

Transformation Analysis Applied to Long-Term Stability and Structural Invariance of Financial Ratio Patterns: U.S. vs. Finnish Firms

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Synoptic abstract

We develop, on the economy-wide level, empirically-based classification patterns for twelve commonly used financial ratios and measure the long-term stability and structural invariance of these patterns. The data are based on annual reports of U.S. and Finnish industrial firms for the periods 1947-75 and 1974-84, respectively. The selected financial ratios are, according to a priori classification, the measures of short-term solvency, long-term solvency, profitability, and efficiency. Classification patterns are developed using factor analysis and the stability and invariance analyses are carried out via transformation analysis. The following factors are found: solvency, profitability, efficiency, and dynamic liquidity. Classification patterns are developed using ratio indices in first-difference form. This is necessary because of clear trend in the time series. Further, empirical results show that different aggregation methods lead to different results. The theoretically better value-weighted indices give more accurate and easier-to-interpret empirical results. Factor patterns based on these indices display time-series stability and cross-sectional invariance. This confirms the importance of aggregation method in ratio analysis.

Key words and Phrases: classification of financial ratios, long-term stability, cross-sectional invariance, aggregation of financial ratios, factor analysis, transformation analysis

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