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Systematic Investment Averaging Strategy for Loss Recovery in Concentrated Equity Positions

(A Quantitative Analysis of Rupee Cost Averaging for Portfolio Risk Mitigation)

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Abstract: This study examines a systematic investment plan (SIP) strategy adapted for recovering capital from concentrated equity positions experiencing substantial unrealized losses exceeding 20%. We develop and test a methodology employing rupee cost averaging principles through regular, incremental share purchases at depreciated valuations to reduce average acquisition cost and improve exit probability at or near original investment levels.

The research employs dual analytical frameworks: empirical analysis using Praj Industries Limited across two distinct market periods (2007 and 2024), and theoretical modeling examining strategy performance under continuous price deterioration scenarios. The 2007 case study demonstrates successful capital recovery within five months through systematic monthly investments equal to 1/15th of initial capital. The 2024 scenario, characterized by severe 62% decline, reveals strategy limitations: while average cost basis declined from ₹821.15 to ₹569.11 (30.7% reduction), ultimate recovery remains contingent on favorable market movements.

Theoretical modeling across three deterioration rates (1%, 3%, 5% monthly decline) confirms that systematic averaging consistently reduces the price-to-average-cost differential compared to passive holding, though cannot guarantee capital recovery under continuous deterioration. Sensitivity analysis indicates the standard divisor of 15 for SIP amount calculation represents optimal balance between capital efficiency and effectiveness, with higher allocation ratios providing only marginal incremental benefit.

The strategy demonstrates three critical characteristics: (1) mandatory continuous capital deployment requirements constraining implementation to investors with available liquidity, (2) persistent dependency on eventual favorable price movements for exit execution, and (3) applicability exclusively to fundamentally sound securities experiencing temporary dislocations rather than structural deterioration. We conclude that systematic investment averaging serves as a tactical risk management tool for concentrated position exit rather than a guaranteed recovery mechanism, offering structured discipline for loss-averse investors while maintaining realistic expectations regarding market dependency and strategy limitations.

Keywords: *Dollar-Cost Averaging, Systematic Investment Plan, Concentrated Stock Positions, Loss Recovery, Rupee Cost Averaging, Behavioral Finance, Portfolio Risk Management.*

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I. INTRODUCTION

Equity market investments inherently carry the risk of capital loss, despite diversification strategies designed to mitigate such exposure. In practice, maintaining portfolio diversification discipline over extended investment horizons proves challenging for most investors. Consequently, portfolios often evolve into hybrid structures combining both diversified holdings and concentrated positions, violating fundamental risk management principles. When such concentrated positions experience substantial declines exceeding 20%, investors typically face a binary choice: realize the loss through liquidation or maintain the position with the expectation of future price recovery.

This research examines a third alternative: a systematic investment plan (SIP) strategy applied to individual equity positions. This methodology employs rupee cost averaging

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principles, traditionally utilized in mutual fund investing, to reduce the average acquisition cost through regular, incremental purchases during price declines. By systematically acquiring additional shares at depreciated valuations, investors can narrow the differential between current market price and average cost basis, thereby improving the probability of capital recovery.

This paper presents both empirical and theoretical analyses of this strategy. The empirical section examines Praj Industries Limited across two distinct time periods (2007 and 2024), demonstrating the strategy's application under real market conditions. The theoretical section develops a worst-case pricing model to assess strategy performance under continuous price deterioration scenarios. While the strategy demonstrates potential for loss mitigation, our analysis reveals critical limitations, including mandatory capital commitment requirements and persistent dependence on favorable market movements for ultimate capital recovery.

II. LITERATURE REVIEW AND STRATEGIC FRAMEWORK

The systematic investment averaging strategy for concentrated equity positions represents an adaptation of dollar-cost averaging principles to individual stock holdings experiencing significant unrealized losses. This section establishes the theoretical foundation, operational prerequisites, and psychological requirements necessary for effective strategy implementation.

➢ *Dollar-Cost Averaging and Systematic Investment Plans*

Scholars have debated the effectiveness of dollar-cost averaging (DCA) for decades. Early work by Constantinides (1979) argued that DCA is theoretically inferior when returns are assumed to be random and independent, showing that lump-sum investing usually produces better risk-adjusted outcomes if money is available upfront. Brennan, Li, and Torous (2005) confirmed this through a large study of portfolios from 1926–2003, finding lump-sum investing generally outperforms DCA, though they noted DCA may help investors who are highly loss-averse.

Later research highlighted situations where systematic investing can be useful. Statman (1995) explained that psychological factors—like avoiding regret and managing loss aversion—make DCA attractive despite its inefficiency. Milevsky and Posner (2003) showed mathematically that DCA can reduce risk for very cautious investors, especially in markets that tend to revert to the mean.

