stakeholder behaviors have been recorded as follows:

- Expectations of revenue changes 0.00 , (-0.00), and (-0.03); Peak and trough dates for relative revenue expectation changes are respectively the weeks ending January 26, 2023 and December 22, 2022.

⁶ [Reputation, Stock Price, and You](#) (Apress: 2012) is a good reference text. Steel City Re's [advisory service](#) is a good resource.

⁷ Put simply, your stakeholders and the public at large want to know that you're actively trying to preclude risk. They want to know that you have effective thoughtful risk management and dutiful governance—quality enterprise risk management. [Strategic insurance](#) helps deliver this message.

⁸ Measured in proto-GU%, each component being normalized against the entire population of values.

- Expectations of net income changes 0.02 , (-2.35), and (-2321.95); Peak and trough dates for relative net income expectation changes are respectively the weeks ending February 2, 2023 and January 19, 2023.
- Expectations of equity growth changes 0.00 , 0.00 , and (-0.22); Peak and trough dates for relative equity growth expectation changes are respectively the weeks ending September 22, 2023 and December 8, 2022.
- Expectation stability changes 0.11 , (-0.14), and 0.44 ; Peak and trough dates for relative metric stability expectation changes are respectively the weeks ending October 6, 2023 and December 8, 2022.

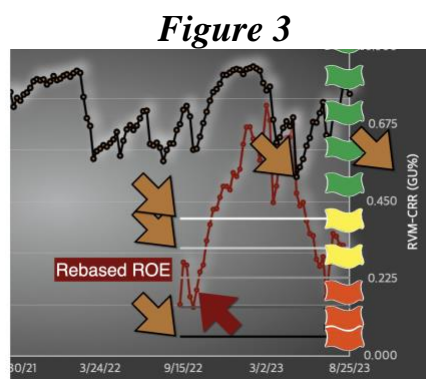
Intelligence for Auditing Reputation Value and Risk Controls.⁹ Boeing Company's reputation value and volatility to controls established on the basis of the prior year's value and volatility, show that .Boeing Company's reputation value is not underperforming its historic range; i.e., 0 breach(es) of the first lower control bar over the trailing twelve months. There were 0 , 0 , 0 , 0 and 0 breach(es) of the second, third, fourth, and fifth lower control bars, respectively.

Figure 3. Please see the separate companion Boeing Company Resilience Monitor graphic report December 8, 2023, [key reputation value control charts on page 3](#), for a graphical presentation of the above summary and details below.

Black and gold markers, black line. RVM% is a composite index of four ~equally weighted forward looking financial measures of expected revenue, income, equity value, and their net stability. The unit of measure is the Gerken Unit percentile (GU%).

Red line. Change in market capitalization of Boeing Company adjusted for the change in the S&P500 to reduce signal noise.

A generic annotated illustration of the reputation value control charts on [page 3](#) of the separate companion graphic report is shown here.



Reasoning and Evidence:

The average direction¹⁰ of change over the past year is 0.24 (GU% vector). Boeing Company's current reputation value¹¹ is 0.36 GU%, compared with reputation values of 0.35 GU%, 0.38 GU%, and 0.80 GU% over the past 1, 4, and 13 weeks respectively.

⁹ A general overview of the reputation risk management controls and benchmarking information provided by this resilience monitor can be found in this [explanatory video](#).

¹⁰ Vector-based charts on pages 6 and 7.

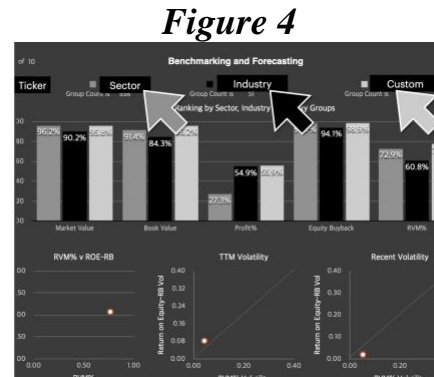
¹¹ Steel City Re makes available for risk managers on request a PowerPoint® template, prepopulated with company-specific data, on reputation risk for use in ERM and board presentations.

The reputation value changes are reflected in the observed change in market capitalization, currently \$148038 million, which has changed 5%, 24%, and 16%, over the past 1, 4, and 13 weeks, respectively; or, when adjusted to remove background market effects, 6%, 22%, and 15% over the past 1, 4, and 13 weeks, respectively.

Intelligence for Reputation Value and Risk Benchmarking. Boeing Company's reputation value benchmarked to 93 Aerospace & Defense industry peers earns a ranking at 71, which corresponds to the 0.56 percentile. Named peers for a custom/bespoke benchmarking cohort are not available; in the absence of a bespoke cohort, empty data fields are marked 'N/A': 7983 custom-selected peers, places the company ranking at the 0.36 percentile for a rank of 4980 out of 7983 with one (1) being the highest rank.

Figure 4. Please see the separate companion Boeing Company Resilience Monitor graphic report December 8, 2023, [key benchmarking charts on page 6](#), for a graphical presentation of the above.

A generic annotated illustration of [benchmarking charts on page 6](#) of the separate companion graphic report is shown here.



Historic Values. Aerospace & Defense industry historic rankings are available for 0 prior period(s). Over the past 1, 4, 8 and 13 weeks, the rankings were #N/A, #N/A, N/A, and #N/A respectively. Named peers for a custom/bespoke benchmarking cohort are not available. Over the past 1, 4 and 13 weeks, the rankings among peers were 0, 0, and 0 respectively. One year ago, the ranking was N/A. Note: N/A=Data not available.