Do Competitive Advantages Lead to Higher Future Rates of Return?

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Research Questions

- What is a competitive advantage?
- Do competitive advantages lead to increased future profitability?
- Using ex-post realizations of profitability, we measure success of competitive advantages as:
  - Explanatory power
  - Persistence

Why is It Important?

- Managerial decision-making
  - Where should the firm concentrate its resources and effort?
- Analysis context
  - Examining the behavior of operating income by competitive advantages refines the predictive value of its components
    - Steady state versus positive/negative growth rates (implications for truncation period)
    - Important for both equity investors and creditors

Competitive Advantage Candidates

- Traditional
  - Economies of Scale
  - Product Differentiation
  - Innovation
  - Capital Requirements
- Expanded
  - Power over Suppliers
  - Power over Customers
  - Credible Threat of Expected Retaliation (financial flexibility)

Particulars

- Profitability
  - Return on Net Operating Assets (RNOA)
  - Adjust for Risk
  - Within Industry Analysis
  - Study mean effects and condition on level of competitive advantage effort to study over-time effects
  - One-year and five-years ahead horizon
- Sample
  - 1972 to 2003
  - 65,220 firm-year observations

Overview of Results

- Largest returns come from power over suppliers and the credible threat of expected retaliation
  - Result in a 3% risk- and industry-adjusted RNOA premium even after 5 years
- Bargaining power over customers results in modest long-term gains
- Traditional advantages such as product differentiation, innovation and capital intensity are not effective at protecting future profitability

Return on Net Operating Assets (RNOA)

- Measure of operating profitability (Nissim and Penman 2001)
  - Shown to be more relevant for forecasting future profitability than ROE or ROA (Fairfield et al 1996)
- Effects of financial leverage are eliminated
  - Zero NPV activities that cannot be a sustainable source of profitability

Risk-Adjusted Profitability

- Differences in risk among firms may contribute to the level of profitability needed to generate a "normal" return or to non-convergence of profitability over time
- Important to "risk-adjust" profitability to separate differences in risk from effects of competitive advantages
  - Risk-adjustment process is innovation in this paper

Risk of Operations

- Most prior studies focus on equity risk
- Need a measure of operational risk
  - Cost of capital for operations versus cost of capital for equity
  - Operational risk will not be depend on source of financing

Risk-Adjustment Method

- Use method from Easton and Sommers (*JAR* 2007) as starting point
  - Can estimate the cost of equity capital using *current* accounting data

$$\frac{eps_{jt}}{bps_{jt-1}} = \delta_0 + \delta_1 \frac{p_{jt} - bps_{jt}}{bps_{jt-1}} + \zeta_{jt}$$

where $\delta_0 = r_E$, $\delta_1 = (r_E - g)/(1 + g)$

Risk-Adjustment Method (Continued)

This is transformed to allow for estimation of the cost of capital of operations via the following regression equation:

$$\frac{OI_{jt}}{NOA_{jt-1}} = \delta_0 + \delta_1 \frac{V_{jt}^{Oper} - NOA_{jt}}{NOA_{jt-1}} + e_{jt}$$

where $\delta_0 = r^{Oper}$, $\delta_1 = \left(r^{Oper} - g\right)/\left(1+g\right)$

where V^{Oper} = MVE + NFO

Summary Statistics

- Median RNOA before risk-adjustment = 10.4%
  - Nissim and Penman (2001) reported 10.0%
- Median RNOA after risk-adjustment = 3.3%
  - Implied cost of capital for operations of 7.1%

Industry Adjustment

- Controlling for industry eliminates differences in operating cycle, business model, resources, growth, and technology across industries
  - Allows for generalizability across industries within economy
- Use Fama and French (1997) 48 classifications to adjust dependent and independent variables

Descriptive Statistics – Table 2

- Median $RNOA^{RA}$ is 3.3%
- Highest $RNOA^{RA}$ industries:
  - Tobacco (10.1%), Trading (9.4%), Insurance (8.3%), Defense (7.2%), Printing (5.8%), Consumer Goods (5.2)
- Lowest $RNOA^{RA}$ industries:
  - Coal (0.9%), Medical Equipment (1.1%), Precious Metals (1.1%), Communications (1.2%), Real Estate (1.3%), Agriculture (1.5%), Petroleum (1.7%), Lab Equipment (1.7%), Candy (1.7%)

Base Model

$$RNOA_{t+1}^{RA} = \alpha_0 + \alpha_1 RNOA_t^{RA} + \alpha_2 \Delta RNOA_t^{RA} + \alpha_3 G_t^{NOA} + \alpha_4 Age_t + \alpha_5 OpSize_t + \varepsilon$$

- Control for current level and change in profitability
  - Serially correlated with future profitability (Fairfield and Yohn 2001)
- Control for growth in NOA (denominator)
- Firm-level controls
  - Age
  - Size of operations (MVE + NFO)
- Vary dependent variable by horizon
  - t + 1, t + 5

Expanded Models

Traditional:

$$RNOA_{t+1}^{RA} = \alpha_0 + \alpha_1 RNOA_t^{RA} + \alpha_2 \Delta RNOA_t^{RA} + \alpha_3 G_t^{NOA} + \alpha_4 Age_t + \alpha_5 OpSize_t + \alpha_6 CoS_t + \alpha_7 AdvInt_t + \alpha_8 Innov_t + \alpha_9 CapInt_t + \varepsilon$$

Expanded:

$$RNOA_{t+1}^{RA} = \alpha_0 + \alpha_1 RNOA_t^{RA} + \alpha_2 \Delta RNOA_t^{RA} + \alpha_3 G_t^{NOA} + \alpha_4 Age_t + \alpha_5 OpSize_t + \alpha_6 CoS_t + \alpha_7 AdvInt_t + \alpha_8 Innov_t + \alpha_9 CapInt_t + \alpha_{10} OLLev_t + \alpha_{11} InvTurn_t + \alpha_{12} ARTurn_t + \alpha_{13} MktShr_t + \alpha_{14} FLev_t + \alpha_{15} ExFunds_t + \varepsilon$$

