

**Using DEA for Evaluating Winner-Loser Investment Portfolios  
based on Intra-Firm Efficiency: Evidence from the Tehran Stock  
Exchange**

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**ABSTRACT**

This study employs Data Envelopment Analysis (DEA) to evaluate the performance of win-loss investment portfolios constructed based on the fundamental efficiency of internal corporate factors. Using a sample of 382 firms listed on the Tehran Stock Exchange from 2011 to 2023, we specify an input-oriented DEA model incorporating seven financial ratios as inputs—current ratio, debt ratio, accounts receivable turnover, total assets turnover, inventory turnover, fixed asset turnover, and inventory-to-working capital ratio—and seven profitability and valuation metrics as outputs—return on assets (ROA), return on equity (ROE), net profit margin, earnings per share (EPS), price-to-earnings ratio (P/E), operating profit margin, and Tobin's Q. Firms are classified into winner (high-efficiency) and loser (low-efficiency) portfolios within their respective industries. We then compare the future market performance of these portfolios using both parametric tests and stochastic dominance analysis across multiple investment horizons. The results reveal a nuanced relationship between fundamental efficiency and subsequent returns. The winner portfolio demonstrates statistically significant superiority over the loser portfolio for six-month raw returns, one-year raw returns, and one-year industry-adjusted returns. However, for six-month industry-adjusted returns, the winner portfolio significantly underperforms the loser portfolio. These findings suggest that while fundamentally efficient firms deliver superior long-term performance, short-term industry dynamics can temporarily overshadow firm-specific fundamentals. The results have important implications for

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portfolio management, particularly regarding the alignment of investment horizon with fundamental analysis signals.

**Keywords:** Data Envelopment Analysis, Intra-Firm Efficiency, Investment, Portfolio Performance.

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