In emerging markets, studies have found stronger support for systematic investment plans (SIPs). Chodietty et al. (2022) examined Indian mutual funds and found SIPs often performed better than lump-sum investments. David, Purswani, and Jojo (2019) reached similar conclusions in Indian equity markets. Zein et al. (2023) compared SIP, lump sum, and value averaging, reporting that systematic approaches consistently delivered annual returns of 5–6% across different market conditions.

Researchers have also proposed improved versions of DCA. Lin and Xu (2017) introduced Modified DCA (MDCA), which increases investment during market declines and reduces it during rallies. Testing across six major global indices showed MDCA consistently beat traditional DCA. Marshall and Ellis (2019) developed Enhanced DCA (EDCA), which adjusts contributions based on past returns, leading to higher wealth in most simulated cases.

Another related method is value averaging, introduced by Edleson (1988, 2007). Here, investors adjust contributions to hit preset portfolio value targets. Panyagometh (2013) used simulations to show value averaging can outperform DCA over long horizons. However, Hayley (2013) criticized this approach, arguing that its performance metrics are biased and that it requires too much cash and active management, making it inefficient in practice.

➢ *Strategy Prerequisites*

Two fundamental conditions must be satisfied prior to strategy deployment:

- *Threshold Condition:*

The equity position must exhibit an unrealized loss exceeding 20% of initial investment value. This threshold is predicated on the observation that fundamentally sound securities experiencing corrections of this magnitude demonstrate higher probability of mean reversion compared to securities in structural decline.

- *Capital Allocation Priority:*

In portfolios containing multiple positions meeting the threshold condition, priority should be assigned to the position exhibiting the greatest absolute loss. This constraint reflects practical capital preservation considerations and maximizes the strategy's impact on overall portfolio recovery.

The strategy is exclusively applicable to securities meeting specific quality criteria: stable and competent management teams, robust fundamental metrics, consistent revenue generation, and established market recognition. Securities associated with companies experiencing managerial malfeasance, fraudulent activities, or governance failures are categorically unsuitable for this approach, as fundamental deterioration precludes price recovery. Additionally, small-cap equities with limited price history (less than two years) or recent initial public offerings lack sufficient historical data for informed strategy deployment.

➢ *Psychological Considerations*

Successful strategy execution demands specific investor psychology and discipline. Once systematic purchasing commences, investors must resist the impulse to prematurely liquidate positions and crystallize losses. The strategy's fundamental objective is portfolio rebalancing through loss-neutral exit from concentrated positions, not profit generation. Investors must maintain clear focus on capital preservation and portfolio optimization rather than speculative gains.

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➢ *Strategy Implementation Framework*

The systematic investment averaging strategy addresses a specific portfolio management challenge: executing loss-neutral exits from underperforming concentrated positions. Implementation follows a structured four-step process:

- *Step 1 – Capital Allocation Determination:*

Calculate the monthly SIP amount by dividing the initial investment value by 15. This divisor represents a pragmatic balance between additional capital requirements and strategy effectiveness, though subsequent empirical analysis examines alternative allocation ratios.

- *Step 2 – Systematic Purchase Initiation:*

Execute monthly purchases of the determined SIP amount at prevailing market prices.

- *Step 3 – Dynamic Exit Order Management:*

Establish a Good-Till-Triggered (GTT) order at the recalculated average acquisition price following each monthly purchase. This order automatically executes upon favorable price movement.

- *Step 4 – Exit Execution:*

The primary objective is position liquidation at or above average cost basis, achieving a loss-neutral exit that facilitates portfolio rebalancing without capital impairment.

Through rupee cost averaging mechanics, investors systematically acquire larger share quantities at depressed valuations, progressively reducing average cost basis and improving the probability of achieving exit conditions under favorable market movements.

III. EMPIRICAL ANALYSIS: PRAJ INDUSTRIES LIMITED CASE STUDY

To demonstrate practical application and efficacy of the systematic investment averaging strategy, we analyze Praj Industries Limited, a small-cap engineering company with market capitalization of ₹5,607 crore. With over three decades of operational history, Praj Industries provides extensive price data suitable for rigorous analysis. Historical monthly price movements exhibit significant volatility, ranging from -47% to +69% as shown in Figure 1, creating multiple scenarios satisfying the 20% decline threshold condition. This empirical analysis examines two distinct time periods: May 2007 and December 2024, representing different market cycles and volatility regimes. The analysis excludes dividend income and transaction costs, focusing exclusively on price dynamics.