Diminishing Returns:

$$RNOA_{t+1}^{RA} = \alpha_0 + \alpha_1 RNOA_t^{RA} + \alpha_2 \Delta RNOA_t^{RA} + \alpha_3 G_t^{NOA} + \alpha_4 Age_t + \alpha_5 OpSize_t + \alpha_6 CoS_t + \alpha_7 \Delta CoS_t + \alpha_8 AdvInt_t + \alpha_9 \Delta AdvInt_t + \alpha_{10} Innov_t + \alpha_{11} \Delta Innov_t + \alpha_{12} CapInt_t + \alpha_{13} \Delta CapInt_t + \alpha_{14} OLLev_t + \alpha_{15} \Delta OLLev_t + \alpha_{16} InvTurn_t + \alpha_{17} \Delta InvTurn_t + \alpha_{18} ARTurn_t + \alpha_{19} \Delta ARTurn_t + \alpha_{20} MktShr_t + \alpha_{21} \Delta MktShr_t + \alpha_{22} FLev_t + \alpha_{23} \Delta FLev_t + \alpha_{24} ExFunds_t + \alpha_{25} \Delta ExFunds_t + \varepsilon$$

% Increases in Explanatory Power (Adj. R^2)

t + 1

% Inc. over:	Traditional	Expanded	Dim. Returns
Base	6.72%	25.15%	32.53%
Traditional		17.27	24.19
Expanded			5.90

t + 5

% Inc. over:	Traditional	Expanded	Dim. Returns
Base	35.68%	78.12%	108.86%
Traditional		31.28	53.94
Expanded			17.26

Regression Results: $RNOA_{t+1}$ (Model 4)

Base & Controls | Traditional | Expanded

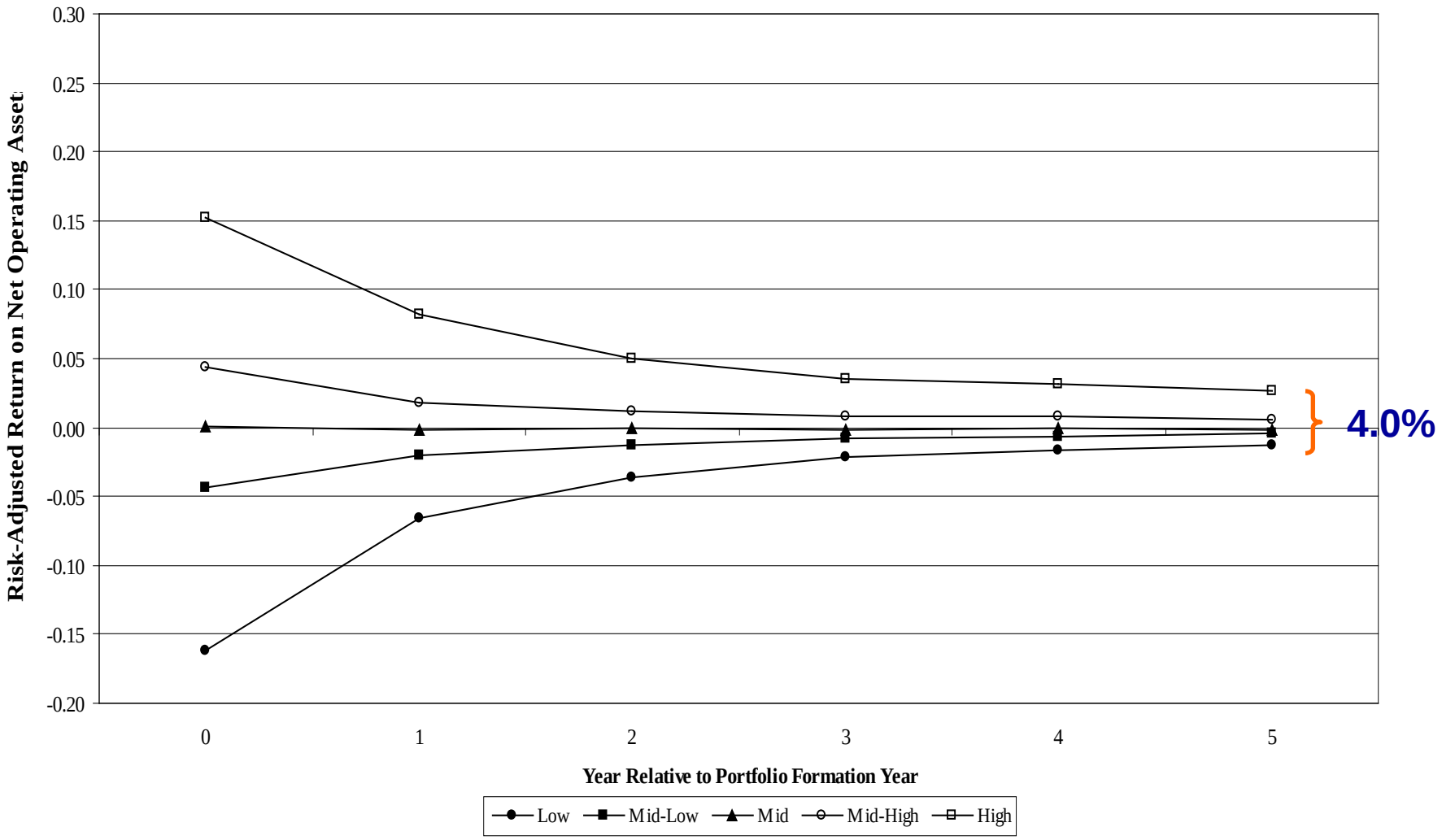
	Coeff.	t-stat		Coeff.	t-stat		Coeff.	t-stat
Intercept	0.001	0.31	**CoS**	-0.279	**-5.52**	**OLLev**	0.063	**4.12**
$RNOA_t$	0.906	**11.54**	**ΔCoS**	0.032	0.30	**ΔOLLev**	0.114	**4.31**
$\Delta RNOA_t$	-0.141	**-3.45**	**AdvInt**	-0.286	-2.34	**InvTurn**	0.046	2.97
G^{NOA}	-0.122	**-6.99**	**ΔAdvInt**	0.013	0.03	**ΔInvTurn**	-0.136	**-3.96**
Age	-0.002	-0.48	**Innov**	-1.282	-5.73	**ARTurn**	-0.073	**-3.04**
OpSize	0.002	0.96	**ΔInnov**	0.291	0.59	**ΔARTurn**	0.053	1.05
			CapInt	-0.814	-4.33	**MktShr**	-0.099	-1.25
			ΔCapInt	-0.133	-0.64	**ΔMktShr**	0.156	0.35
						FLev	0.007	3.30
						ΔFLev	0.044	3.87
						ExFund	0.070	**2.75**
						ΔExFund	0.071	**2.63**

