Is Bowman’s Paradox an Empirical Artifact? Evidence from Asian Emerging Countries

Abstract

Purpose *– This study aims to reconcile and address Bowman's Paradox empirical criticism from the lens of financial theory, corporate strategy, and their econometric adversaries based on three issues, i.e. risk conceptualization, measurement, and econometric modeling in Asian emerging countries (AEC).*

Design/methodology/approach *– The study is conducted on a panel data sampling from 2,872 firms across four Asian Emerging Countries (AEC) and employs a two-stage least squares (2SLS) estimation technique. We proposed a theoretical framework based on triangulation that outlines four risk-return relationships based on proxies derived from capital market and firm-level data and employs different econometric models to answer Bowman’s Paradox ongoing criticism.*

Findings *– The empirical results negate the empirical artifact viewpoint in AEC. The risk-return relationship estimated on firm accounting-based ratios or its combination with market-based measures supports Bowman’s paradox and thus upholds the corporate strategy point of view. Whereas the risk-return relationship based on market-based ratios upholds the financial theory point of view. However, the results are mixed when risk is subdivided into systematic and business risk. Our results are robust across standard deviation and semi-standard deviation-based measures of risk and there is no evidence of a non-linear relationship.*

Originality/value *– A compelling debate exists that Bowman’s paradox is an empirical artifact. We provide an innovative approach that aims to reconcile and address the ongoing debate by employing diverse risk-return proxies and econometric models in Asian emerging countries. Methodological issues such as endogeneity, sample biases, temporal fluctuations, downside risk variations, multiple moments of a variable, and model misspecification are also addressed. This triangulation enhances the robustness of our analysis, providing a comprehensive perspective on AEC, and laying the groundwork for future researchers to explore Bowman's paradox through alternative measures and models.*

Keywords: Risk-return tradeoff, Firm risk, Firm return, Emerging markets, Bowman’s Paradox, Econometric Modeling

1. Introduction

For decades, the proponents of financial theory have maintained that accepting high risk is necessary to enhance returns, particularly in capital markets. However, the introduction of the Bowman (1980) paradox not only challenged the prevailing positive risk-return perspective based on financial theory but also inspired corporate strategy researchers to expand its theoretical boundaries (Hoskisson et al., 2017). However, in pursuit of theoretical expansion, corporate strategy researchers tended to overlook the limitations associated with the underlying risk-return proxies and their econometric models. These limitations includes differences in the capital market and firm-level dynamics (Bromiley et al., 2001, Shivaani et al., 2019), the relevance of risk-return proxies used for a specific construct in a particular situation (Ruefli, 1990, Ruefli et al., 1999, Miller and Bromiley, 1990), issues related to proxy measurement, and model misspecification (Nickel and Rodriguez, 2002, Devers et al., 2008, Henkel, 2009, Mahmood and Kunst, 2022, Miller and Reuer, 1996). Neglecting these factors not only drew criticism toward Bowman's proposed negative risk-return relationship but also gave rise to misconceptions about the theoretical rationale put forth by subsequent studies. Moreover, the scarcity of empirical evidence, particularly in AEC, further exacerbates this empirical void.

To bridge this empirical void, we undertook a comprehensive reexamination of Bowman's paradox within the context of AEC. Our approach involves triangulating commonly used risk-return proxies that are derived from capital market and firm-level data sources. However, we rigorously addressed various methodological issues that have been empirically identified as problematic in risk-return research. These methodological issues include concerns related to endogeneity, biases stemming from sample variation in different studies, temporal fluctuations, the examination of downside risk variations, using multiple moments of a variable as a proxy of different variables in a single model, and the potential for model misspecification. As a result, our study presents a novel framework that delineates four distinct types of risk-return relationships. This innovative approach offers a straightforward method to address the methodological criticisms frequently associated with risk-return analysis while employing established risk-return measures. Moreover, our research serves to reconcile the various critiques and challenges posed to the field of risk-return analysis, thereby laying the groundwork for future researchers to explore Bowman's paradox through alternative measures and models.