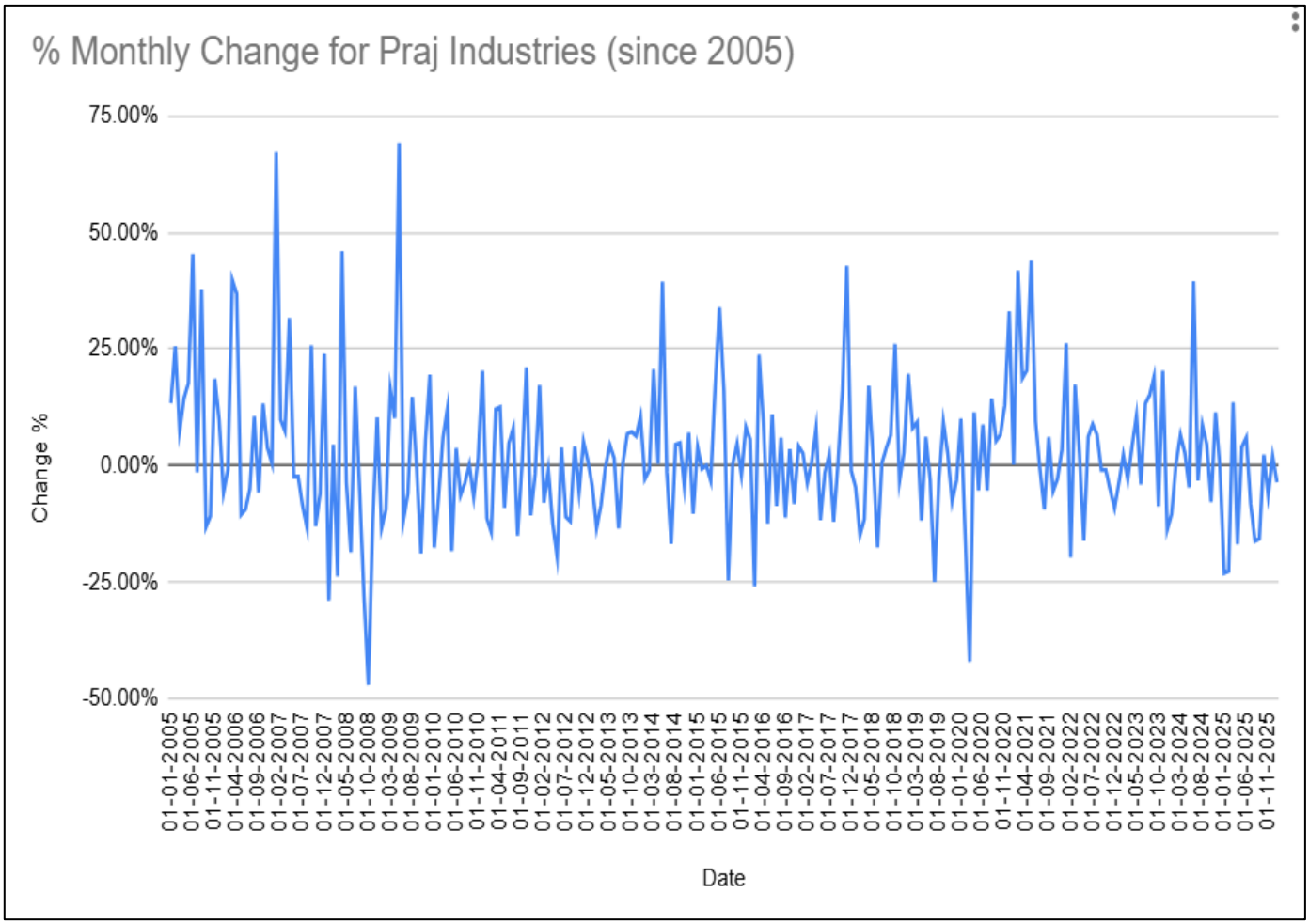

Fig 1 % Monthly Change for Praj Industries (Since 2005)

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➢ *Case Study 1: May 2007 Investment Scenario*

- *Initial Position Characteristics:*

✓ Investment Amount: ₹100,000.00
✓ Entry Price (May 1, 2007): ₹243.62
✓ Shares Acquired: 410 units (₹100,000 ÷ ₹243.62)

Following initial acquisition, the position experienced rapid deterioration. By August 2007, the portfolio value declined to ₹77,367, representing a 22.54% unrealized loss, thus satisfying the threshold condition for strategy activation. The table below presents the price trajectory during this period:

Table 1 May 2007 Investment Scenario

Date	Price (₹)	% Change	Portfolio Value (₹)
May 1, 2007	243.62	0.00%	99,884
June 1, 2007	238.03	-2.29%	97,592
July 1, 2007	217.50	-10.72%	89,175
Aug 1, 2007	188.70	-22.54%	77,367
Dec 1, 2007	240.75	-1.18%	98,708

Notably, maintaining the position without intervention through December 2007 would have resulted in near-complete recovery, with only a 1.18% residual loss. However, such patience requires considerable emotional discipline, particularly when facing interim losses exceeding 22%. Many investors, driven by loss aversion and emotional decision-making, would likely liquidate during the decline, crystallizing substantial losses.

