RISK RESEARCH REPORT

25 Years of Predictive Power

A 25-Year Comparative Quantitative Study of ERS's

LOSS INDICATOR™ (LI™)

and

4 DIMENSIONS OF RISK™ (4D™)

June 30, 2025

EQUITY RISK SCIENCES

Employing Data Science & AI for Safer Investing

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Executive Summary

What You're About to Read

This comprehensive research report presents 25 years of quantitative evidence demonstrating how Equity Risk Sciences' (ERS) proprietary risk assessment tools can help investors identify and avoid devastating losses before they occur. The report analyzes thousands of companies across multiple time periods, market cycles, and economic conditions to validate the predictive power of two key innovations:

- **4 Dimensions of Risk™ (4D™)**: A comprehensive risk grading system (A through F) that evaluates companies' overall financial health and future performance potential
- **Loss Indicator™ (LI™)**: A specialized early warning system designed specifically to flag companies at high risk of significant price declines

Why This Research Matters

The Problem: Every year, investors lose billions of dollars in preventable losses from companies showing clear warning signs of financial distress. Traditional analysis often fails to identify these risks until it's too late.

The Solution: Through rigorous data science applied to SEC-filed financial data, ERS has developed tools that consistently identify high-risk investments years in advance. This isn't hindsight analysis—it's predictive intelligence that works.

The Proof: Our research shows that over 25 years, these tools have successfully:

- Identified 93% of companies that eventually went bankrupt—up to three years before their collapse
- Flagged stocks that experienced 40%+ losses nearly four times more accurately than random selection
- Helped investors avoid $8.4 trillion in collective losses from 60 major companies that declined dramatically between 2020-2023

Why You Should Read This Report

For Investment Professionals: Learn how data-driven risk assessment can enhance your due diligence process, protect client assets, and fulfill your fiduciary responsibilities more effectively.

For Institutional Investors: Discover quantitative tools that can improve your portfolio construction, reduce downside exposure, and enhance risk-adjusted returns across market cycles.

For Risk Managers: Understand how predictive analytics can transform your approach to identifying and mitigating investment risks before they materialize into losses.

This report provides concrete evidence that major investment losses are often predictable and preventable. The data spans multiple decades, thousands of companies, and various market conditions—offering you the insights needed to make more informed investment decisions and protect capital more effectively.

1 Part One Introduction

Understanding Risk Through Data Science

Part One introduces ERS's risk assessment methodology and presents compelling evidence of its effectiveness through quantitative analysis of 2,619 companies over 3.4 years.

The 4 Dimensions of Risk™ (4D™)

The **4 Dimensions of Risk™** analyzes SEC-filed financial data to assign letter grades (A through F) that predict future price movements. Companies receiving higher grades (A, B) demonstrate stronger financial fundamentals, while lower grades (E, F) indicate elevated risk of significant losses.

How It Works: Proprietary algorithms process financial statements, cash flow data, and operational indicators to identify patterns that precede both outperformance and underperformance.

The Loss Indicator™ (LI™)

The **Loss Indicator™** serves as an early warning system, specifically designed to detect companies at immediate risk of substantial price declines. It uses ratings from "Acceptable" to "Condemned" to indicate increasing levels of financial distress.

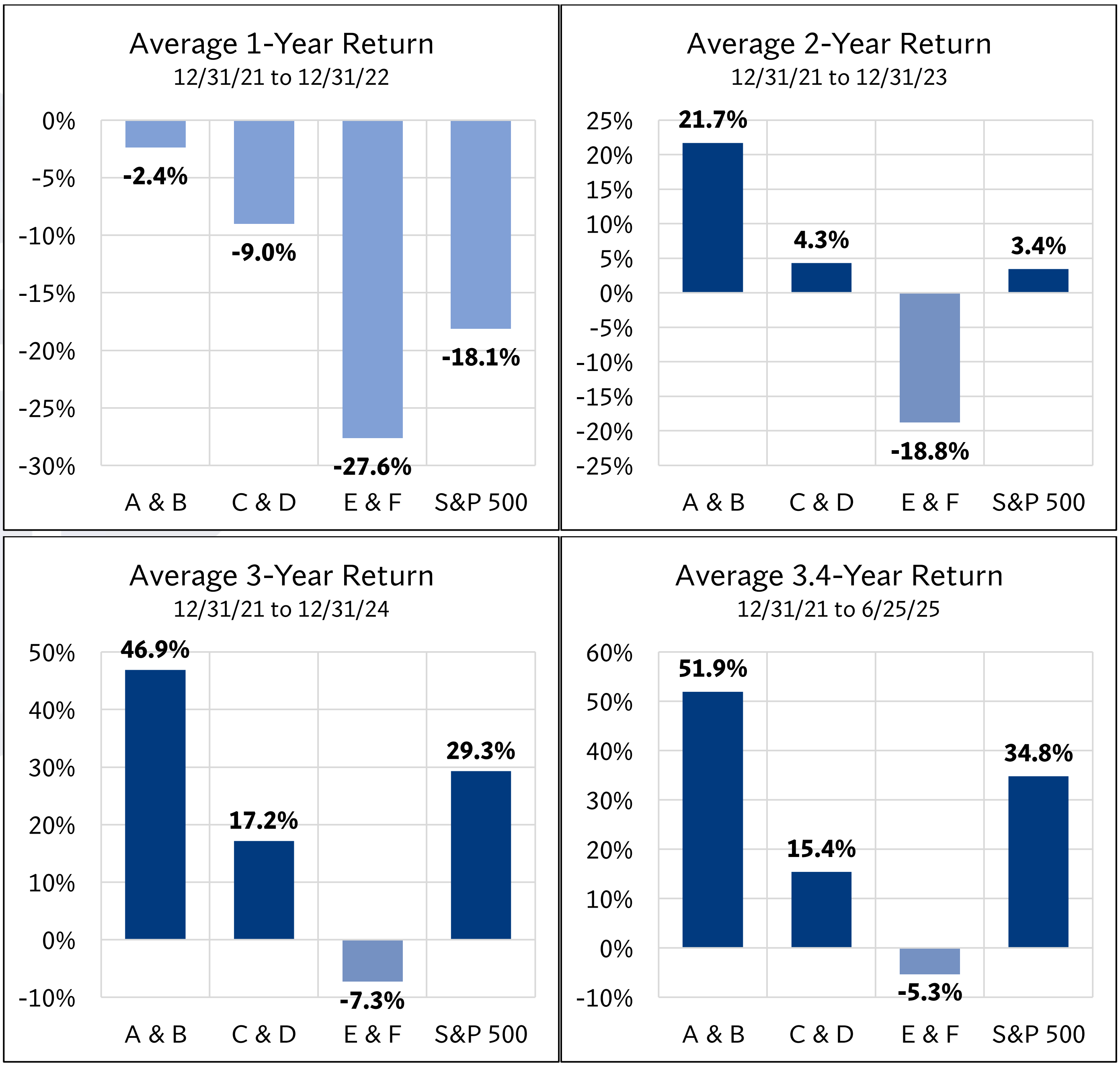
How It Works: The LI™ focuses on specific financial patterns that historically precede major price declines, providing critical intelligence for capital preservation.

What You'll Learn in Part One

The following sections demonstrate how these tools performed across 2,619 companies, showing concrete evidence of how ratings correlate with actual investment outcomes and the significant performance differences between high-rated and low-rated companies.

1.1 4 DIMENSIONS OF RISK (4D) Study – 3.4-Year Returns

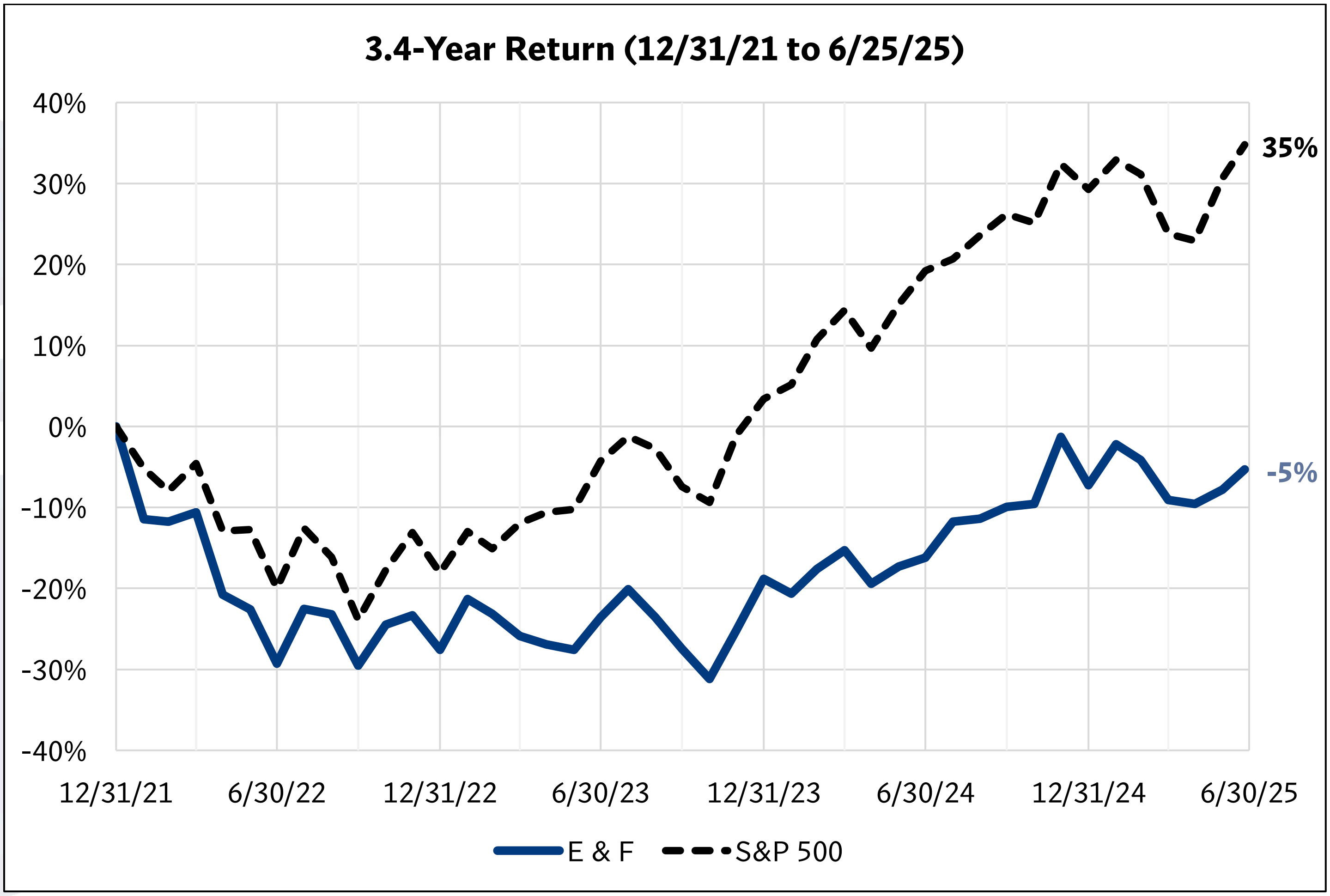
Description: The charts below show that ERS's **4 DIMENSIONS OF RISK** (**4D**) rating is strongly correlated with actual investment outcomes: companies rated **A or B** (low risk) produced significantly higher average returns over 1-, 2-, 3-, and 3.4-year periods than companies rated **E or F** (high risk). This consistent performance gradient across timeframes confirms that **4D** effectively stratifies financial risk and helps investors identify stocks more likely to outperform—or underperform—before those outcomes occur.



1.2 4 DIMENSIONS OF RISK (4D) Study Line Chart

Description: This chart below illustrates the cumulative total returns of an equal-weighted stock portfolio of the 1,346 stocks rated **E or F** by ERS's **4 DIMENSIONS OF RISK**™ over the 3.4-year period from December 31, 2021, to June 25, 2025.

- **E & F-Rated Stocks** (high risk) are shown in blue, and
- The **S&P 500** benchmark is in black.



4D "E" & "F" Stocks Underperformed the S&P 500 by **40%** Over 3.4 Years

The results reveal a clear and consistent divergence in performance based on **4D** scores. The high-risk **E & F**-rated stocks declined **-5%**, while the S&P 500 rose **35%**. Notably, this return gap widened steadily over time, particularly during periods of market recovery, illustrating the **4D**'s predictive ability to identify riskier investments and help investors reduce, avoid and prevent losses.

1.3 Frequency of 40% Declines When Held for 3.4 Years
4 DIMENSIONS OF RISK (4D) Study

Description: The table below demonstrates that stocks rated as high-risk by ERS's **4D** (ratings **E or F**) experienced a far higher rate of large losses (greater than 40%) compared to low-risk stocks (ratings **A or B**), with the worst-rated groups producing these losses nearly four times as often. The frequency of any loss was nearly twice as high for stocks rated **E or F**, and this pattern held true across all company sizes, steadily declining as **4D** scores worsened.

