
Mark F. Kocoloski
University of Dayton, stander@udayton.edu

Joseph D. Nitting
University of Dayton, stander@udayton.edu

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Recommended Citation
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By: Mark Kocoloski and Joe Nitting

Advisors: Dr. Robert Dean and Dr. John Rapp

Purpose:
The purpose of this study is to evaluate the impact of sector idiosyncratic risk and beta market risk on sector performance in the following four time periods:

1. Overall period 2007-2010
2. Downswing Period 12/31/07 to 3/31/09
3. Upswing Period 3/31-09 to 12/31/10
4. The year 2011

Model Specifications:

**Beta**

\[ R_i = a + bR_m + e_i \]

- \( a = \) intercept
- \( b = \) regression coefficient
- \( R_m = \) return to market
- \( E_i = \) error term

**Idiosyncratic Risk**

\[ IR_i = \frac{\sum_{k=1}^{n} (e_k - \bar{e}_k)^2}{n} \]

- \( IR_i = \) Idiosyncratic Risk
- \( E_k = \) error term “k” observations
- \( E-bar = \) mean error term

**Estimating Equations**

\[ R_i = a + b(IR_i) \]

\[ R_i = a + b(\text{Beta}) \]

\[ R_i = a + b(\text{Beta}) + b_2(\text{IR}) \]

Results:

**IR Model**

The \( b \) coefficient is significant for the long term period (2007-2010) and the upswing period, from 3/31/09 to 12/31/10. The \( R \)-squares are relatively low but coefficients have the right sign.

**Beta Model**

The \( b \) coefficient is significant during the downswing period, from 12/31/07 to 3/31/09, as well as for the 2011 period at a 95% confidence level. The \( b \) coefficient for the 3/31/09 to 12/31/10 period was significant at the 90% confidence level, but indicated the wrong sign.

**IR and Beta Model**

The \( b \) coefficient was significant in 3 out of 4 periods. The \( b_2 \) coefficient for IR was significant for 2 out of 4 periods. This \( b_2 \) coefficient for IR has the right sign, but we question the sign on the \( b \) coefficient for beta in both the upswing and downswing periods. There is multicollinearity between beta and IR in this equation, which has caused the sign change for beta.