- *Strategy Application and Outcomes:*

Upon satisfying the 20% decline threshold in August 2007, the investor would initiate systematic purchasing at ₹6,666.67 monthly (₹100,000 ÷ 15). The following table demonstrates the progressive impact of systematic averaging:

Date	Price (₹)	SIP (₹)	Total Shares	Total Invested (₹)	Avg Price (₹)
May 2007	243.62	—	410	99,884	243.62
Aug 2007	188.70	6,667	410 + 6,666.67 /188.70 = 445	106,550.87	106,550.87 / 445 = 239.44
Sep 2007	237.45	6,667	445 + 6,666.67 /237.45 = 473	113,217.53	113,217.53 / 473 = 239.36
Oct 2007	206.65	6,667	473 + 6,666.67 /206.65 = 505	119,884.20	119,884.20 / 505 = 237.39
Nov 2007	194.20	6,667	505 + 6,666.67 /194.20 = 539	126,550.87	126,550.87 / 539 = 234.79
Dec 2007	240.75	—	539	126,550.87	234.79

By December 2007, when the market price reached ₹240.75, it exceeded the average cost basis of ₹234.79, triggering the exit condition. Liquidating the position would yield ₹126,551 (539 shares × ₹234.79). After deducting the additional capital deployed through SIP (₹6,667 × 4 = ₹26,667), the net recovered amount equals ₹99,884, matching the original investment. This demonstrates successful capital recovery, though it required both additional capital commitment and favorable market price movement. Figure 2 visually captures this.

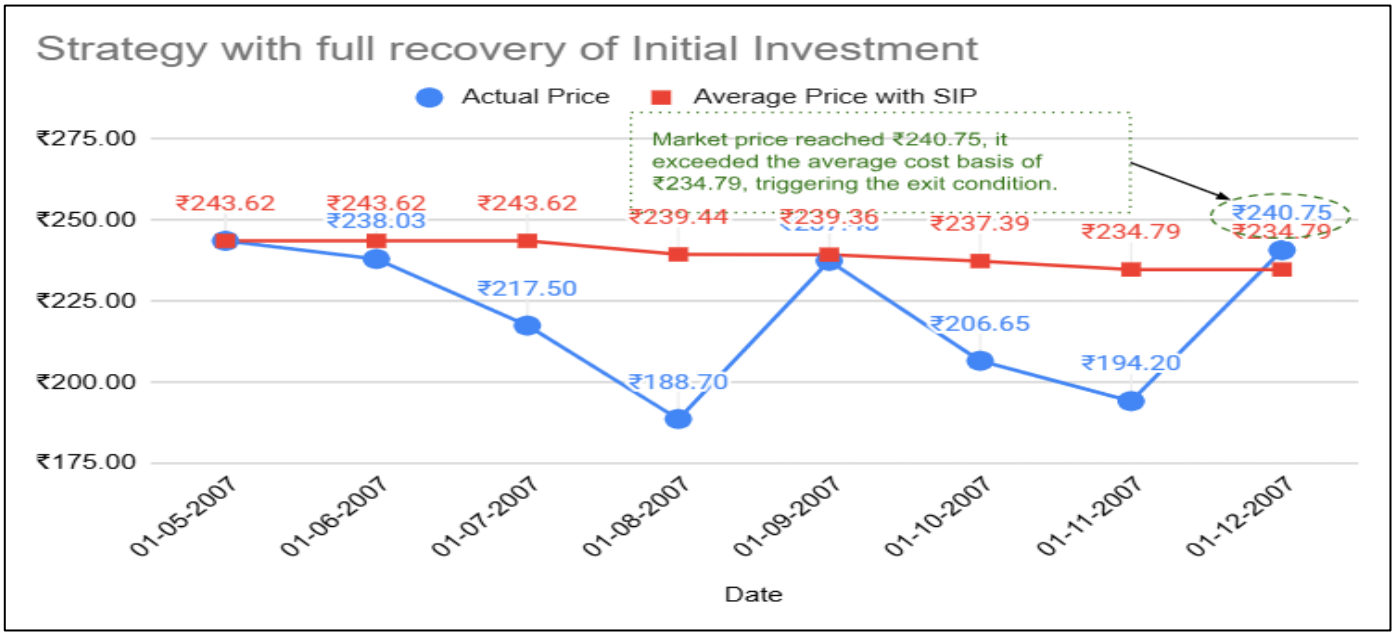

Fig 2 Strategy with full recovery of Initial Investment

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➢ *Case Study 2: December 2024 Investment Scenario*

The second case study examines a more severe decline scenario, demonstrating both the strategy's resilience and its limitations under prolonged market deterioration.