Adjusted R^2 = .2196

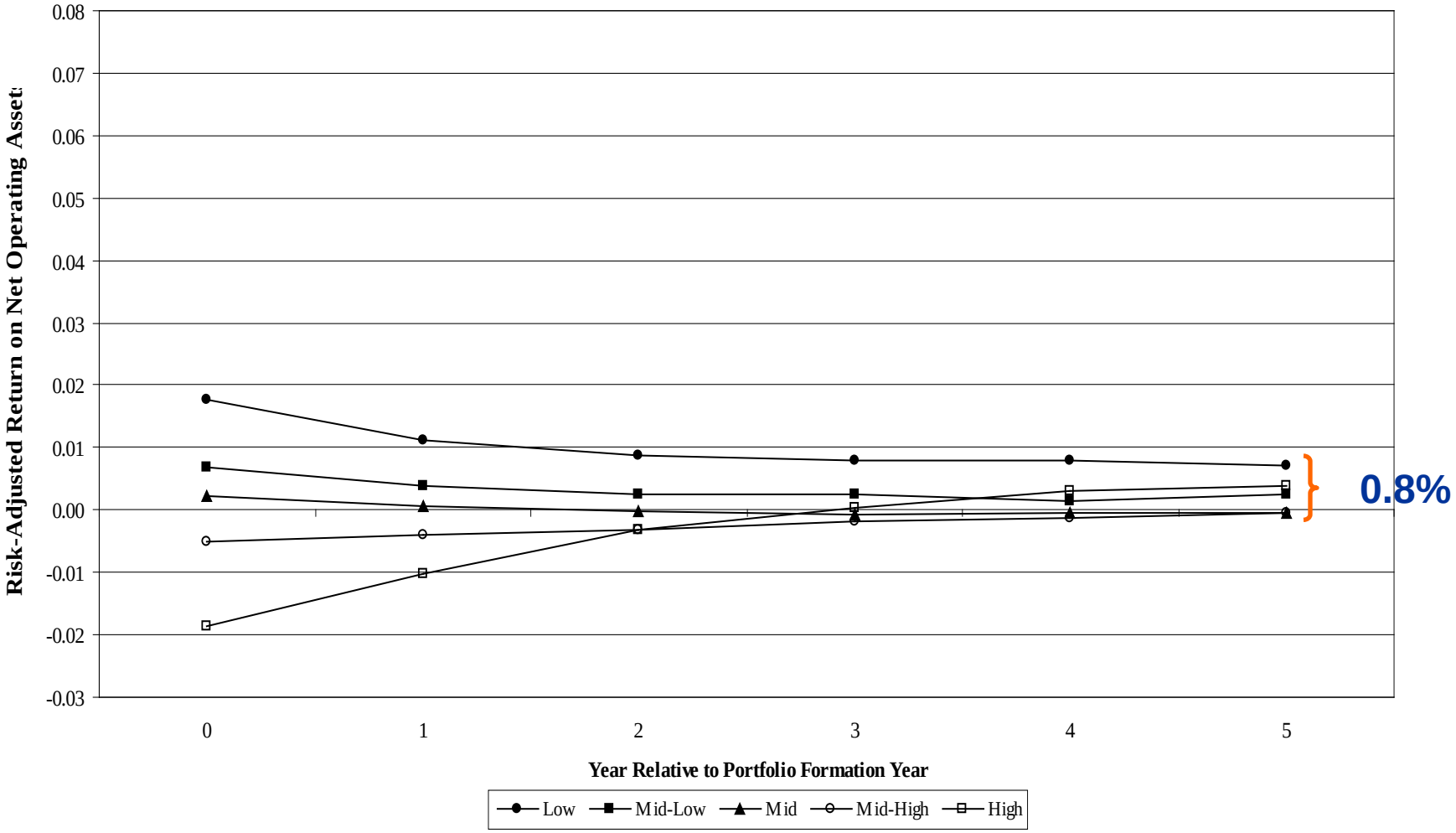
Convergence Analysis

- Determines whether current level of competitive advantage results in sustainable future profitability over five subsequent years
- Inherent survivorship bias
  - Should bias toward convergence (and therefore against results)

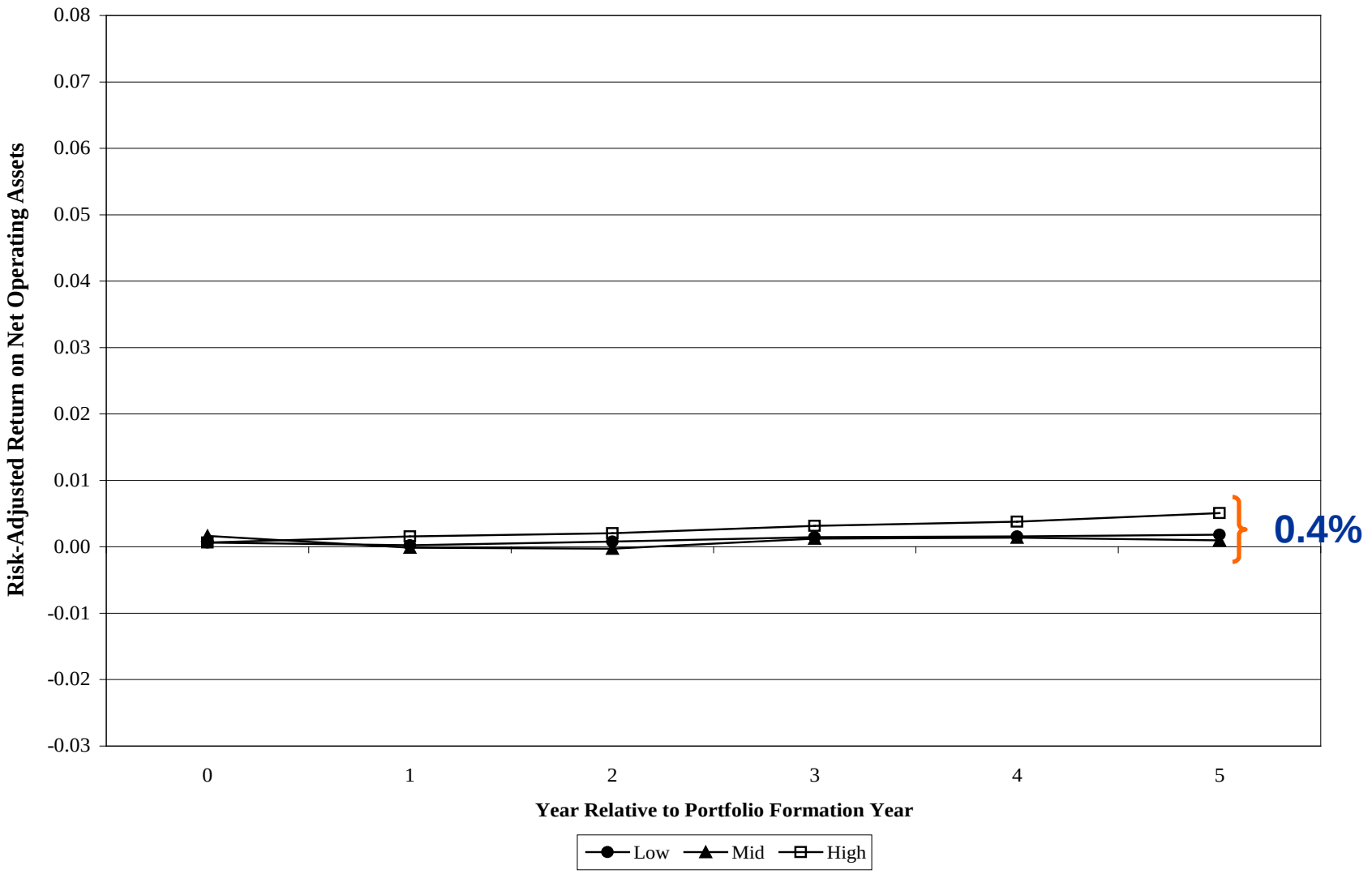
Convergence of Industry- and Risk-Adjusted RNOA over 5-Year Horizon