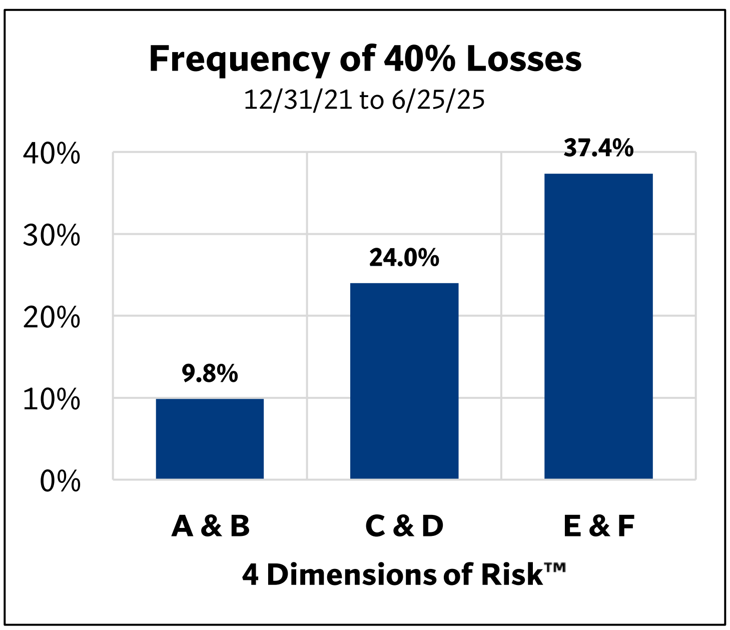
Key Finding:
ERS's Worst-Rated Stocks Were 4x More Likely to Suffer a **40% Loss**

Frequency of Losses – 12/31/21 to 6/25/25

4D	# of Co's	# of Losses	# of 40% Losses	Frequency of Losses	Frequency of 40% Losses
A or B	122	41	12	34%	**10%**
C or D	1,151	582	276	51%	**24%**
E or F	1,346	863	503	64%	**37%**
Average	2,619	1,486	791	57%	**30%**

Summary:

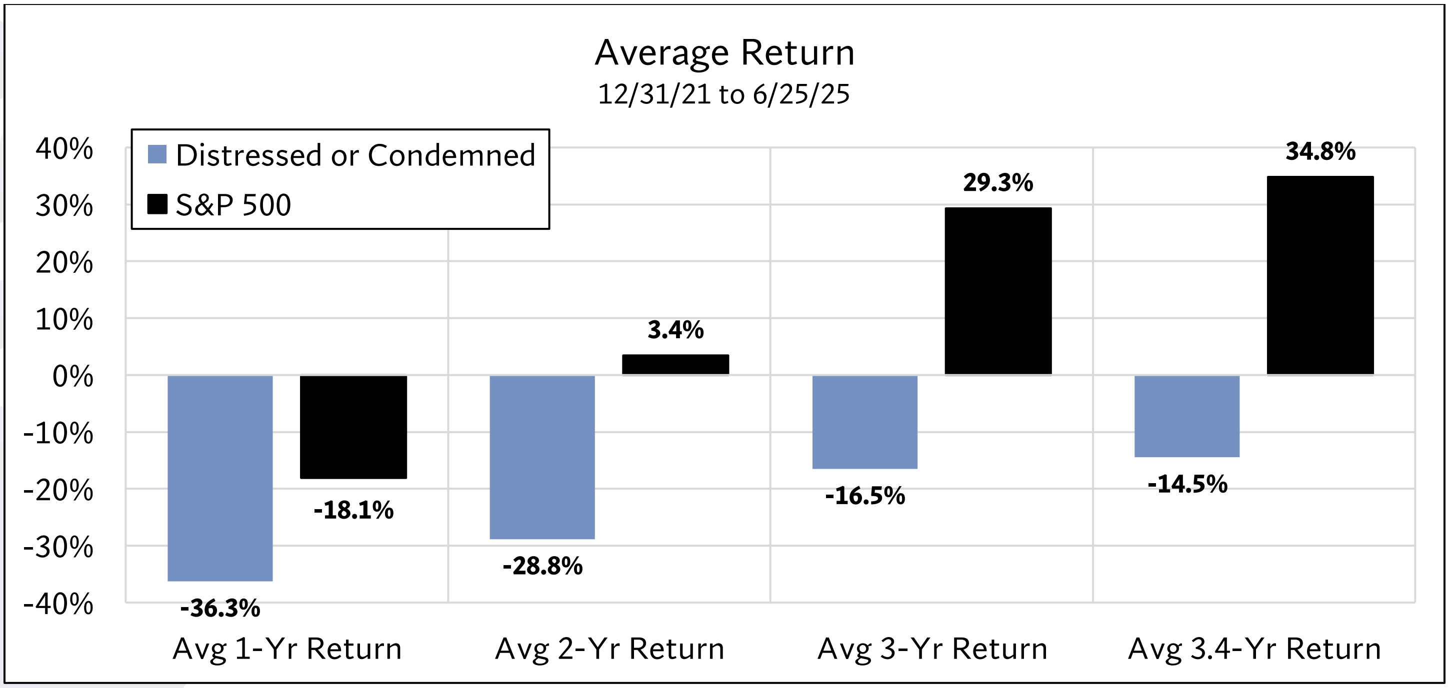
- 37.4% of the stocks rated **E or F** lost more than 40% of their value overall.
- 9.8% of the stocks rated **A or B** lost more than 40% of their value overall.
- The frequency of any loss, not just catastrophic ones, rose steadily as the **4D** worsened.



1.4 LOSS INDICATOR (LI) Study Supplement

While this section of the report has focused on the **4 DIMENSIONS OF RISK™** (**4D**), ERS provides a suite of other proprietary ratings tailored to different risk management goals. Among them is the **LOSS INDICATOR** (**LI**), which is specifically engineered to detect companies with elevated financial vulnerability with a high probability of a substantial price decline.

As shown in the table and chart below, stocks rated **Distressed** or **Condemned** by the **LI** experienced significantly higher loss rates, including catastrophic 40%+ losses nearly half the time. For fiduciaries and investment professionals whose priority is to avoid or reduce major losses, the **LI** serves as a powerful warning signal and complement to the **4D**.



Frequency of Losses – 12/31/21 to 6/25/25

LI	# of Co's	# of Losses	# of 40% Losses	Frequency of Losses	Frequency of 40% Losses
Distressed or Condemned	559	382	272	68%	**49%**
C or D	2619	1486	791	57%	**30%**

1 Part One Summary and Key Takeaways

What the Data Reveals

The quantitative analysis of 2,619 companies over 3.4 years provides compelling evidence that ERS's risk assessment tools deliver measurable predictive value:

Key Findings from the 4 Dimensions of Risk™ (4D™) Study:

Performance Gradient: Companies rated A or B consistently outperformed companies rated E or F across all time periods. The frequency of catastrophic losses (40%+ declines) varied dramatically:

- Only 10% of A/B-rated companies experienced 40%+ losses
- 37% of E/F-rated companies suffered 40%+ losses
- This represents nearly a 4x difference in major loss frequency

Market Outperformance Gap: While the S&P 500 gained 35% over the study period, E/F-rated stocks declined 5%—a 40 percentage point difference.

Key Findings from the Loss Indicator™ (LI™) Study:

Early Warning Effectiveness: Companies rated "Distressed" or "Condemned" experienced losses 68% of the time, with 49% suffering catastrophic 40%+ declines.

Critical Implications for Investors:

Predictive Power: Both tools demonstrated that investment risk can be systematically identified using rigorous financial analysis, providing advance warning to make informed decisions.

Scalable Application: The methodology worked across different company sizes, sectors, and market conditions.

The Bottom Line

Part One establishes that major investment losses are often predictable and preventable. Companies showing poor financial fundamentals consistently delivered worse outcomes for investors, demonstrating that systematic risk assessment can significantly improve capital preservation and risk-adjusted returns.

2 Part Two Introduction

*This section summarizes the key findings of Equity Risk Sciences' 25-year study, highlighting the predictive power of the **LOSS INDICATOR** for optimizing stock selection and risk management.*

Equity Risk Sciences' proprietary **LOSS INDICATOR** (**LI**) empowers investors with data-driven tools to minimize risk. These ratings (**Acceptable** to **Condemned**), derived from SEC-filed financial data, predict significant price losses.

Key Finding:
Stocks rated **Condemned** by the **LI** suffered **3-year losses averaging 28.9%**

Our 25-year study, spanning 15 comprehensive analyses across multiple timeframes (5, 10, 15, 20 and 25 years) and holding periods (6 months, 1 year, 2 years), reveals:

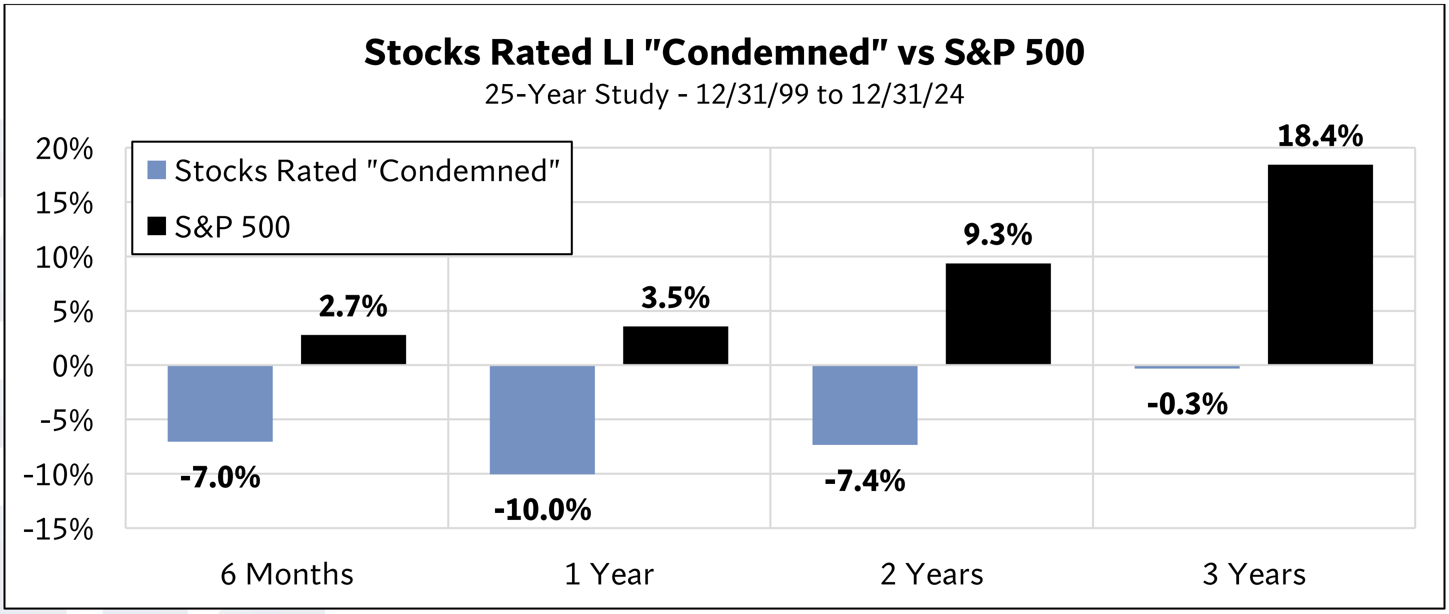
- **LI Flags Losers:** Among stocks which suffered losses, stocks rated **Condemned** by the **LI** declined by an average of 28.9% when held for 3 years, serving as a critical early warning system to avoid catastrophic losses.
- **Robust Methodology:** Analyzing the 1,500 largest U.S.-listed companies monthly, our ratings demonstrate statistically significant predictive power.

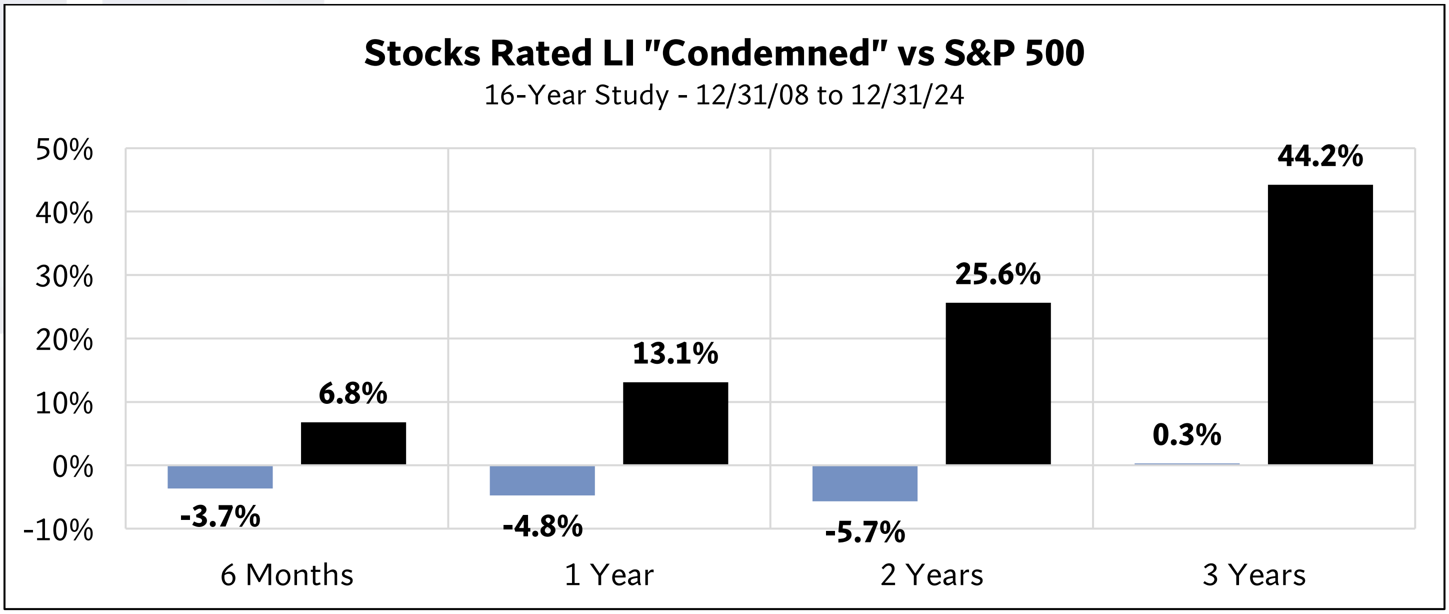
For fiduciaries and institutional investors, the **LOSS INDICATOR** provides a framework for building resilient, high-performing portfolios.