This study is primarily designed to validate the consistency of commonly used risk-return measures across different contexts, rather than to refute or substantiate the theoretical foundations, logical premises, and practical implications of Bowman's paradox. Thus, our empirical examination aims to determine whether the foundational principles of Bowman's paradox have remained unaltered or have exhibited variations when subjected to alternative measures and models. This inquiry is also of particular significance as it extends the examination of Bowman's paradox beyond the confines of the United States, thereby addressing a significant question pertaining to its empirical validation in AEC (DasGupta and Dhochak, 2021).

The remaining paper is organized as follows. The theoretical explanation of Bowman’s paradox, empirical critics, and theoretical framework are discussed in section 2; section 3 provides the methodology; section 4 shows the results and section 5 concludes the study.

2. Theoretical Underpinning of the Bowman Paradox

The seminal work of Markowitz (1952) on risk diversification provides the fundamental underpinning for risk-return relationships in the field of finance. This relationship is further refined into a positive association by leading authors in finance (Sharpe, 1964, Lintner, 1965), who assert that, in capital markets, stock returns are solely a function of systematic risk. To simplify this notion within classical finance theory, they argue that a higher standard deviation or Beta of stock return, which serves as a measure of firm risk, should correspond to higher firm returns, as depicted in Figure 1. However, Bowman (1980) challenged this conventional risk-return relationship, characterizing it as a paradox—an inverse relationship at the firm level, as illustrated in Figure 2. Bowman’s seminal work is distinguished by one significant aspect, that he tested risk-return relationship at firm level, using firm level return ratios such as ROE as measure of firm return and variance of firm return (ROE) as measure of firm risk. Based on empirical results he argues that the risk-return relationship in the context of a firm's strategy is more intricate than financial investments in capital markets, where market forces rapidly discount any disparities in risk and return. Bowman's seminal paper also outlines several plausible explanations for this risk-return paradox, including factors such as market competition, industry structure, shifts in managers' risk attitudes, income smoothing, management competence, and the role of an effective board of directors (Khan et al., 2022). These possible explanations to Bowman’s paradox attracted a stream of research in the field of corporate strategy.

Figure 1: Positive Risk-Return Relationship

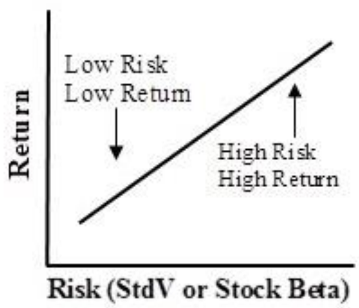
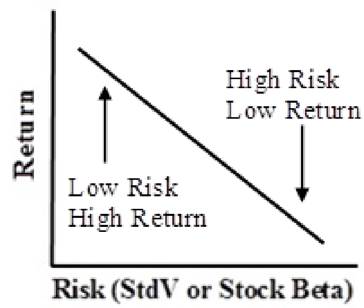


Figure 2: Negative Risk-Return Relationship



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According to Andersen (2023), researchers exploring firm risk-return relationships from a corporate strategy perspective often scrutinize multiple facets of company operations, including the impact of leadership, organizational structure, and cultural and behavioral attributes. Conversely, finance literature concentrates on how a firm's risk-return relationship is influenced by financial markets and their participants that trade corporate debt and stocks. Consequently, market-based risk-return outcomes can be influenced by investor behavior and expectations. Therefore, the notions of both positive and negative risk-return relationships emerge within distinct dynamics, one in the capital market and the other at the firm level. Nonetheless, the concept of a negative risk-relationship has proven to be highly compelling, continuously attracting the attention of numerous researchers, particularly in the field of corporate strategy, on various theoretical grounds (Hoskisson et al., 2017). Given the profound significance of this negative risk-return relationship in corporate strategy research and its practical applications, various theoretical frameworks have been proposed.