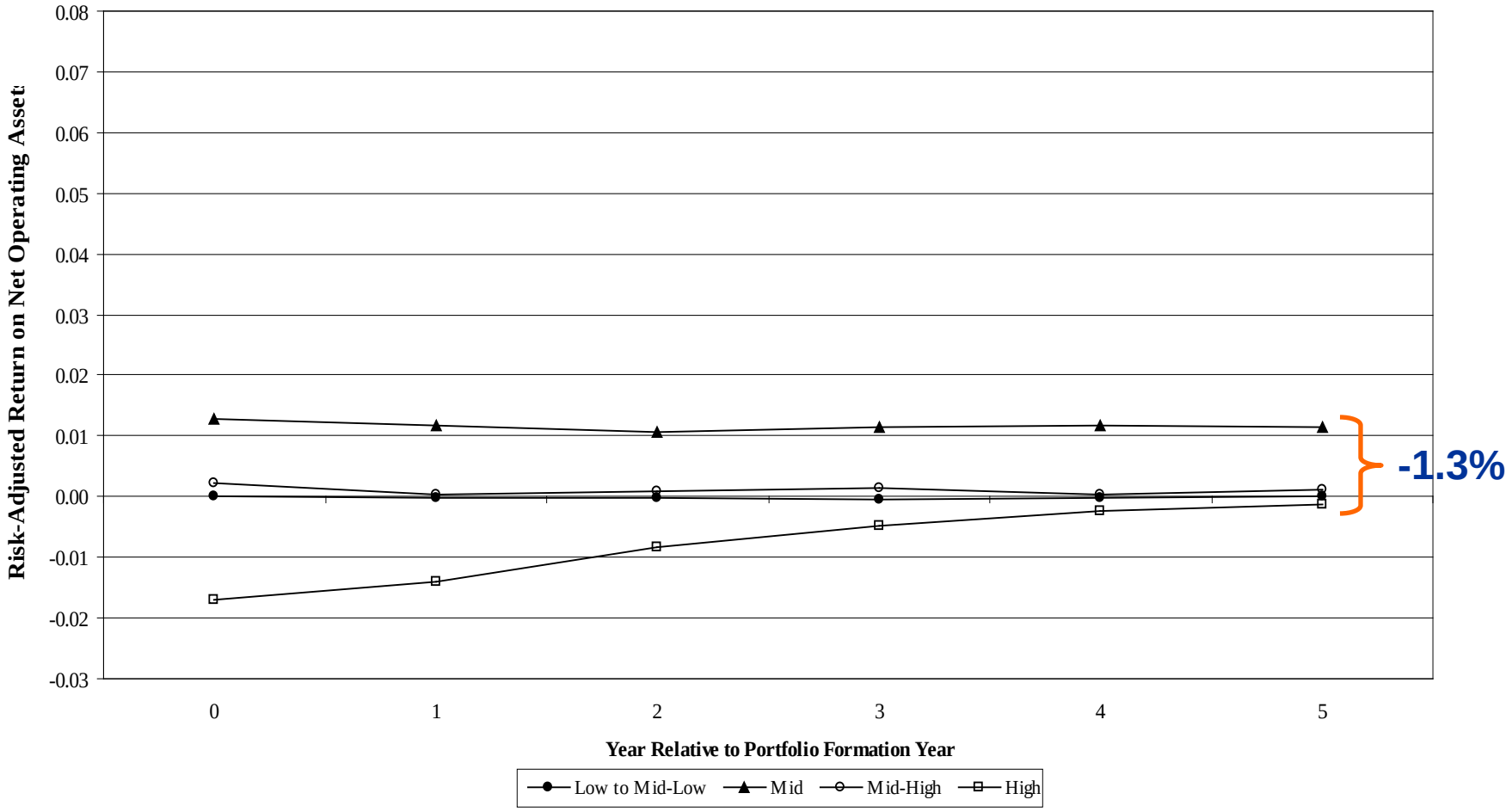
Convergence based on Economies of Scale



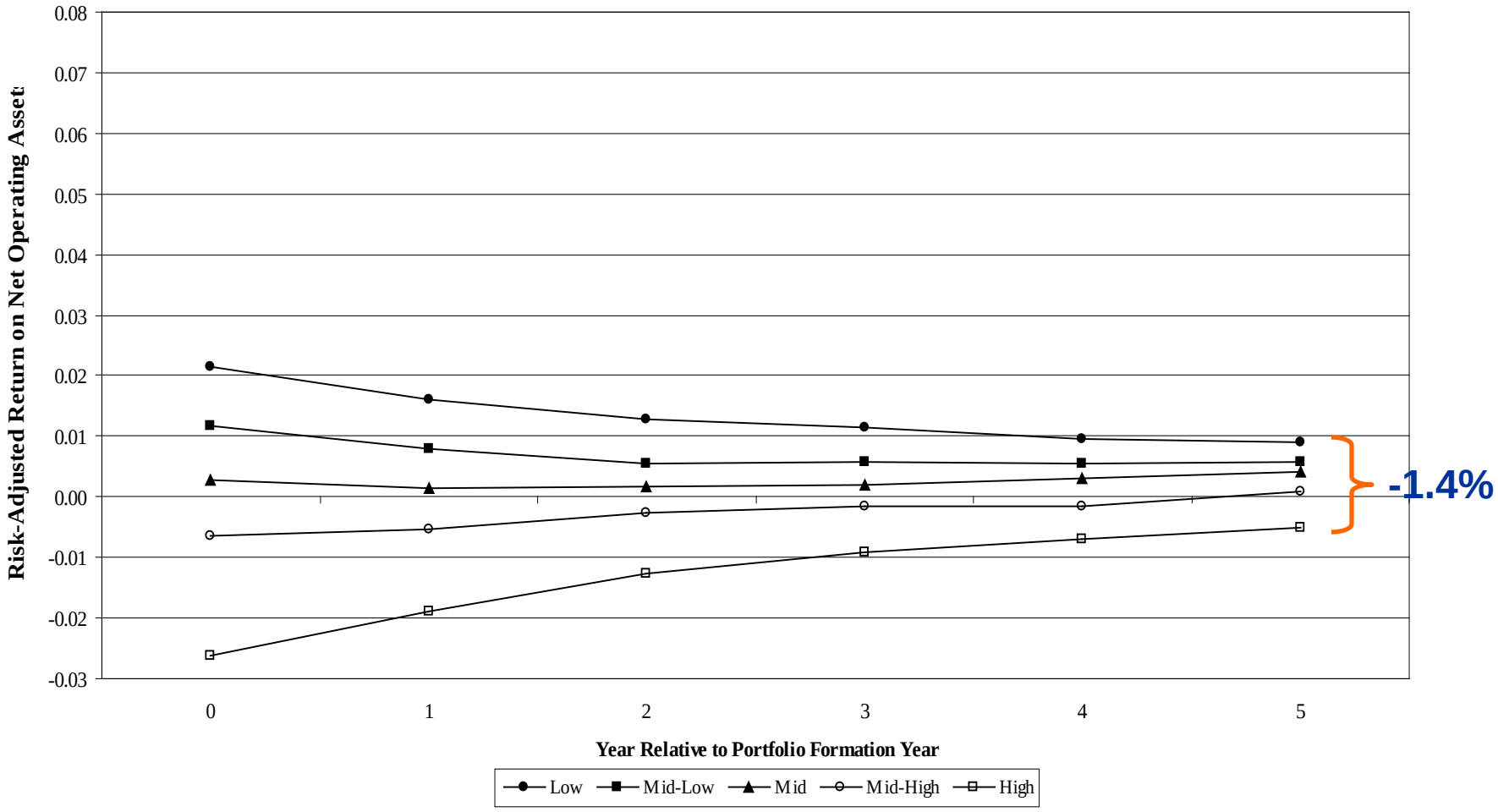