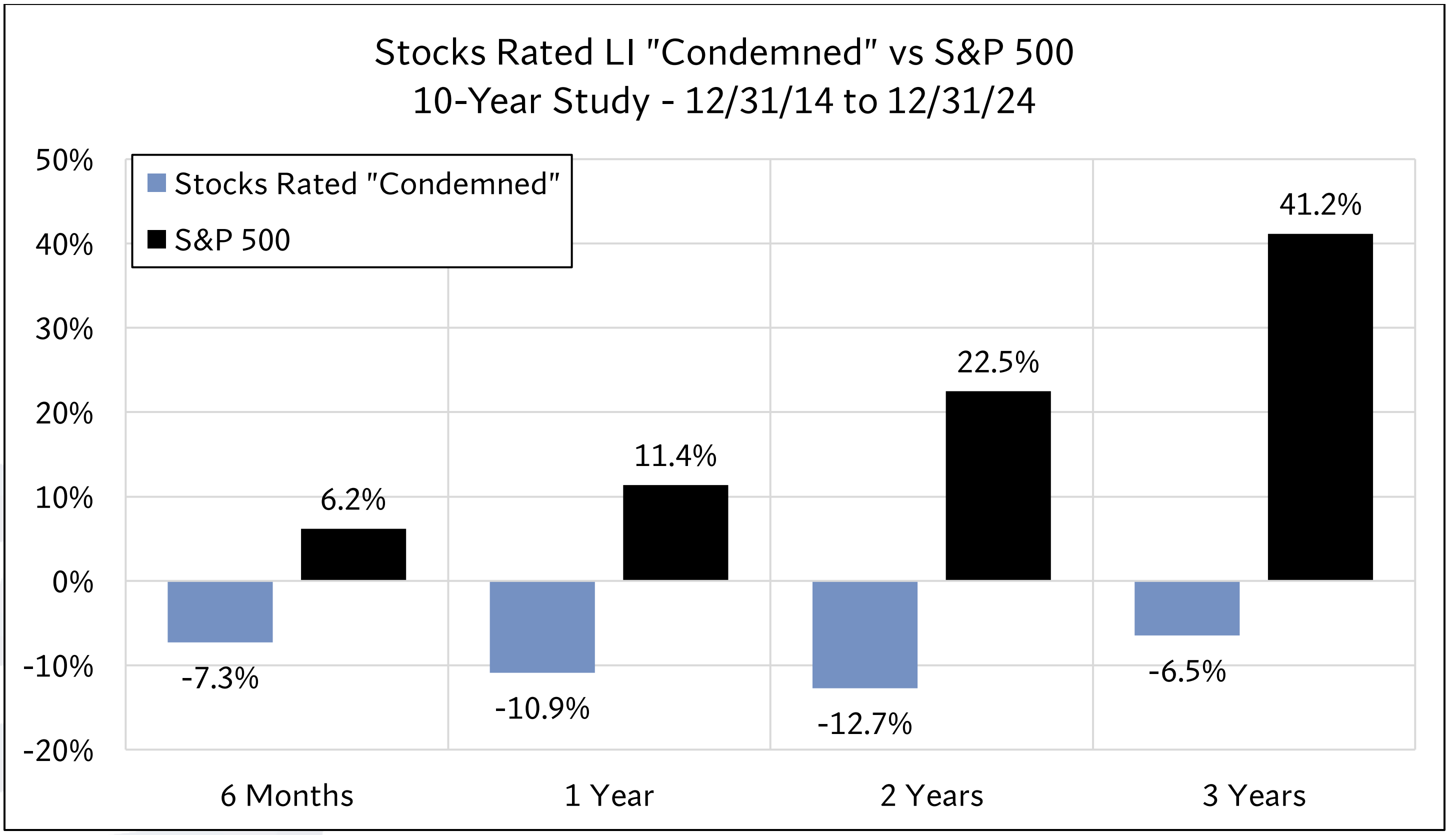
2.1 Loss Indicator – Summary of Results

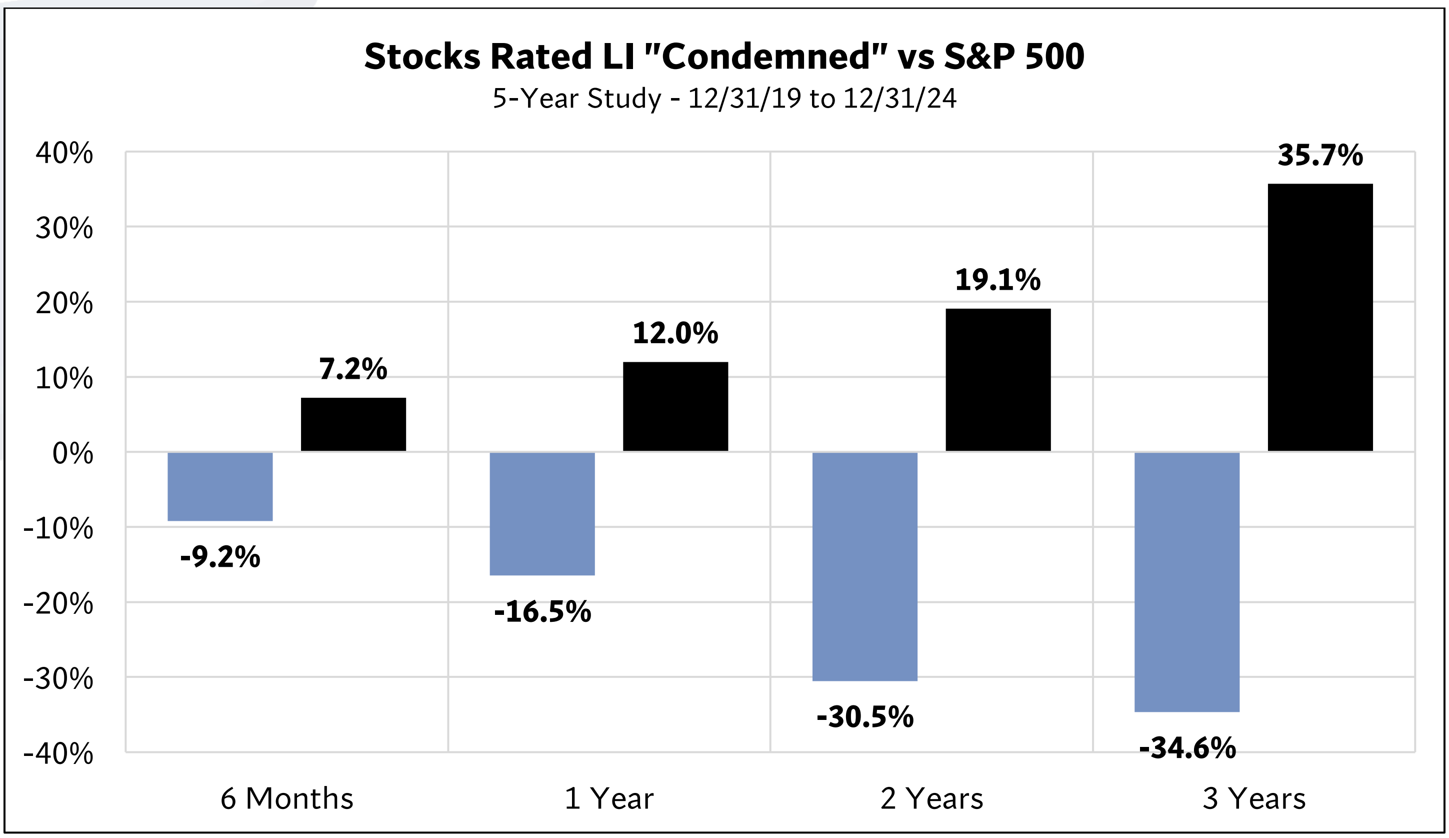
Highlights the LI's effectiveness as an early warning system, identifying high-risk stocks likely to experience significant price declines.

LI's Early Warning:
Avoiding **Condemned**-rated stocks could have saved investors, protecting portfolios from catastrophic losses.



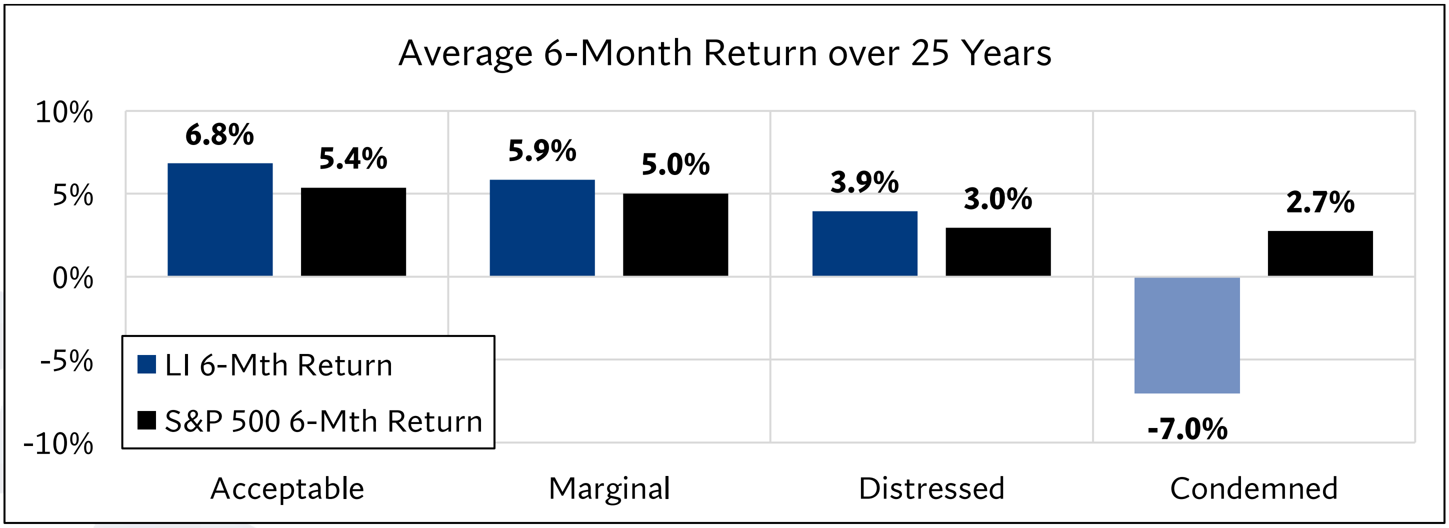


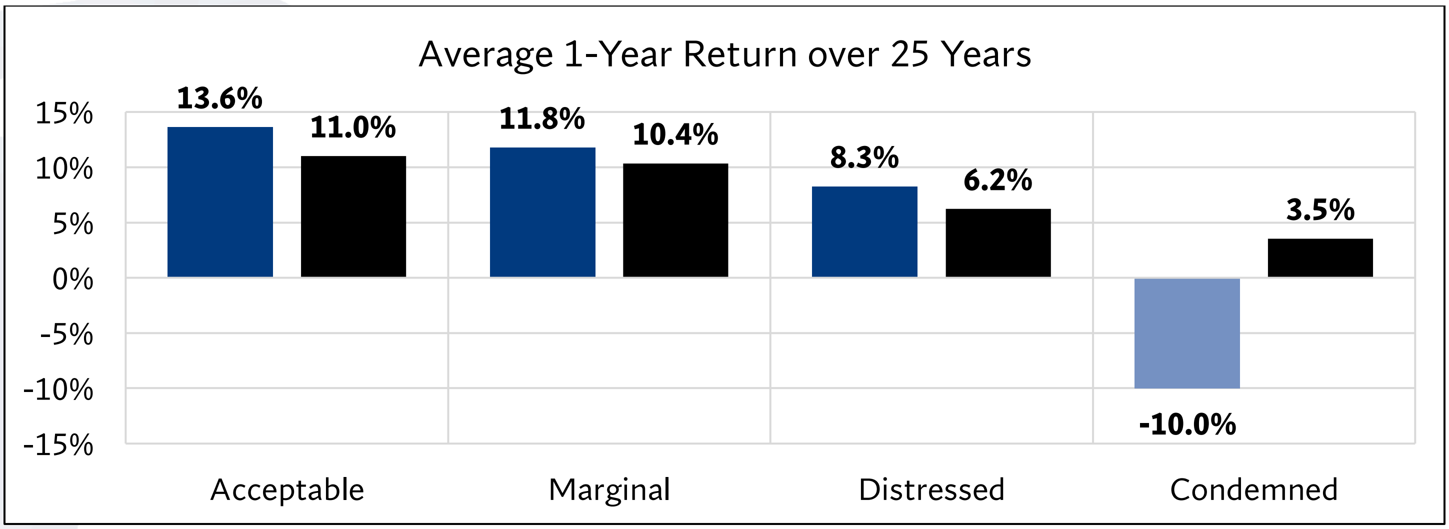

Stocks Rated LI "Condemned" vs S&P 500
10-Year Study - 12/31/14 to 12/31/24
Stocks Rated "Condemned"
S&P 500
50%
40%
30%
20%
10%
0%
-10%
-20%
6.2%
11.4%
22.5%
41.2%
-7.3%
-10.9%
-12.7%
-6.5%
6 Months
1 Year
2 Years
3 Years