One common explanation for the Bowman paradox finds its roots under prospect theory (Marzo, 2010, Gupta and Pathak, 2018, Khan et al., 2022). According to this theory, decision-makers tend to react more aggressively to losses than to equivalent gains. A similar rationale is also applied within the framework of behavioral theory in the context of the firm (Xiaodong et al., 2014, Nguyen et al., 2021, Gooding et al., 1996). The Bowman paradox is also elaborated and justified from the perspectives of upper echelon theory (Li and Tang, 2010, Harrison et al., 2020, Ooi and Hooy, 2022) and agency theory (Jensen and Meckling, 1976, Chari et al., 2019). Various other factors, including psychological attributes, market dynamics, and executive preferences, are also attributed to the Bowman paradox. For example, when discussing the firm-risk-return relationship, Holder et al. (2016) pointed to managerial myopia as a possible explanation. Christensen et al. (2020) argue that the competitive environment in different sectors alters the linkages between firm risk and return relationships. Similarly, Becerra and Markarian (2021) delved into the conundrum of the firm risk-return relationship in the context of product market competition and the capabilities of different firms. The risk preferences of female executives are also examined under the theoretical framework of the Bowman paradox (Perryman et al., 2016). Others suggest that the risk-return relationship is primarily influenced by managers' rent-seeking behavior and that these effects can be mitigated through the implementation of an effective corporate governance framework (DasGupta and Deb, 2022). With the advancement of computer technology, corporate risk is also examined using unconventional computer simulations, including computer-aided human trials, agent-based simulations, and theoretical analysis (Song et al., 2012).

The preceding discussion underscores the significance of the Bowman Paradox in both strategic management theory and practice. However, the unprecedented expansion of the Bowman Paradox has given rise to empirical issues, which are the focal point of this study. Some experts argue that the unparalleled empirical support for the Bowman Paradox relies on pre-defined and borrowed proxies of risk and return (Nickel and Rodriguez, 2002, Ruefli, 1990, Henkel, 2009, Devers et al., 2008, Lehner, 2000, Miller and Bromiley, 1990, Walls and Dyer, 1996, Santacruz, 2020). They contend that this support results from systematic and econometric errors distorting the true link between a firm's risk-return relationship(Baucus et al., 1993, Walls and Dyer, 1996, McNamara and Bromiley, 1997, Devers et al., 2008, Nickel and Rodriguez, 2002, Santacruz, 2020, Miller and Bromiley, 1990). Thus, the prevalence of systematic shortcomings in operationalizing firm risk and errors in econometric modeling suggests that empirical evidence for Bowman's Paradox may be weaker than previously considered. This underscores the importance of conducting more rigorous and context-specific empirical studies to better comprehend the underlying nature of the risk-return relationship in strategic decision-making.

2.1. Bowman Paradox empirical criticisms

Despite the logical and persuasive nature of Bowman's paradox and its opposing interpretation of the risk-return relationship, the empirical evidence supporting it remains questionable. Thus, the validity of the paradox remains uncertain. The fundamental objections to Bowman’s paradox can be divided into three categories. First is the issue related to the conceptualization of the concept of risk. The second category of academic criticism is based on the measurement of risk. The third category of academic criticism challenges the use of econometric models for estimation. We thoroughly examined and deliberated on all three aspects of Bowman's paradox's empirical criticisms.

2.1.1. Conceptualization of the Construct of Risk

Before delving into the question of empirical artifacts, it is essential to comprehend the complexity associated with the concept of risk. Risk has consistently been a subjective construct, conceived from diverse theoretical viewpoints in different circumstances (Hoskisson et al., 2017). However, it does not carry identical meanings across various fields of management, among researchers, and market participants (Ricciardi, 2004). A consensus among researchers regarding the delineation of risk is its adverse implication, encompassing the potential for loss, damage, injury, disaster, or an undesirable outcome (Slovic, 2000). Thus, putting oneself or a firm "at risk" involves engaging in an action that may lead to losses or an undesirable consequence, whether deliberately or unintentionally. To comprehend this phenomena and taking inspiration from Knight (1921) definition of risk, many researchers in psychology and business began to define risk as a situation or decision where the consequences and possibilities are quantifiable (Lopes, 1987). However, while simplifying the concept of risk as "measurable uncertainty or measurable variation of desired outcome" resolves the quantification issue for academic research, it simultaneously neglects and to some extent blurs the subjective aspects of risk, such as sources, types, significance, and implications that vary across different fields. Consequently, the proxies used as measures of risk create significant disagreement among scholars within a respective field and across fields. According to Ricciardi (2008), in behavioral finance, researchers measure risk using 125 different proxies, while 57 different techniques are employed in behavioral accounting literature.