Convergence based on Adv. Intensity



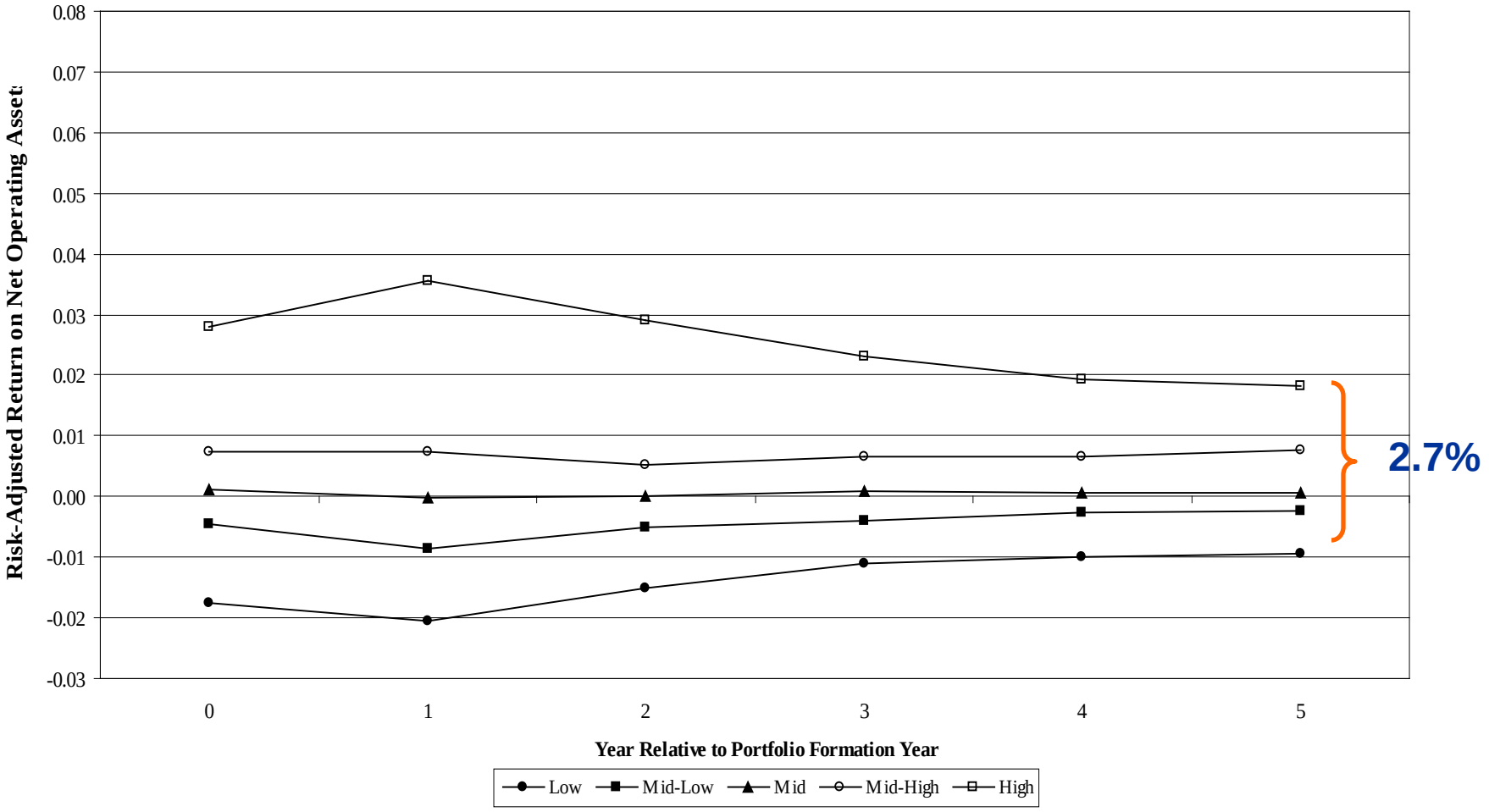
Convergence based on Innovation



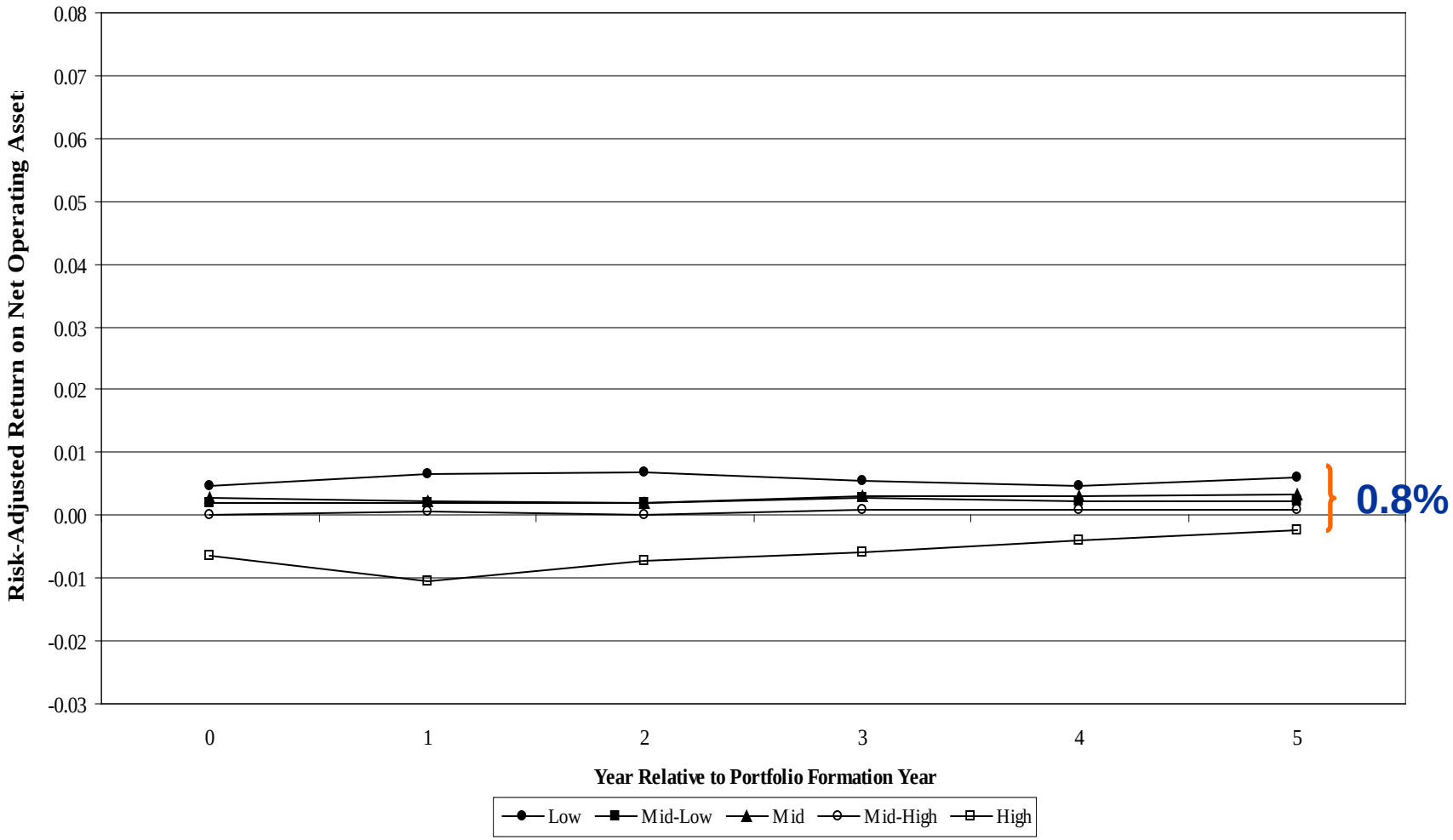