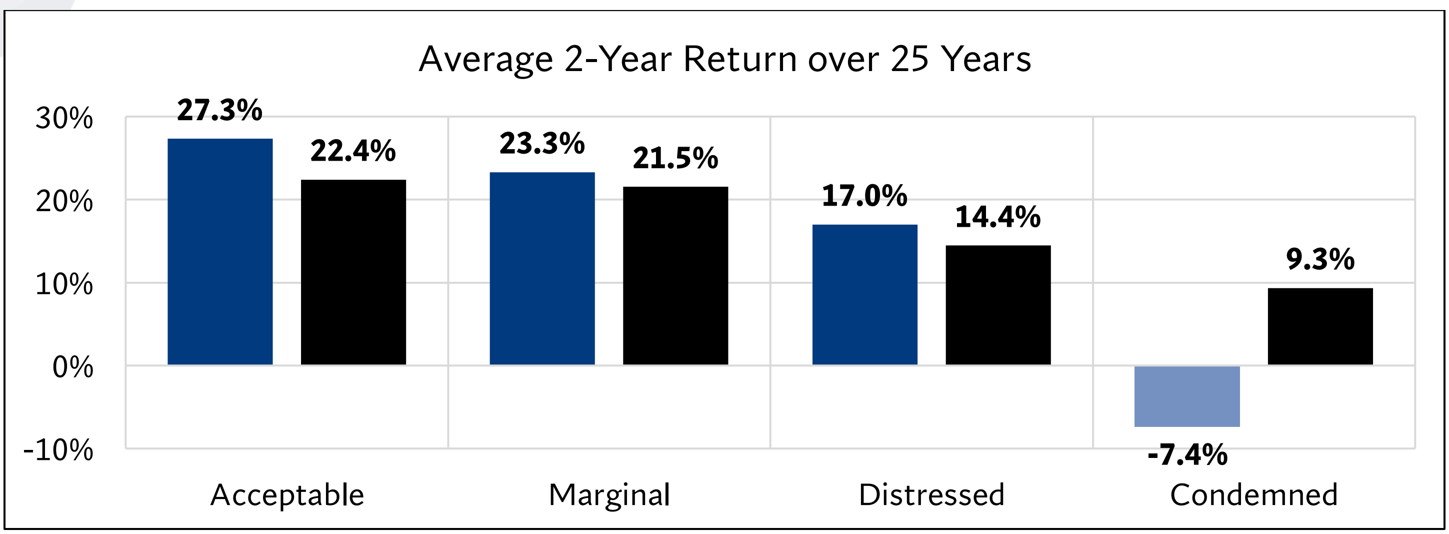

Stocks Rated LI "Condemned" vs S&P 500
5-Year Study - 12/31/19 to 12/31/24
40%
30%
20%
10%
0%
-10%
-20%
-30%
-40%
7.2%
12.0%
19.1%
35.7%
-9.2%
-16.5%
-30.5%
-34.6%
6 Months
1 Year
2 Years
3 Years

2.2 25-Year Study

Analyzes the performance of LI ratings for stocks held for 6 months, 1 year or 2 years over a 25-year period (1999–2024), compared to the S&P 500.

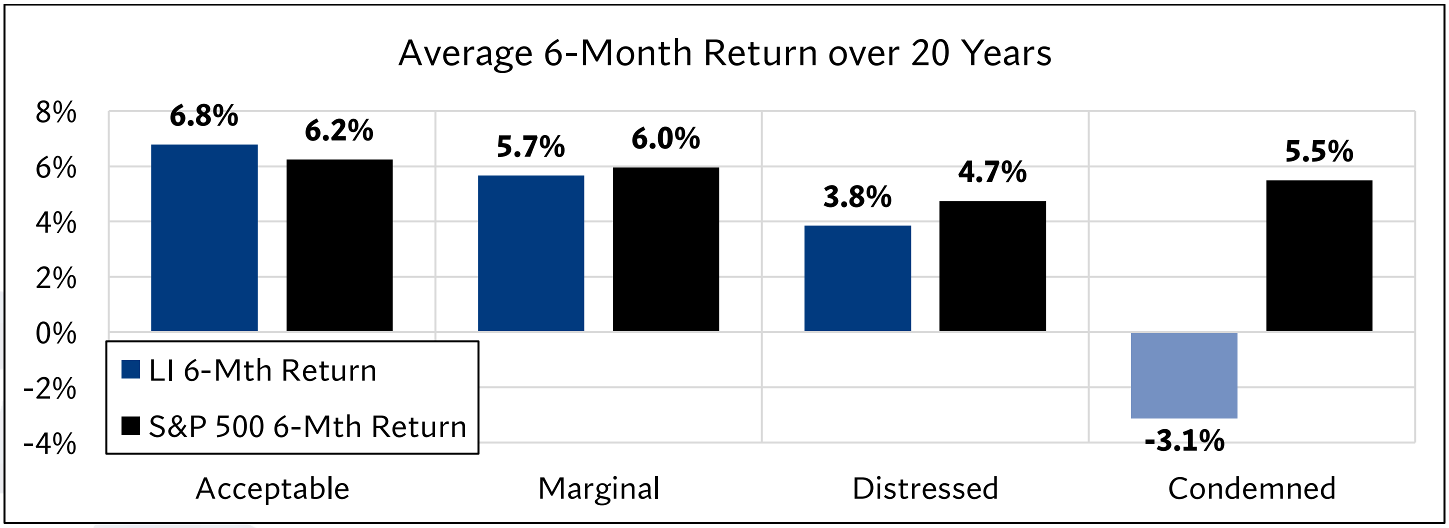


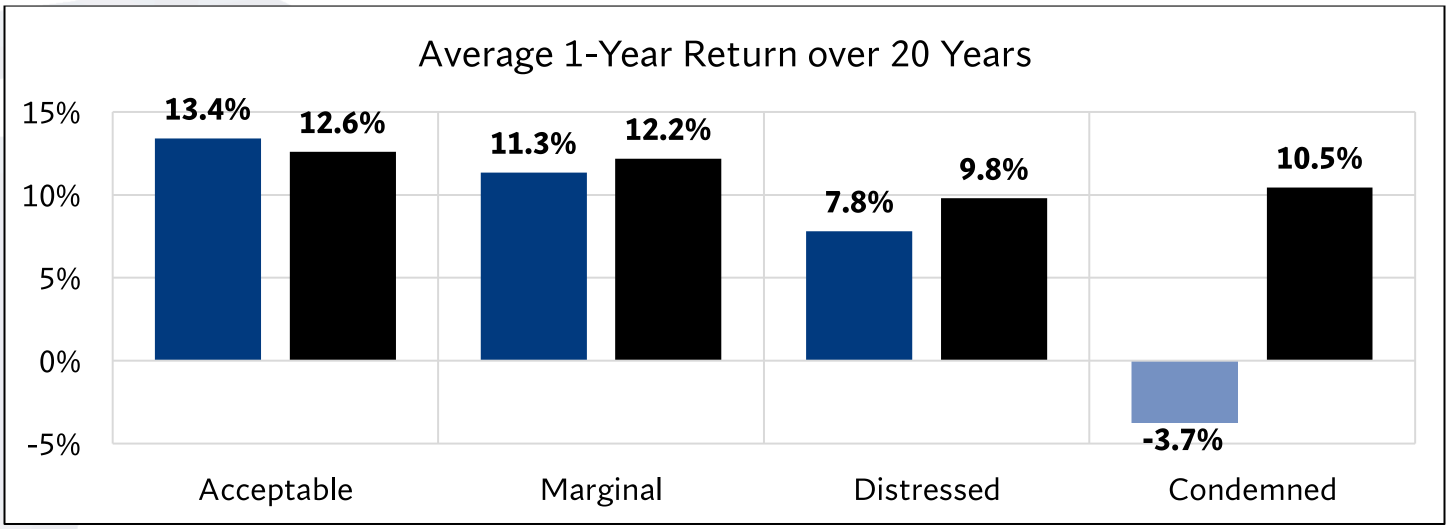


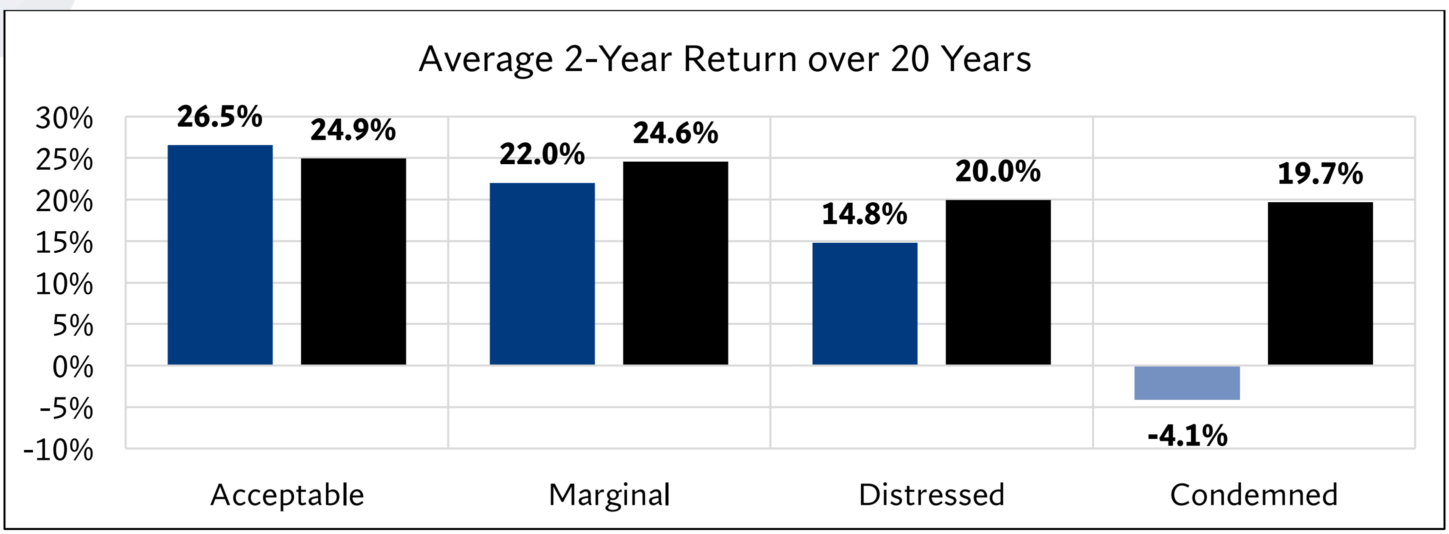


2.3 20-Year Study

Analyzes the performance of LI ratings for stocks held for 6 months, 1 year or 2 years over a 25-year period (1999–2024), compared to the S&P 500.