- *Initial Position Characteristics:*

✓ Investment Amount: ₹100,000.00
✓ Entry Price (December 1, 2024): ₹821.15
✓ Shares Acquired: 121 units (₹100,000 ÷ ₹821.15)

This scenario presents substantially more challenging market conditions. Without intervention, the position deteriorated dramatically, declining 62.13% to ₹37,625 by January 2026, as illustrated in the following table:

Table 2 December 2024 Investment Scenario

Date	Price (₹)	% Change	Portfolio Value (₹)
Dec 1, 2024	821.15	0.00%	99,359
Jan 1, 2025	631.60	-23.08%	76,424
Aug 1, 2025	391.30	-52.35%	47,347
Jan 1, 2026	310.95	-62.13%	37,625

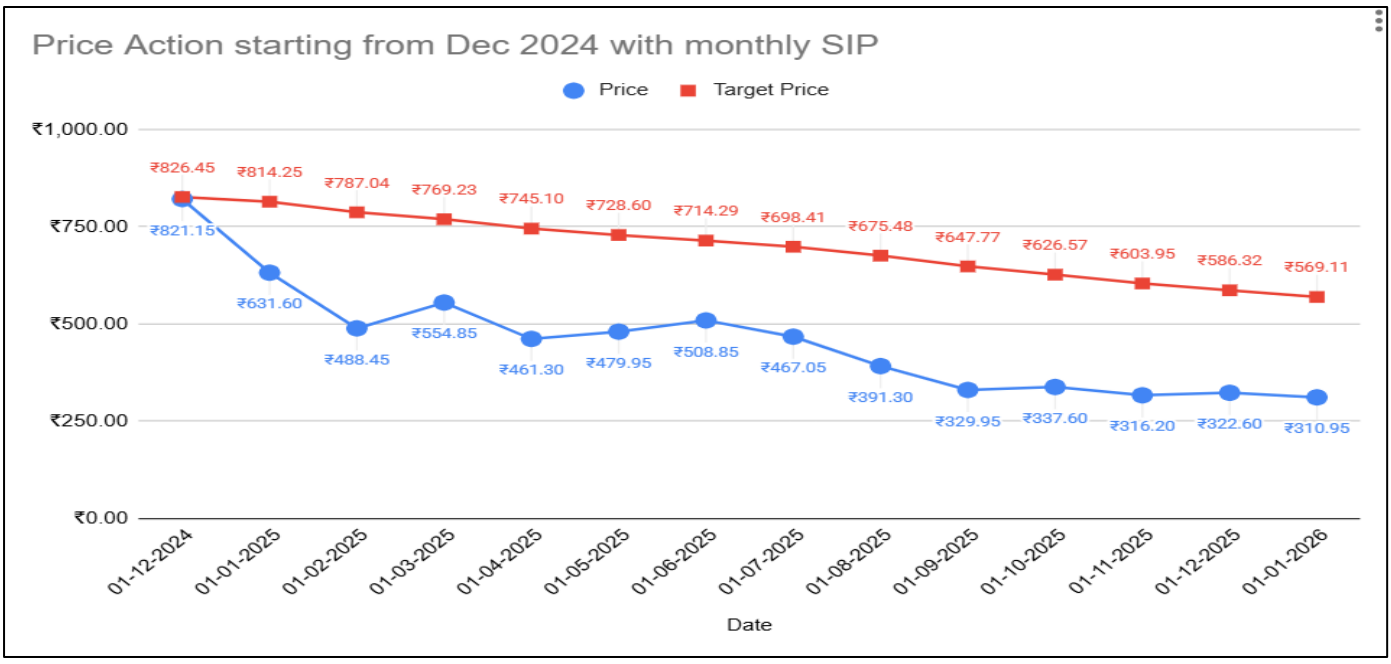

Fig 3 Price Action Starting from Dec 2024 with Monthly SIP

Implementing the systematic averaging strategy with monthly SIP of ₹6,667 over 13 months significantly reduced the average cost basis from the initial ₹821.15 to ₹569.11 as shown in Figure 3. While the market price remained substantially below this level, the strategy successfully narrowed the recovery threshold from ₹821.15 to ₹569.11—a reduction of ₹252.04 or 30.7%. The strategy demonstrates effectiveness in reducing average cost and improving recovery probability, though ultimate success remains contingent upon favorable market movements. In this scenario, the price would need to recover to ₹569.11 (versus the original ₹821.15) for loss-neutral exit, representing a more achievable target but still requiring substantial market appreciation from the current ₹310.95 level.

➢ *Theoretical Analysis: Strategy Performance Under Continuous Deterioration*

While empirical case studies demonstrate strategy application under real market conditions, they cannot comprehensively assess performance across all possible price trajectories. To address this limitation, we developed a theoretical framework modeling strategy behavior under worst-case scenarios of continuous price deterioration.