2.1.2. Sources of Risk-Return Proxies

As discussed in previous sections, risk lacks an absolute definition; therefore, subsequent measurement proxies also differ across fields. To operationalize risk as a potential corporate loss, corporate strategy researchers often use variance or standard deviation of accounting returns such as ROA, ROE, and ROS (Brick et al., 2015, Khan et al., 2022, Gupta and Pathak, 2018, Holder et al., 2016, Bromiley et al., 2017, Cool et al., 1989). Some researchers conceptualize risk based on industry position (Becerra and Markarian, 2013), while others suggest the coefficient of variation of accounting return as a measure of risk

(Miller and Leiblein, 1996, Cool and Schendel, 1987). Although these measures reasonably explain a firm's overall risk, they fail to show the sources of risk (Khan et al., 2022).

A firm's risk may arise from various sources, including the overall state of the economy, industry dynamics, firm management, public policies, and more. Therefore, the origin of risk is crucial for decision-makers, including investors and financial analysts. Especially when considering systematic risk and business risk as two distinct and equally important components of a firm’s total risk. Systematic risk, linked to market-wide impacts, provides insights into broader economic patterns, while business risk, specific to individual firm, offers insight into internal issues and firm response to industry dynamics (VanHorne and Wachowicz, 2008, Arrfelt et al., 2018, Amit and Wernerfelt, 1990). Having a thorough understanding of these risks is crucial for informed decision-making, enabling the creation of specific risk management strategies that address both systematic and business risk (Khan et al., 2023). Therefore, multiple studies also use market-based stock returns and capital market models, i.e., CAPM, to conceptualize systematic and business risk (Rehman et al., 2020, Khan et al., 2022, Khan et al., 2021). Surprisingly, very little attention is given to the fact that systematic risk and business risk are perceived in completely opposite directions by financial economists and strategies (Khan et al., 2022, Bettis, 1983, Nickel and Rodriguez, 2002). Financial economists dismiss business risk because it can be diversified but consider systematic risk as non-diversifiable, thus highly significant (Bromiley et al., 2001). In contrast, corporate strategy researchers attach key importance to business risk besides systematic risk (Khan et al., 2021, Amit and Wernerfelt, 1990). There is no doubt that the theoretical rationale embedded in Bowman’s paradox has significant implications for management research. However, the use of multiple proxies has strengthened the view that Bowman's paradox is built on some predefined, borrowed, and selective proxies of risk and return (Henkel, 2009, Nickel and Rodriguez, 2002).

2.1.3. Model Misspecification Issues

There is also a very noteworthy empirical perspective (Nickel and Rodriguez, 2002, Ruefli, 1990, Henkel, 2009, Devers et al., 2008, Lehner, 2000, Miller and Bromiley, 1990, Walls and Dyer, 1996) indicating that the empirical support for the Bowman Paradox results from systematic and econometric modeling used to obtain desired results, distorting the true link between the risk-return relationship at the firm level. Among these factors, endogeneity is a significant factor, but consistently overlooked by previous researchers. There is always a possibility that some unobserved factors may affect both risk as well as return. The existence of such factors, if not incorporated into the econometric model, introduces the likelihood of inaccurate estimates, thereby contributing to added complexity and uncertainty in the ongoing critique of the Bowman paradox (Andersen, 2008, Andersen, 2009). Furthermore, previous research has also overlooked the time-based fluctuation of the risk-return relationship. They relied on cross-sectional investigation, which examines separate entities at a particular moment in time. It provides a snapshot of events at a specific point in time, disregarding any temporal changes. However, it is important to understand that the risk-return relationship may be time-dependent. This relationship can be impacted by a variety of factors, including economic conditions, market cycles, and regulatory changes, causing it to change over time (Arrfelt et al., 2018). Furthermore, cross-sectional studies have inherent limitations, to unfold the complexity associated with relationships like risk-return. Therefore, rather than depending solely on cross-sectional data, researchers as well as analysts should take time-variant aspects into account, to unfold the time-based variations associated with risk-return relationship.