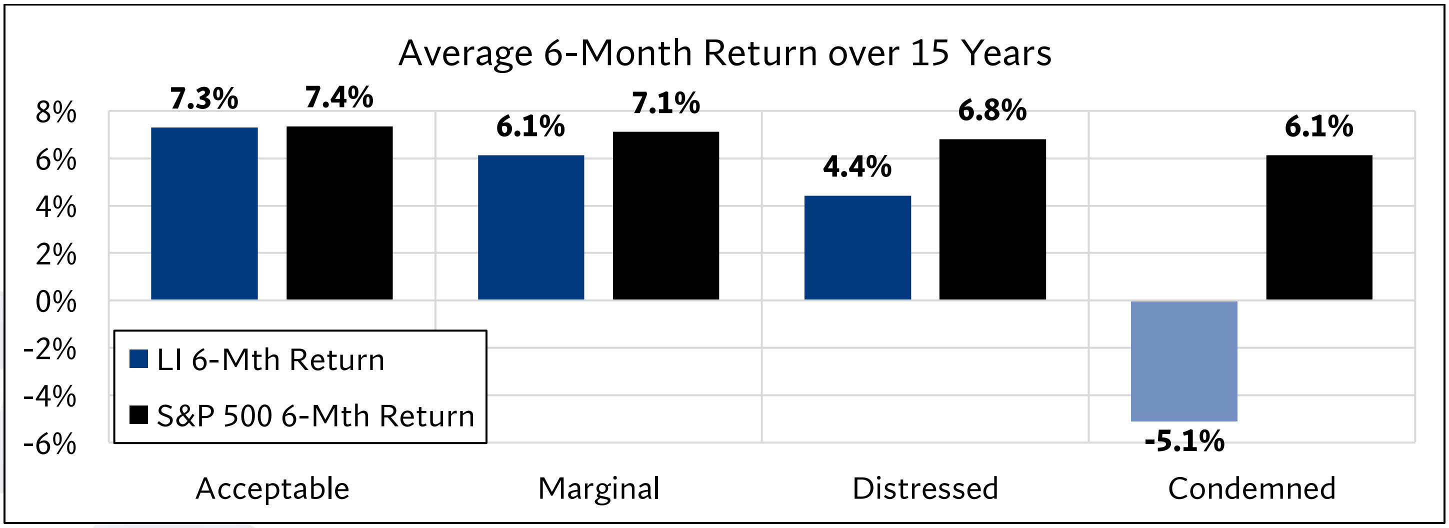


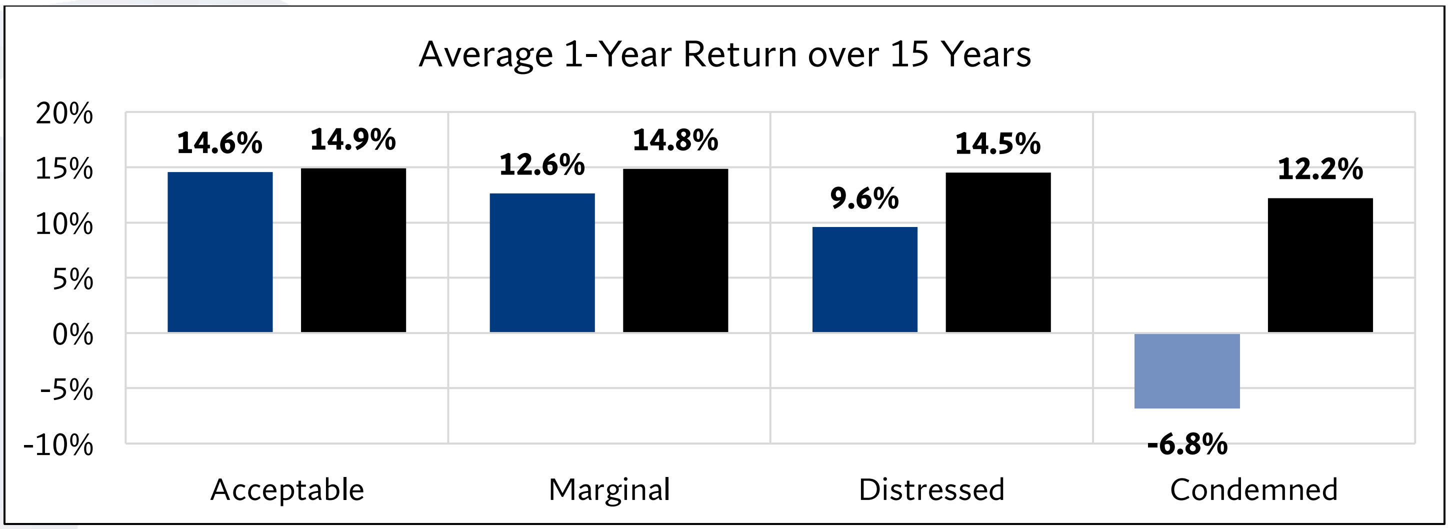


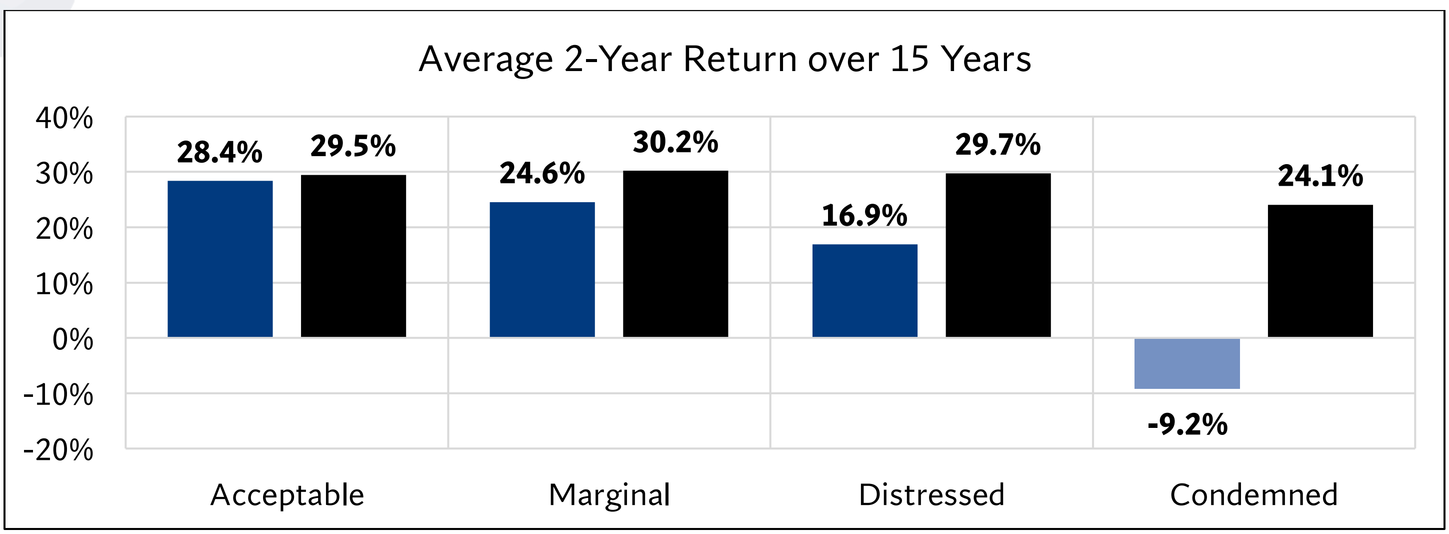


2.4 15-Year Study

Analyzes the performance of LI ratings for stocks held for 6 months, 1 year or 2 years over a 15-year timeframe (2009–2024), compared to market benchmarks.

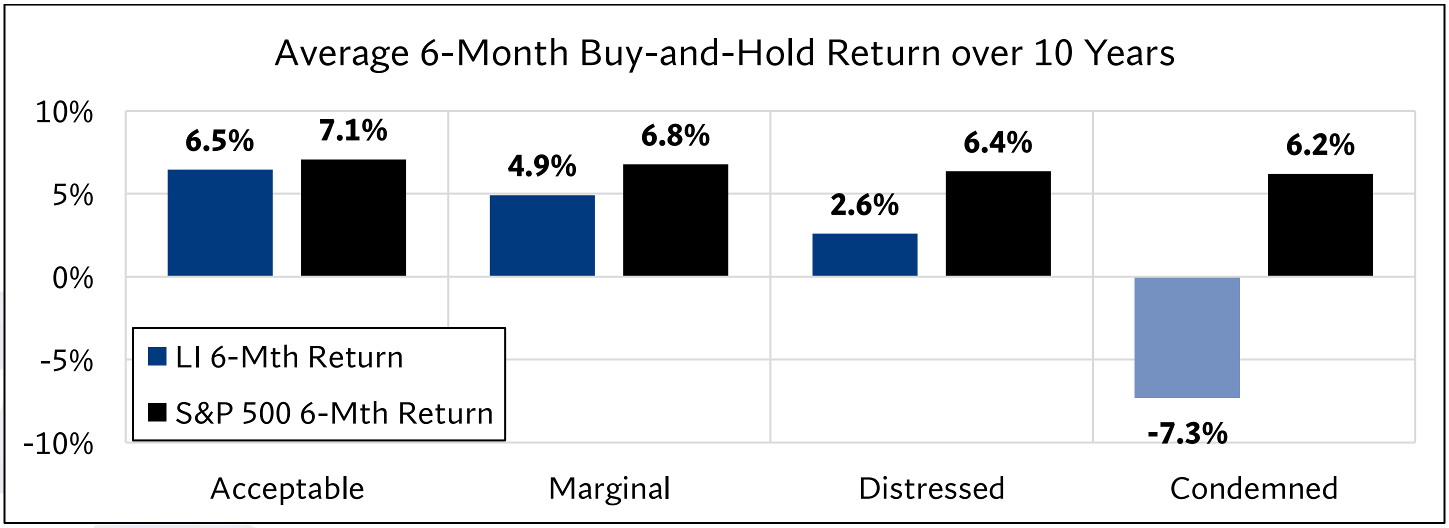


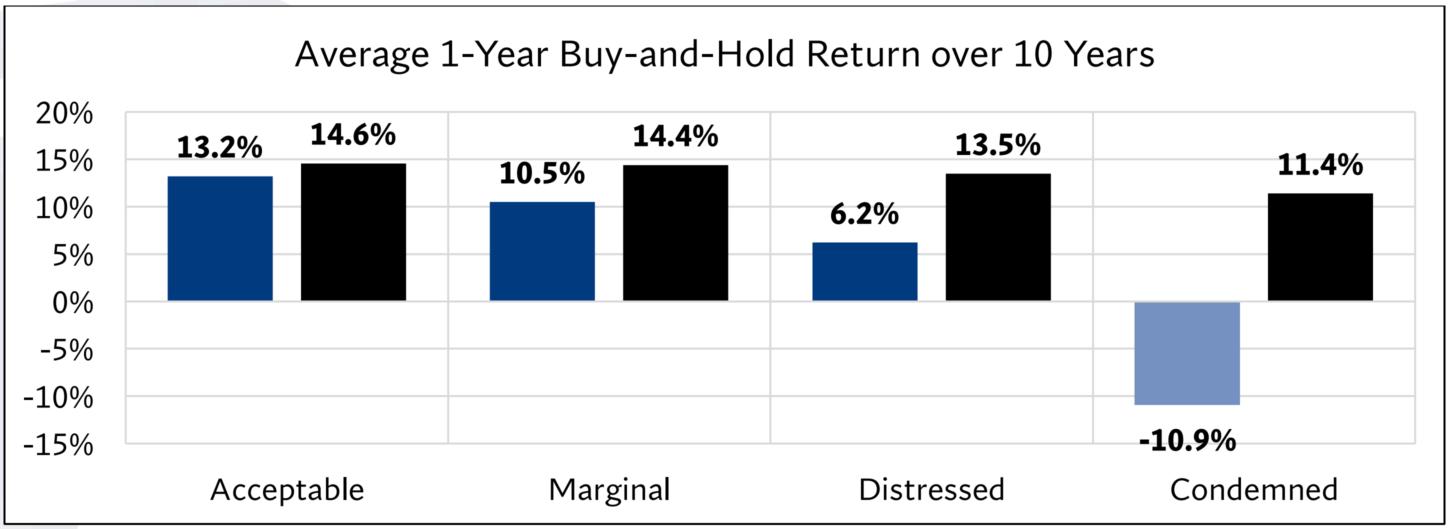


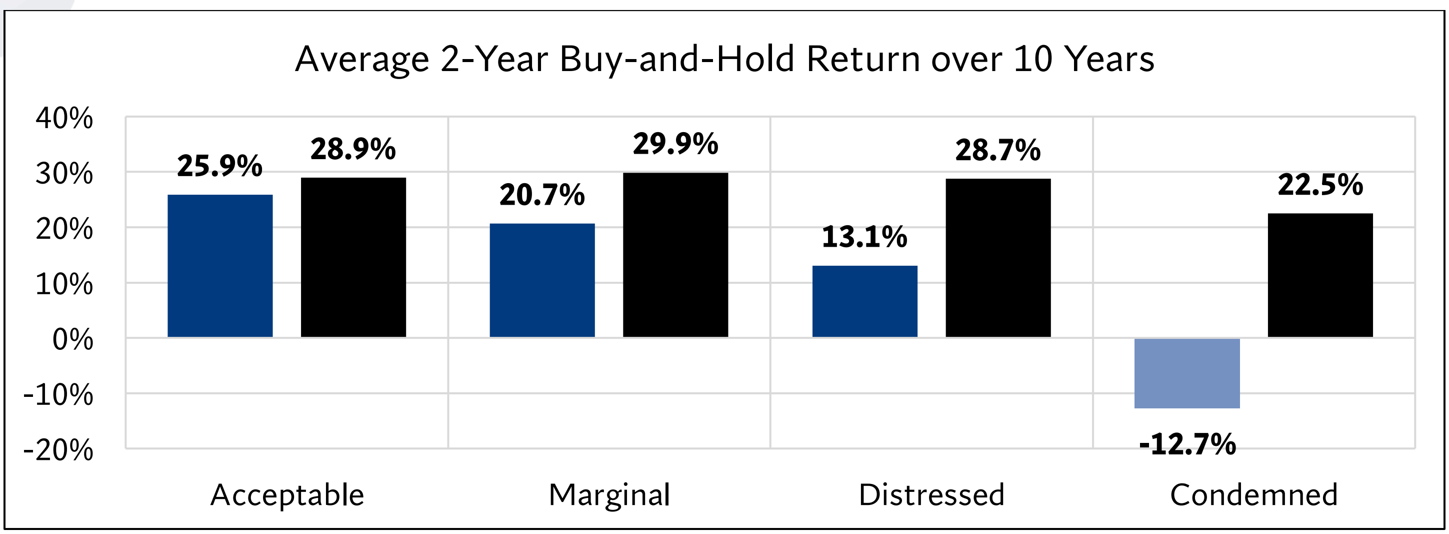


2.5 10-Year Study

Analyzes the performance of LI ratings for stocks held for 6 months, 1 year or 2 years over a 10-year timeframe (2014-2024), compared to market benchmarks.