➢ *Model Construction and Assumptions*

- *Base Parameters:*

✓ Initial Investment: ₹1,000.00
✓ Entry Price: ₹10.00
✓ Initial Shares: 100 units
✓ Strategy Trigger: 20% decline to ₹8.00
✓ Monthly SIP Amount: ₹66.67 (₹1,000 ÷ 15)

Following the initial 20% decline triggering strategy activation, three deterioration scenarios were simulated to assess strategy resilience: 1% monthly decline (gradual deterioration), 3% monthly decline (moderate deterioration), and 5% monthly decline (severe deterioration). Each scenario was modeled over 14 subsequent months to evaluate average cost basis evolution and recovery threshold dynamics. Figure 4 captures the price movements for all three scenarios.

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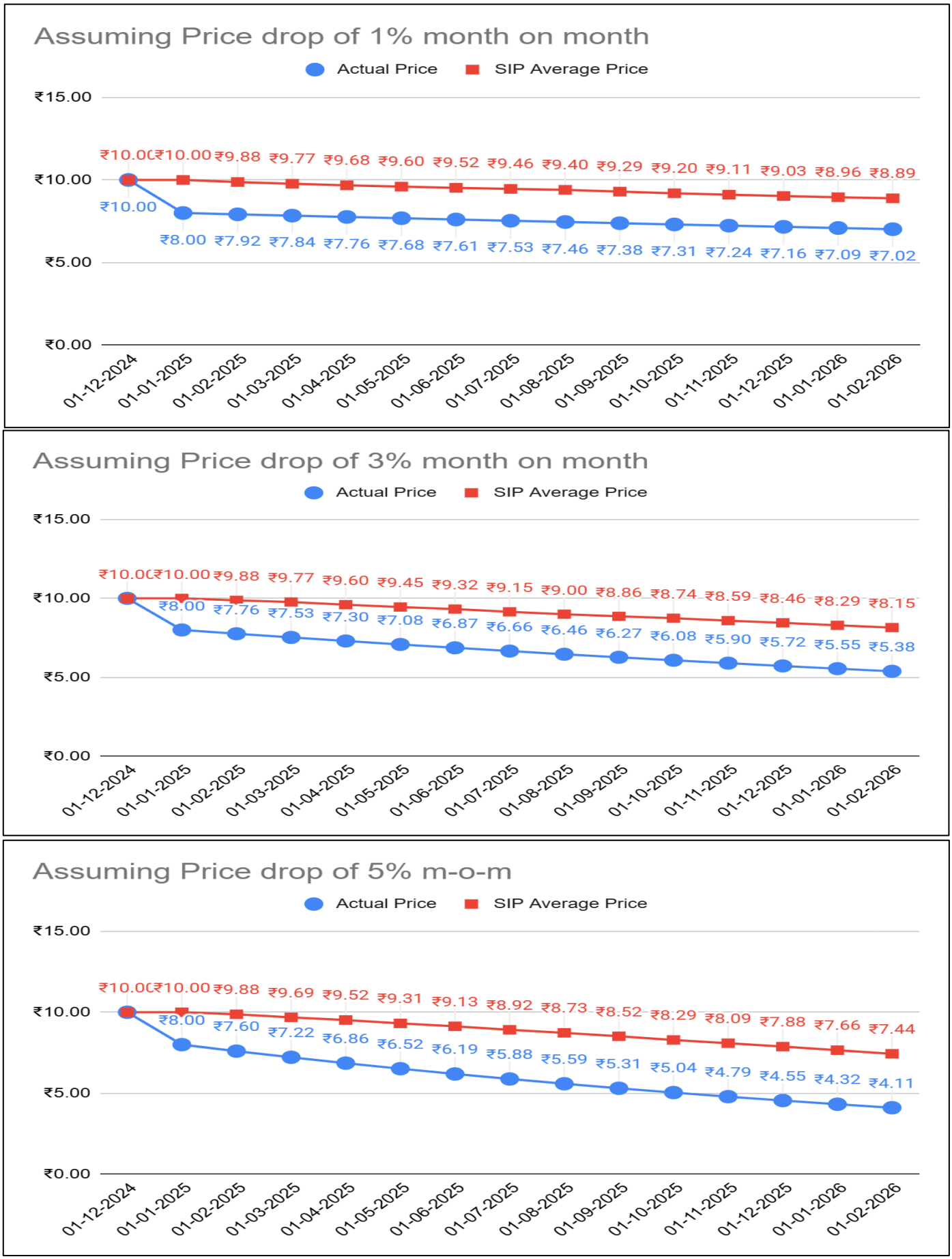

Fig 4 Assuming Price Drop of 1%, 3% and 5% Month On Month

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➢ *Key Findings*

The theoretical analysis yields four critical insights regarding strategy performance under adverse conditions:

- *Gap Reduction Without Elimination:*

Under continuous price deterioration scenarios, the market price never exceeds the average cost basis, preventing exit execution. However, the strategy successfully reduces the differential between actual price and average cost. As systematic purchasing continues at progressively lower prices, the average cost basis declines more rapidly than under passive holding, though it cannot decline faster than the market price itself.