Convergence based on Capital Intensity



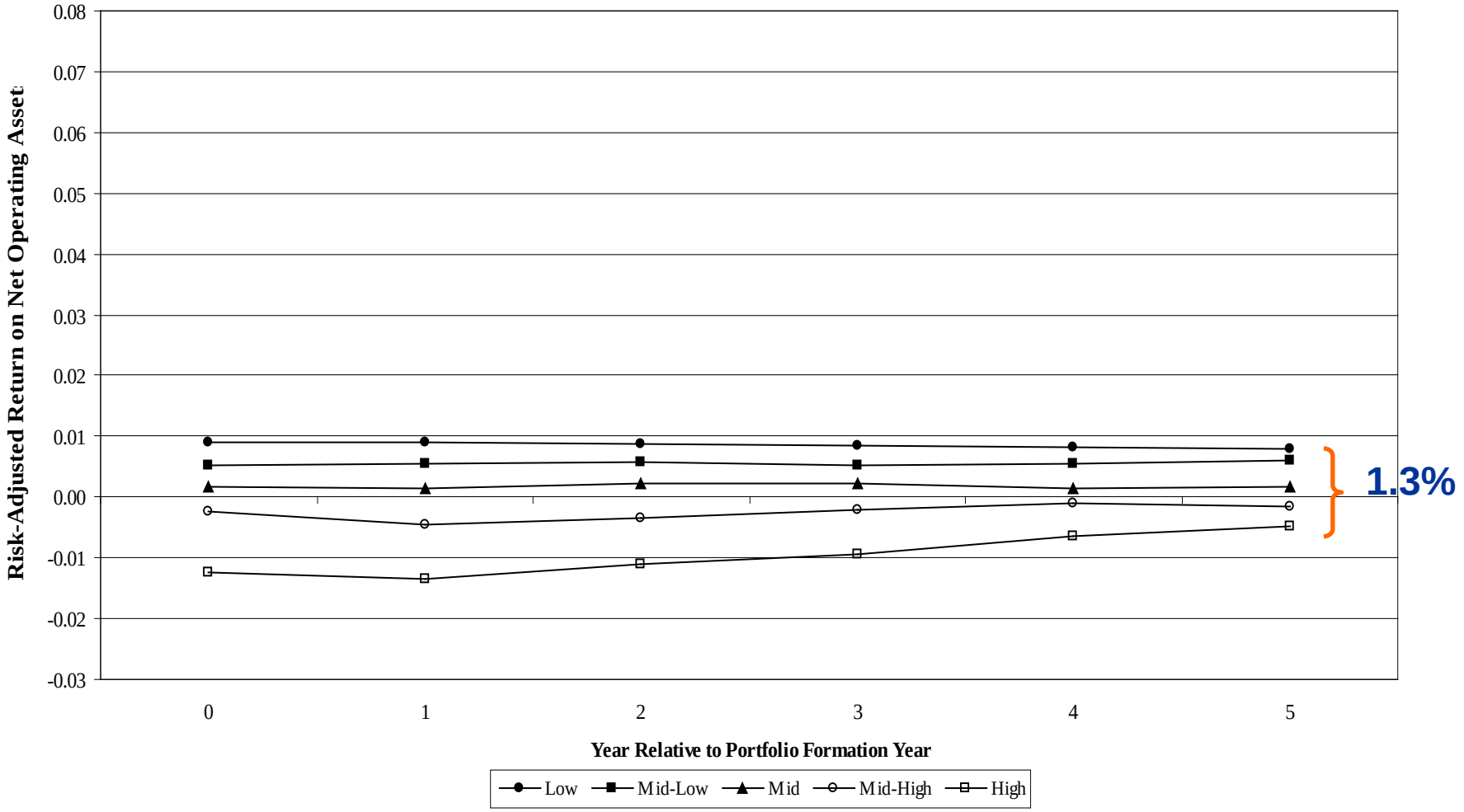
Convergence based on Operating Liability Leverage