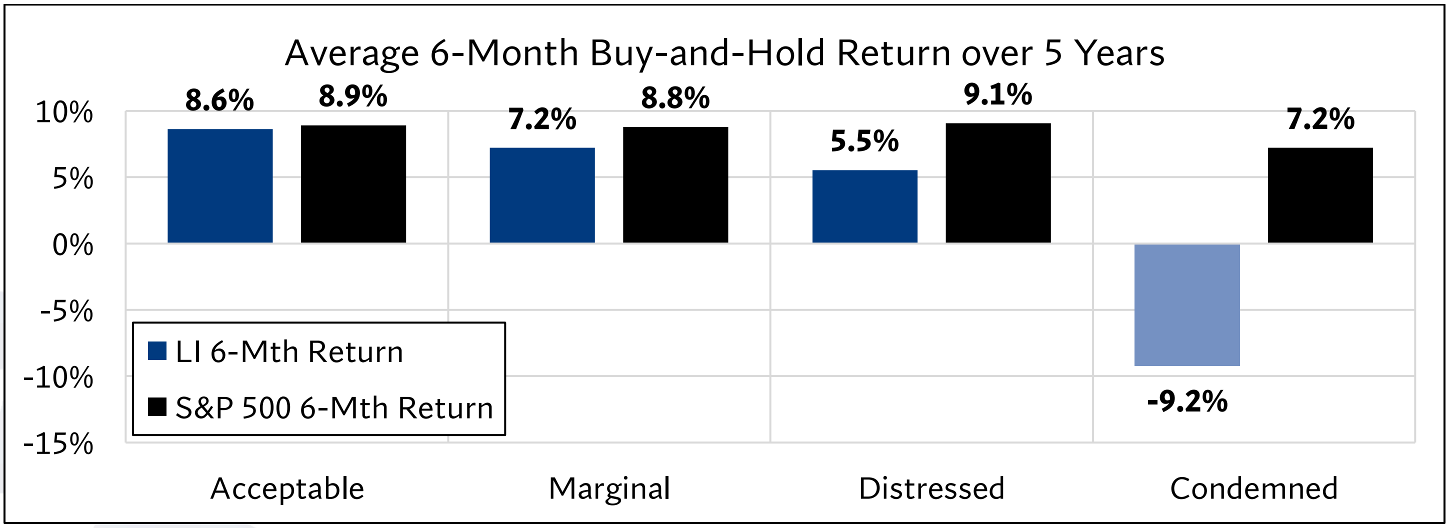


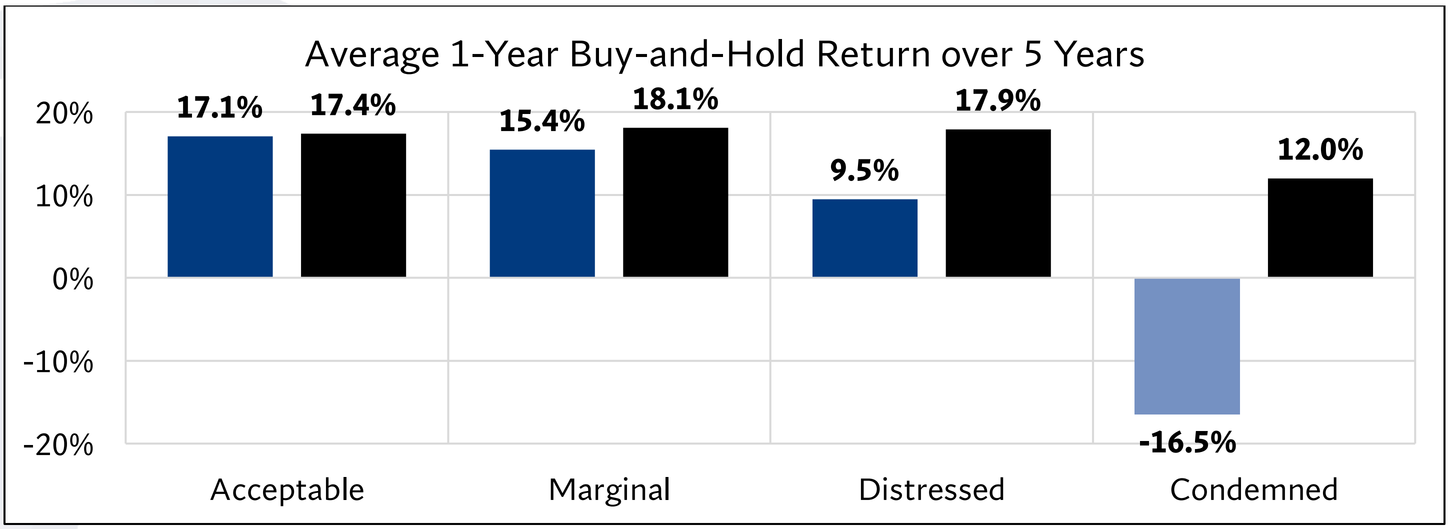


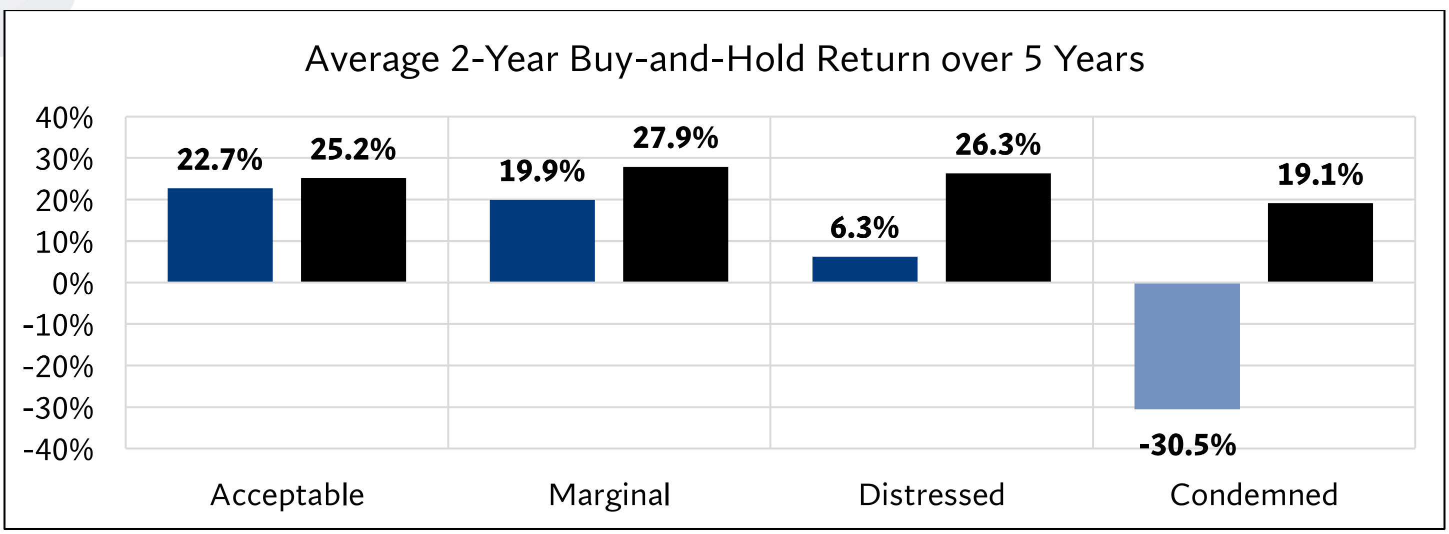


2.6 5-Year Study

Analyzes the performance of LI ratings for stocks held for 6 months, 1 year or 2 years over a 5-year timeframe (2019–2024), compared to market benchmarks.







2.7 Conclusion: Data-Centered Solutions for Institutional Investors

The findings of this 25-year, multi-period study are clear and consistent across timeframes, holding periods, and market cycles. The data presented in this report lead to several critical conclusions:

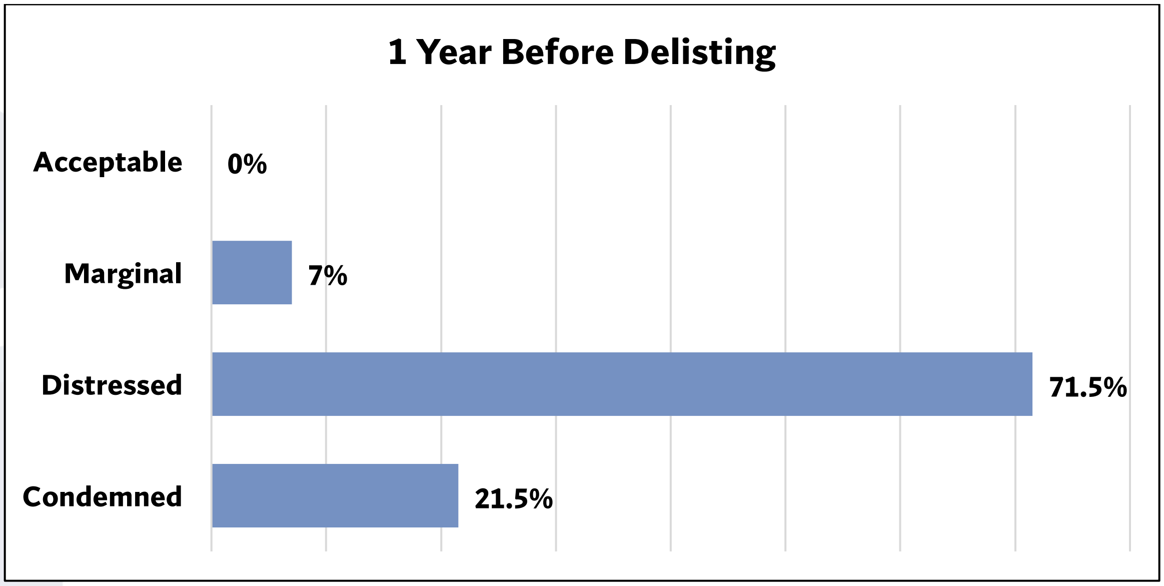
Key Insights:

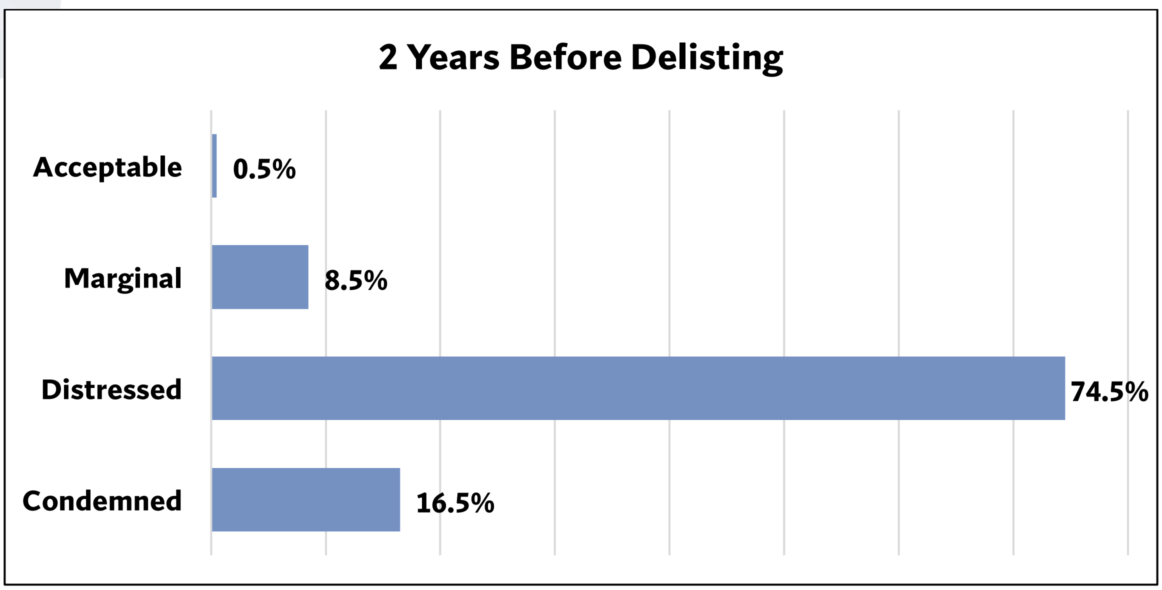
1. **The LI Flags Losers:** The **Loss Indicator** (**LI**) strongly and reliably identified stocks rated F that delivered deeply negative future returns. The F rating is a clear warning signal—one no fiduciary should ignore. The **LI** serves as a powerful tool for avoiding catastrophic downside risk. It provides a robust framework for intelligent stock selection and risk control.
2. **Consistent, Predictive Power:** Across 60 scenarios (15 studies × 4 differently rated portfolios), the **LI** rating exhibited clear, statistically meaningful predictive relationships to future returns. These relationships held true across multiple decades and economic conditions.
3. **Portfolio Construction Impact:** Simply avoiding stocks with the worst **LI** ratings could have materially improved portfolio outcomes for any institutional investor or fiduciary.