- *Superior Performance Relative to Inaction:*

Compared to passive position holding, the systematic averaging strategy maintains a lower and more dynamic exit threshold. While passive investors require full price recovery to the original entry price (₹10.00 in the model), active strategy participants benefit from progressively declining average costs, creating multiple potential exit points at lower price levels.

- *Unrealized Loss Mitigation:*

Despite requiring additional capital deployment, systematic purchasing reduces unrealized losses on a percentage basis. The expanded share base, acquired at depressed valuations, partially offsets portfolio value deterioration compared to the original position size.

- *Accelerated Deterioration Under Severe Declines:*

In scenarios exhibiting steep, sustained price declines, portfolio value deteriorates more rapidly, and the probability of achieving recovery conditions diminishes substantially. The 5% monthly decline scenario demonstrates that aggressive deterioration overwhelms the benefits of cost averaging, as the market price recedes faster than the average cost can adjust downward.

➢ *SIP Amount Sensitivity Analysis*

To assess whether increased monthly investment improves strategy outcomes, we conducted sensitivity analysis using the 1% monthly decline scenario with three SIP allocation levels: ₹66.67 (₹1,000 ÷ 15, baseline), ₹100.00 (₹1,000 ÷ 10, moderate), and ₹200.00 (₹1,000 ÷ 5, aggressive). Results indicate that higher SIP amounts produce marginally lower average cost trajectories as shown in Figure 5, but the improvement is not proportional to the additional capital deployed. Under gradual decline conditions (1% monthly), the differential in average cost between baseline and aggressive SIP strategies remains modest. This suggests that the divisor of 15 in the original methodology represents a reasonable balance between capital efficiency and strategy effectiveness, though investors with greater risk tolerance and available capital may derive incremental benefit from higher allocation ratios.