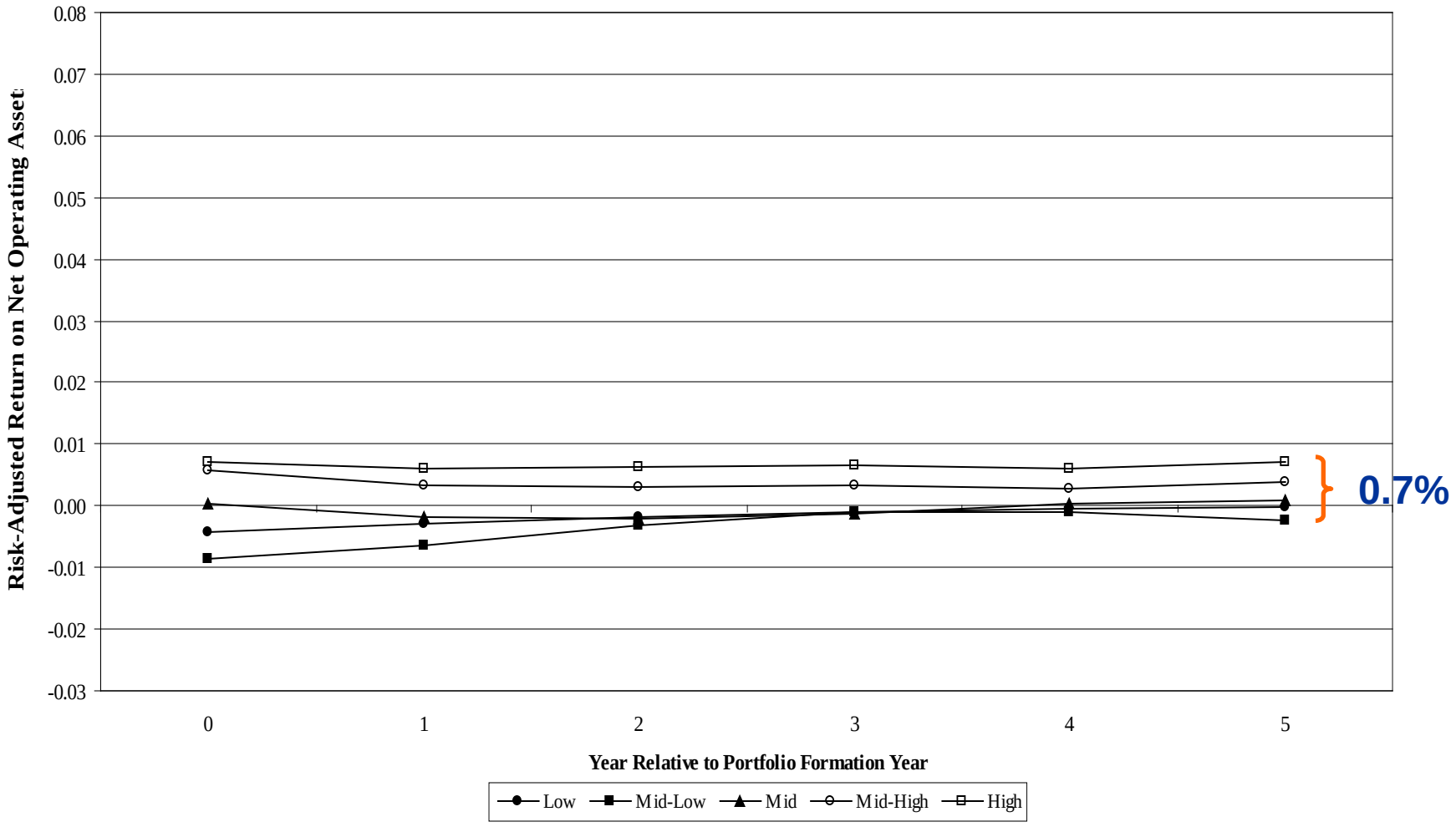
Convergence based on 1 / Inventory Turnover