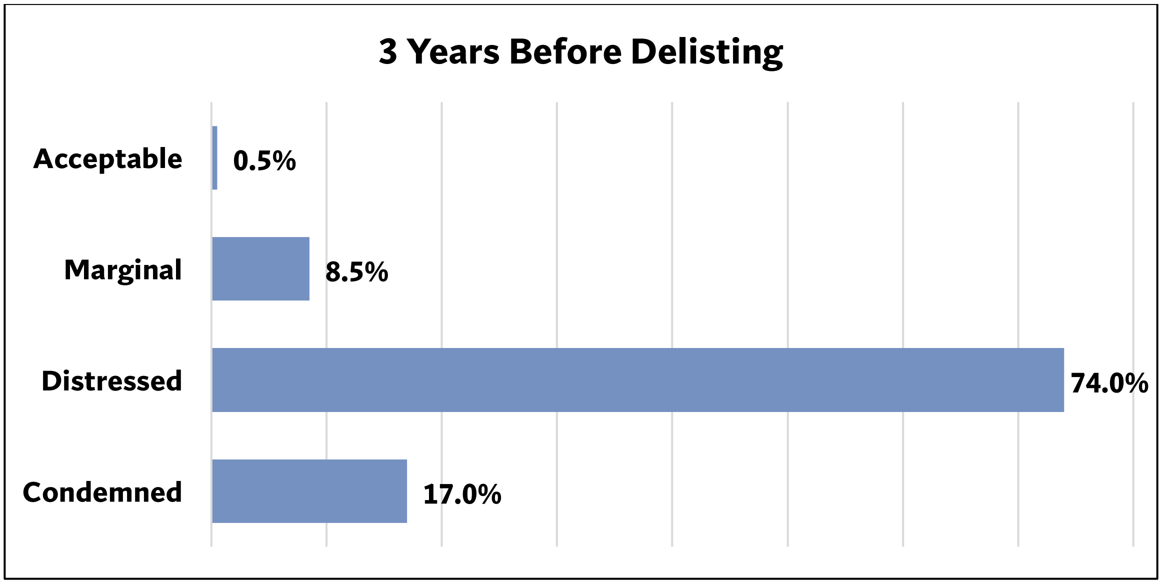
3 ERS's LOSS INDICATOR™ Bankruptcy Study

To protect their clients—and themselves—Registered Investment Advisors must detect rising risk well before catastrophic losses occur. Equity Risk Sciences (ERS) conducted a study of 200 companies that were ultimately delisted due to bankruptcy. By examining the **LOSS INDICATOR™** ratings one, two, and three years prior to each delisting, this research reveals a critical insight: the majority of these companies exhibited clear warning signs well in advance. Advisors who used ERS's **LOSS INDICATOR** would have had ample time to act, avoid exposure, fulfill their fiduciary duties and most importantly, saved investors from countless losses.

These findings provide compelling evidence that rigorous, data-driven ***risk monitoring*** can prevent devastating losses. The following analysis shows the efficacy of ERS's **LOSS INDICATOR**.







This three-year study illustrates the predictive strength of the **LOSS INDICATOR** in identifying companies at serious risk of collapse. One year before bankruptcy and delisting, a staggering **93%** of companies were rated either **"Distressed" (71.5%)** or **"Condemned" (21.5%)**. Two years prior, **91%** were already flagged in the same two high-risk categories. And even three years before delisting, **91%** of these firms were already showing severe financial deterioration.

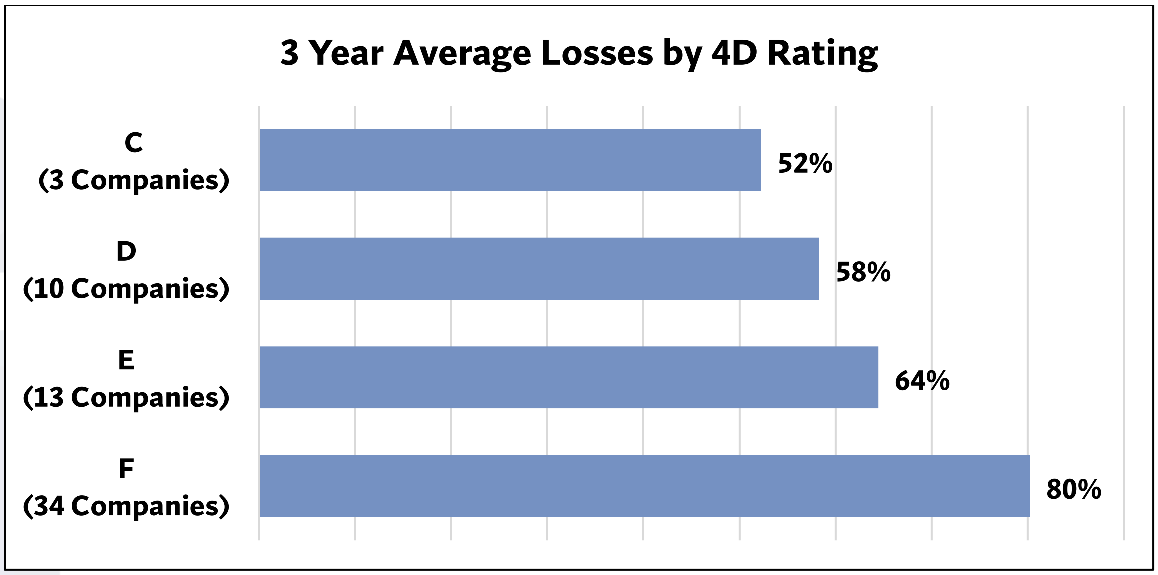
Only **0.5%** of companies were rated "Acceptable" two or three years before delisting—and **none** were rated "Acceptable" just one year before. This consistency across multiple years demonstrates that these failures were not sudden or unpredictable; they were statistically visible in advance. The **LOSS INDICATOR** provided early and actionable warnings in nearly every case, reinforcing its value as a powerful tool for loss prevention and fiduciary risk management.

4 ERS's 4 DIMENSIONS OF RISK™ (4D) - $8.4 Trillion Loss Study

The following pages present a study of 60 widely known companies that collectively lost $8.4 trillion in market value between September 30, 2020, and September 30, 2023.

These are not obscure or speculative names—they are companies many investors know, recognize, and may have owned. Yet every stock in this group experienced a drawdown of at least 40%, with an average decline of 72%, proving that even familiar names can be dangerously risky.

We grouped these companies by their **4 DIMENSIONS OF RISK** (**4D**) ratings prior to their decline. While **4D** ratings range from A+ to F, none of these 60 companies had a rating above C—and those with the worst **4D** ratings of "F" suffered even larger average losses, reinforcing the rating's efficacy at identifying extreme downside risk.



This chart illustrates the average 3-year drawdowns of 60 major public companies that collectively lost over **$8.4 trillion** in market value. As shown, the severity of loss directly correlates with ERS's letter-grade ratings: stocks rated **"F"** experienced average drawdowns of **80%**, while those rated **"E"**, **"D"**, and **"C"** fell by **64%**, **58%**, and **52%**, respectively. These were not obscure or speculative firms—many were household names once considered industry leaders.

While any stock can decline, this study reveals that companies rated **"E" or "F"** by ERS's **4D** rating consistently suffered the most extreme losses. These findings reinforce a vital message for investment advisors: avoid companies with the highest risk ratings. The complete list of these 60 companies appears on the next page. Many of the names will be familiar—and serve as a stark reminder that devastating losses are often foreseeable and preventable.

Company	4D™	Price Loss
3M	D	-55%
Amazon	E	-56%
Ameritrust	F	-98%
AT&T	D	-51%
Block	F	-84%
Charles Schwab	F	-50%
Cloudflare	F	-83%
Comcast	D	-54%
Coupang	F	-81%
Discovery	E	-66%
DoorDash	F	-82%
Faraday Future	F	-100%
Ford	D	-57%
Illumina	E	-75%
Intuitive Surgical	E	-50%
Lucid Group	F	-91%
Moderna	F	-80%
Nike	E	-53%
Palantir Tech.	F	-85%
PayPal	F	-81%
PNC	F	-51%
Rivian Auto	F	-93%
Rock-Tenn	D	-60%
Salesforce	F	-59%
Snap	F	-91%
Target	D	-58%
Truist Financial	F	-61%
U.S. Bancorp	F	-55%
Unity Software	F	-89%
Walt Disney	E	-60%

Company	4D™	Price Loss
Adobe	F	-60%
AMC Enter.	F	-99%
Applied Mats.	D	-55%
Blackstone	E	-52%
Boeing	E	-57%
Charter Comms	E	-63%
Coinbase Global	E	-91%
ContextLogic	F	-97%
Crown Castle	F	-57%
DocuSign	F	-87%
Estee Lauder	E	-62%
Fidelity	C	-40%
General Motors	C	-53%
Intel	C	-64%
Lam Research	D	-57%
Meta	E	-77%
Netflix	E	-76%
P10	F	-97%
Paramount	D	-88%
Peloton	F	-97%
Protective Cap.	F	-100%
Roblox	F	-83%
Roku	F	-92%
ServiceNow	F	-51%
Snowflake	F	-72%
Tesla	F	-73%
Twilio	F	-90%
Uber	F	-68%
Verizon	D	-49%
Zoom	F	-89%

5 4 DIMENSIONS OF RISK™ (4D) – S&P 500 Study Introduction

This section presents the results of a 3-year quantitative study by Equity Risk Sciences (ERS), examining how the **4 DIMENSIONS OF RISK** (**4D**) correlates with future stock performance across 491 members of the S&P 500 as of December 31, 2021. (We lacked full data on the other 9 companies – that's why they weren't included in the study.)

The **4D** is a proprietary, data-driven risk stratification system that uses only SEC-filed financial data to assess the probability and magnitude of future price declines. Companies were grouped by **4D** letter grades (**A** to **F**), and each group was treated as an equal-weighted portfolio, with outcomes measured over multiple time horizons.

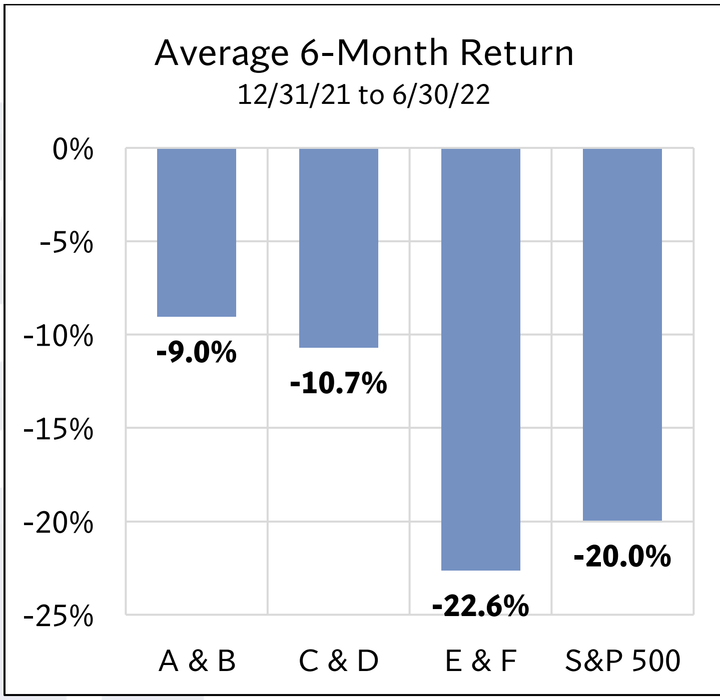
The findings confirm that **4D** scores strongly predict both future gains and losses, with low-risk stocks (**A** & **B**-rated) significantly outperforming high-risk stocks (**E** & **F**-rated) and experiencing substantially fewer large losses. Supplementary analysis of the best- and worst-rated companies further demonstrates the **4D**'s unique ability to identify outliers, mitigate losses, and improve risk-adjusted performance. Independent assessments by ***six leading AI platforms*** validate the study's methodology and conclusions.