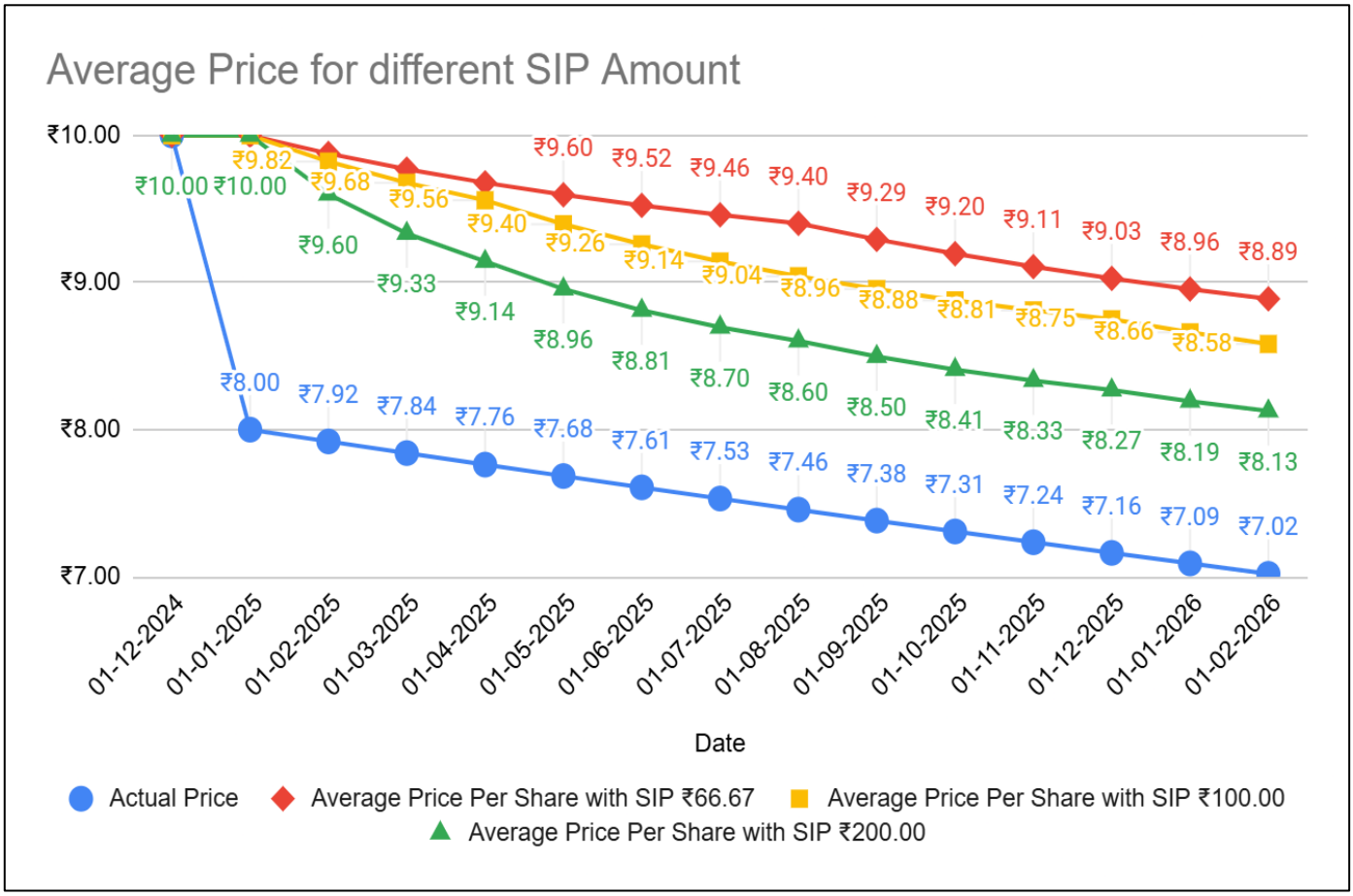

Fig 5 Average Price for Different SIP Amount

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➢ *Strategy Limitations and Risk Factors*

The theoretical analysis reveals fundamental limitations inherent to the systematic averaging strategy that warrant careful consideration:

- *Capital Requirement Dependency:*

The strategy mandates continuous capital deployment over the investment period. Investors unable to maintain systematic purchasing due to liquidity constraints, changing financial circumstances, or exhausted risk capital will experience strategy failure, potentially crystallizing losses at suboptimal prices.

- *Market Movement Dependency:*

Despite average cost reduction benefits, ultimate capital recovery remains entirely dependent on favorable market price movements. The strategy cannot guarantee exit execution and provides no mechanism for loss prevention if the underlying security continues deteriorating or fails to recover.

- *Fundamental Quality Prerequisites:*

The strategy assumes underlying business stability and potential for recovery. Securities experiencing fundamental deterioration, structural industry challenges, or terminal business decline will not benefit from systematic averaging, as price recovery becomes implausible regardless of cost basis reduction.

- *Opportunity Cost Considerations:*

Capital deployed through systematic purchasing in declining positions incurs opportunity costs relative to alternative investments. Investors must weigh the probability-weighted recovery benefits against potential returns from redeploying capital to higher-quality opportunities.

IV. CONCLUSION

This research examines the systematic investment averaging strategy as a methodological approach to mitigating losses and facilitating exits from concentrated equity positions experiencing substantial declines. Through combined empirical analysis using Praj Industries Limited case studies and theoretical modeling of worst-case deterioration scenarios, we demonstrate that the strategy can effectively reduce average cost basis and improve recovery probability compared to passive position holding.

The empirical evidence from the 2007 case study demonstrates successful capital recovery when market conditions permit price stabilization and modest recovery. The strategy enabled exit execution at ₹234.79 versus the original entry price of ₹243.62, requiring only moderate favorable price movement following systematic purchasing. However, the 2024 case study reveals significant challenges under severe, sustained price deterioration, where the strategy successfully reduced the recovery threshold from ₹821.15 to ₹569.11 but could not overcome the magnitude of decline to enable exit execution.

Theoretical modeling confirms that while systematic averaging reduces the price-to-average-cost differential under all tested scenarios, it cannot guarantee capital recovery in continuously deteriorating markets. The strategy demonstrates superiority relative to passive holding but remains fundamentally dependent on eventual favorable price movements. Sensitivity analysis suggests that the standard divisor of 15 for SIP amount calculation represents a reasonable balance between capital efficiency and effectiveness, with higher allocation ratios providing only marginal incremental benefit under gradual decline conditions.

The systematic investment averaging strategy should be understood as a tactical risk management tool rather than a guaranteed recovery mechanism. It is best suited for fundamentally sound securities experiencing temporary market dislocations rather than structural deterioration. Successful implementation requires three critical elements: adequate available capital to maintain systematic purchasing discipline, underlying security quality supporting eventual price recovery, and realistic expectations regarding strategy limitations and market dependency.

Investors contemplating this strategy should conduct rigorous fundamental analysis to distinguish between temporary price corrections in quality securities and permanent capital impairment in deteriorating businesses. The strategy offers a structured approach to concentrated position risk management but cannot substitute for sound initial investment selection, appropriate position sizing, and disciplined portfolio diversification practices. Future research could examine optimal SIP allocation ratios across different volatility regimes, sector-specific strategy efficacy, and integration with complementary risk management techniques such as option-based downside protection.

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