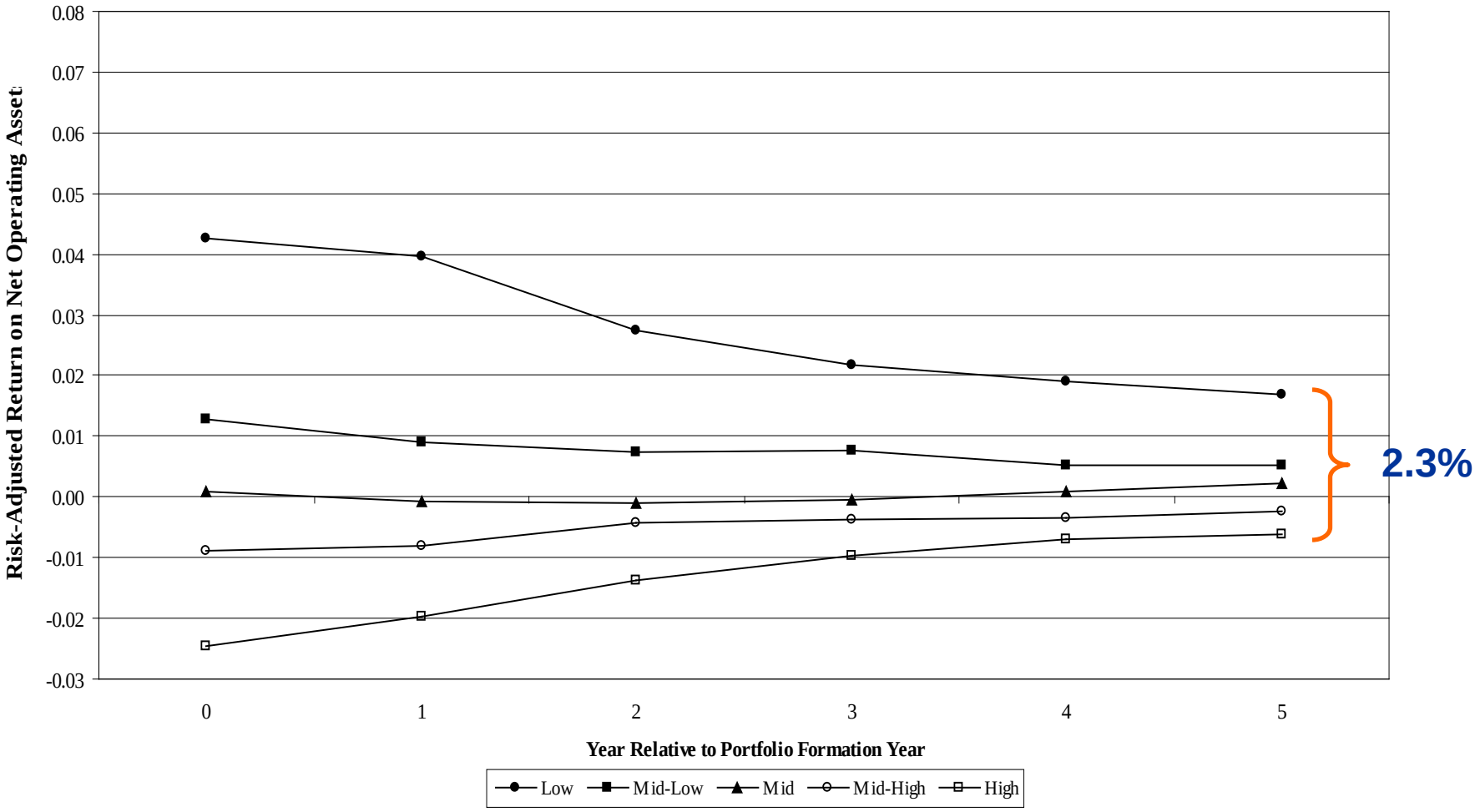
Convergence based on 1 / Receivables Turnover



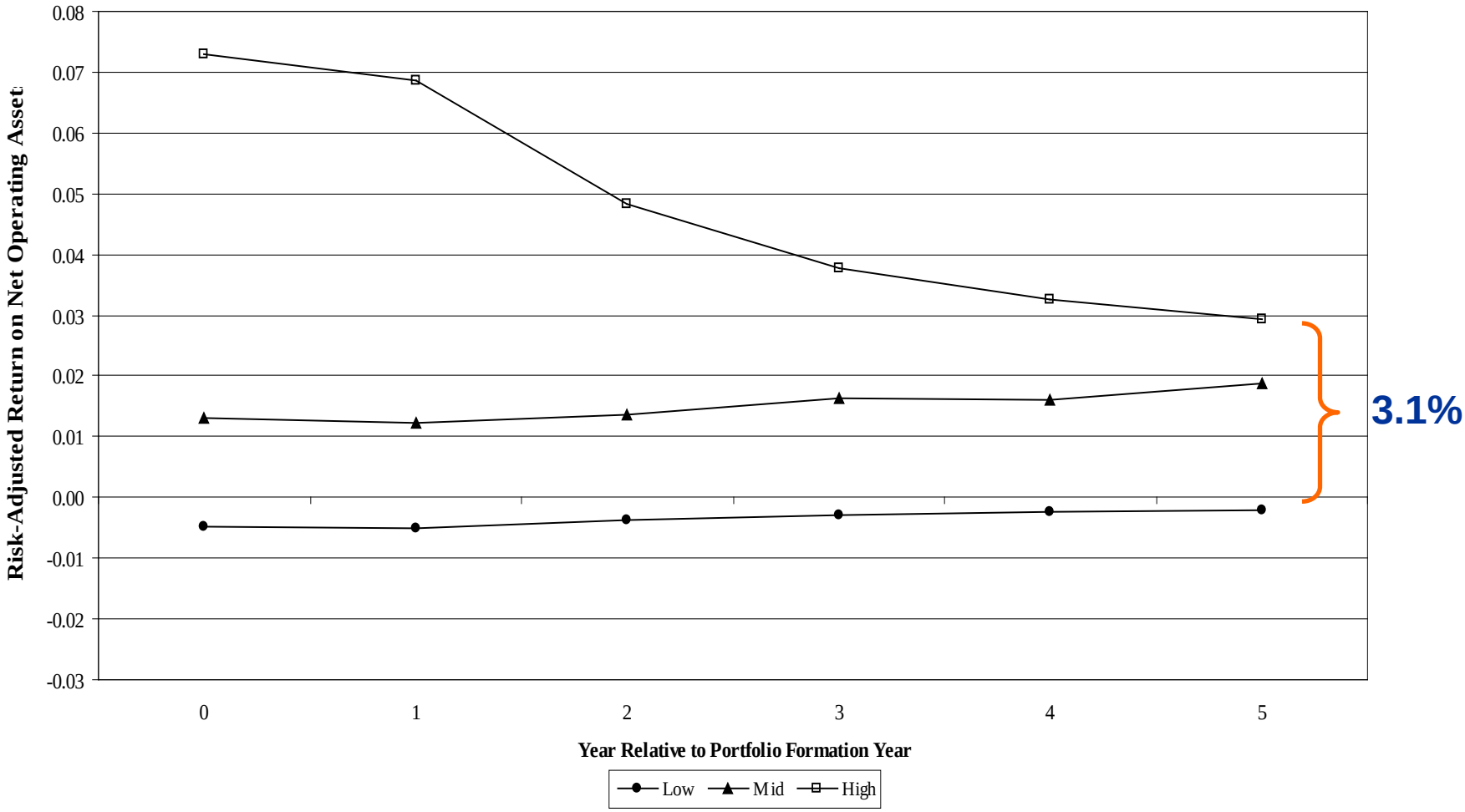
Convergence based on Market Share



Convergence based on Financial Leverage



Convergence based on Excess Funds



Concluding Remarks

- Greatest long-term benefits come from power over suppliers and the credible threat of expected retaliation
- Proxies for traditional competitive advantages such as product differentiation, innovation, and capital intensity are not effective at protecting future profitability