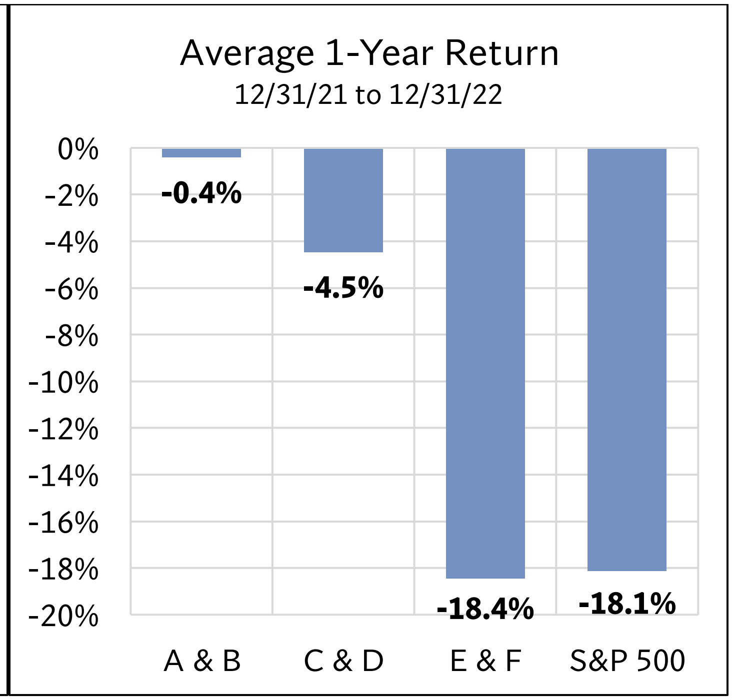
At ERS, our mission is to make investing safer and more rewarding, especially for those with the greatest need for capital protection. By equipping fiduciaries, investment professionals, and institutions with a transparent and repeatable tool for assessing investment suitability, the **4D** empowers better decisions, reduces preventable losses, and raises the standard of care across the investment industry.

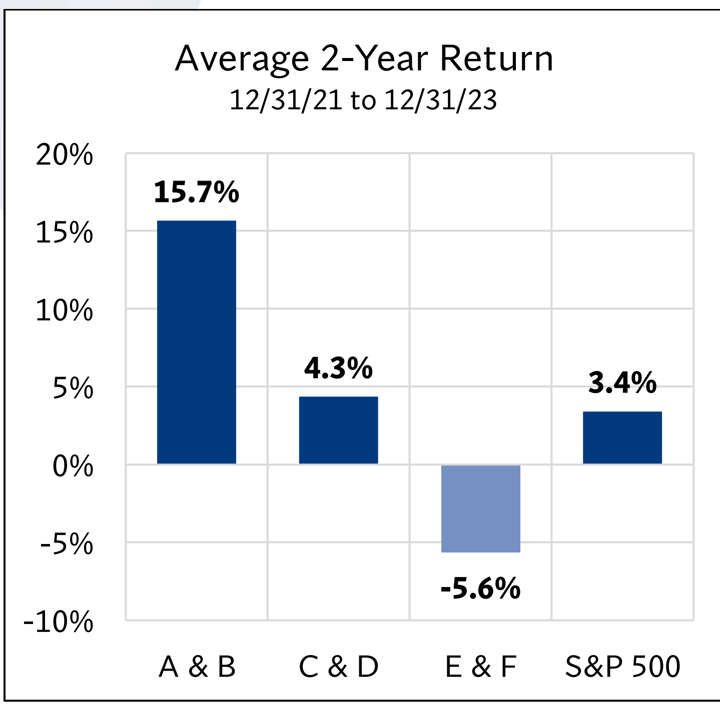
We appreciate your time and interest in our study. The pages that follow provide a detailed, data-supported analysis of the **4D**, along with multiple independent evaluations. We invite you to examine the evidence and judge for yourself the value and reliability of this tool for investment risk management.

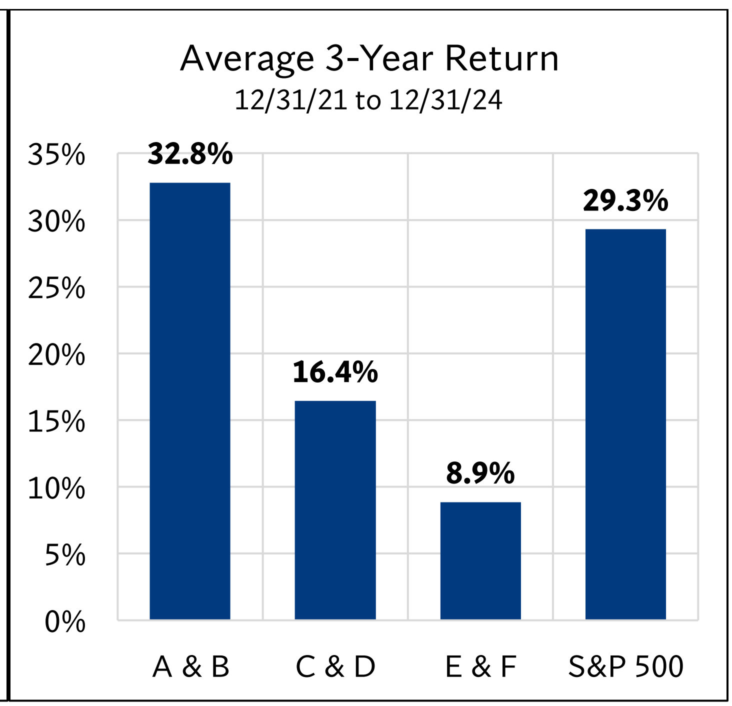
5.1 4 DIMENSIONS OF RISK – S&P 500 Study – 3-Year Returns

Description: The charts below show that ERS's **4 DIMENSIONS OF RISK** (**4D**) is strongly correlated with actual investment outcomes: companies rated **A** or **B** (low risk) produced significantly higher average returns over 6-month, 1-year, 2-year and 3-year periods than companies rated **E** or **F** (high risk). This consistent performance gradient across timeframes confirms that **4D** effectively stratifies financial risk and helps investors identify stocks more likely to outperform—or underperform—before those outcomes occur.





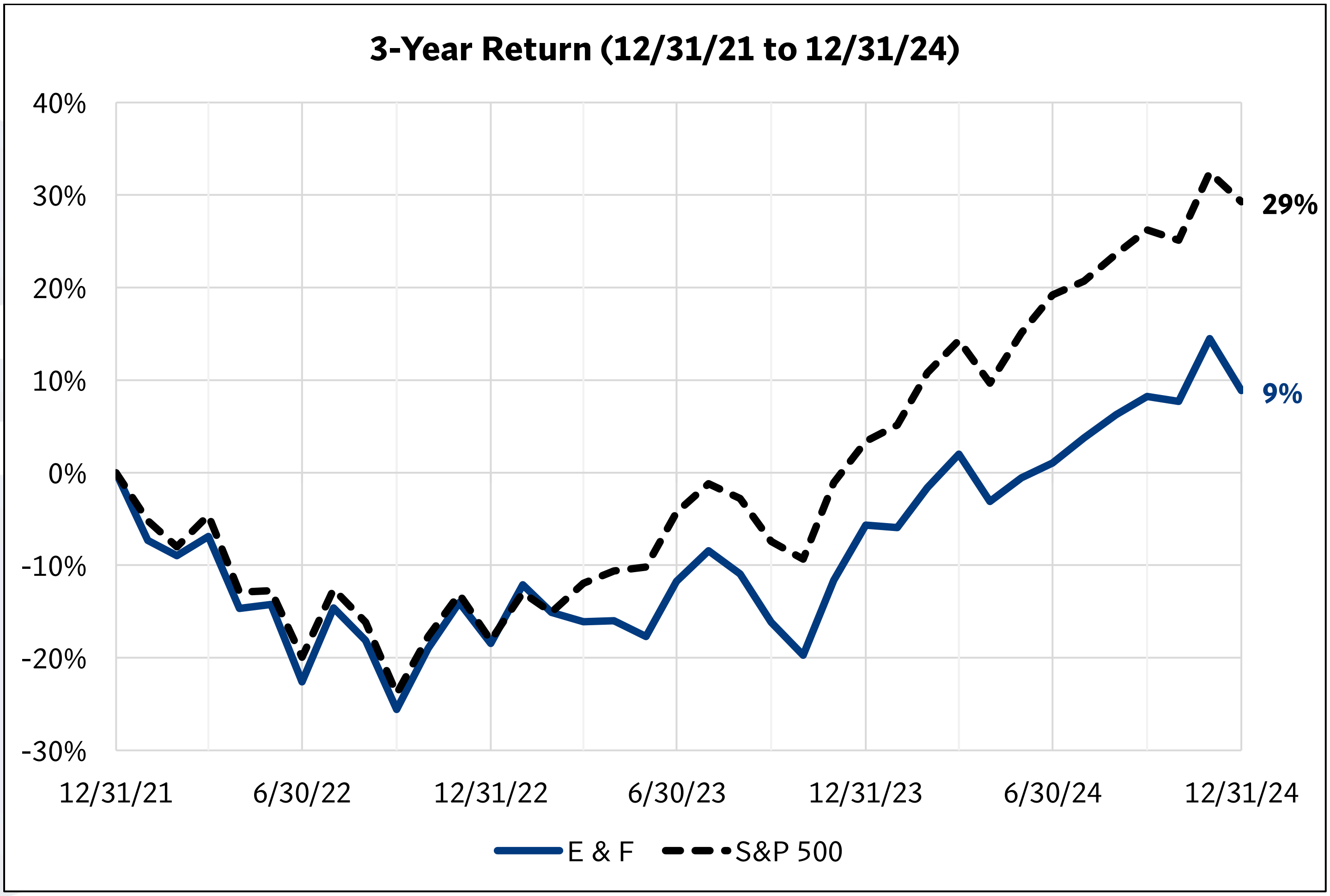




5.2 4 Dimensions of Risk – S&P 500 Study – Line Chart

Description: This chart below illustrates the cumulative total returns of an equal-weighted stock portfolio of the stocks rated **E or F** by ERS's **4 Dimensions of Risk**™ over the 3-year period from December 31, 2021, to December 31, 2024.

- **E & F-Rated Stocks** (high risk) are shown in blue, and
- The **S&P 500** benchmark is in black.



4D "E" & "F" Stocks Underperformed the S&P 500 by **20%** Over 2 Years

The results reveal a clear and consistent divergence in performance based on **4D** scores. The high-risk **E** & **F**-rated stocks only rose **9%**, while the S&P 500 rose **29%**. Notably, this returns gap widened steadily over time, particularly during periods of market recovery, illustrating the **4D**'s predictive ability to distinguish safer investments that compound gains and avoid prolonged losses.

5.3 Frequency of 25% Declines When Held for 3 Years
4 DIMENSIONS OF RISK – S&P 500 Study

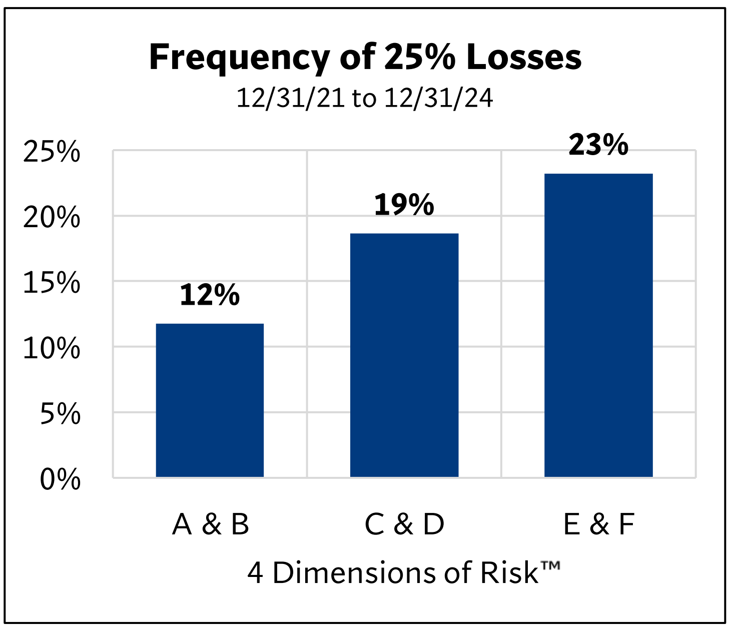
Description: The table below demonstrates that stocks rated as high-risk by ERS's **4D** (ratings **E** or **F**) experienced a far higher rate of large losses (greater than 25%) compared to low-risk stocks (ratings **A** or **B**), with the worst-rated groups producing these losses nearly twice as often. The frequency of any loss was 2.5 times as high for stocks rated **E** or **F**.

Key Finding:
ERS's Worst-Rated Stocks Were **2x** More Likely to Suffer a **25% Loss**

Frequency of Losses – 12/31/21 to 12/31/24

4D	# of Co's	# of Losses	# of 25% Losses	Frequency of Losses	Frequency of 25% Losses
A or B	17	3	2	18%	**12%**
C or D	263	103	49	39%	**19%**
E or F	211	99	49	47%	**23%**
Average	491	205	100	42%	**20%**

Summary:
- 23% of the stocks rated **E** or **F** lost more than 25% of their value overall.
- 12% of the stocks rated **A** or **B** lost more than 25% of their value overall.
- The frequency of any loss, not just catastrophic ones, rose steadily as the **4D** worsened.



6 Disclosures

This section provides important legal and informational disclosures regarding the use of this report and Equity Risk Sciences' proprietary ratings.

1. Purpose: This report is for informational purposes only and does not constitute legal, tax, financial, or investment advice. Investors should consult professional advisors before making investment decisions.

2. Data Sources: Equity Risk Sciences, Inc. ("ERS") derives its analysis from publicly available financial and market data, management estimates, and third-party research. While ERS believes these sources are reliable, it has not independently verified all information and assumes no responsibility for errors or omissions.

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