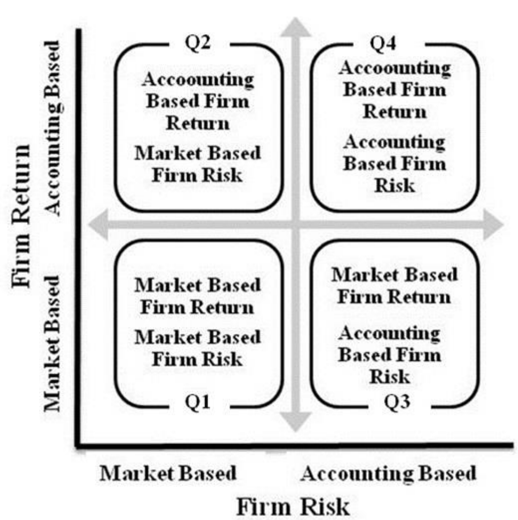
Most of the existing literature based on risk-return relationship implicitly assumed linear relationship, thus used linear regression models to explore this relationship (DasGupta and Dhochak, 2021). However, real-world complexity is not always linearly associated. Similarly, risk-return relationship often exhibits nonlinear relationship across different time and circumstance (DasGupta and Dhochak, 2021). Therefore, fitting corporate instances which shows nonlinear characteristics to linear models not only results into biased estimates but also brushes away any seasonal, economic, or firm specific unique nonlinear trends (Mahmood and Kunst, 2022). For instance, financial returns (ROA) exhibit a substantially negative skewness and a significant positive kurtosis, violating the assumption of a normal distribution (Andersen, 2023). Studies have shown that firm returns tend to have a left-skewed distribution, with a few exceptional performers on the positive end and many underperforming firms on the negative end (Williams et al., 2016, Lustig and Verdelhan, 2012). To address those normality issues, researchers remove outliers and extreme instances from their samples, thus, overlooking important information about extreme cases (Nordhaus, 2011). By making estimation on more real-world and filtered data, researchers can gain a better understanding of the underlying dynamics behind skewed distributions and valuable insights into exceptional organizations, which distinguished it from the rest (Mahmood and Kunst, 2022).

Therefore, researchers must explore both linear and non-linear models to ensure the reliability of their results, unearthing valuable insights into the non-linear aspects of the risk-return relationship across different levels of risk, market circumstances, and economic cycles (Nordhaus, 2011). Furthermore, non-linear models are better equipped to capture the dynamics of enterprises and financial markets, especially during financial crises or bull markets when non-linear behavior becomes more prevalent (Mahmood and Kunst, 2022). Therefore, meticulous scrutiny of data, considering underlying economic factors, is essential to yield valuable insights into the non-linear aspects of the risk-return relationship in finance.

2.2. Theoretical Framework

In this section we systematically address the risk-return criticism discussed above. First, we tackle the issue of sources of risk-return proxies by measuring them based on accounting and market data, resulting in four different types of risk-return relationships, as illustrated in Figure 3. Previous empirical results across each quadrant are inconclusive. Second, the measurement technique adopted for this study (explained in the Methodology section) addresses issues such as multiple moments of a variable, downside variations of risk, and different types of risk (Arrfelt et al., 2018). Finally, model misspecification issues like endogeneity, time-variant sample, and the debate between linear and non-linear modeling are also addressed by employing 2SLS analysis on panel data and adopting both linear and non-linear modeling for estimation (Becerra and Markarian, 2021). The consistency of empirical results on the risk-return relationship across more than two, if not all, of the quadrants can provide substantial evidence to either support or reject Bowman's paradox empirical artifact premise within the realm of AEC, which is the primary objective of the study.

Figure 3 Risk-Return Relationship



Source: Authors own creation

3. Methodology

Our analysis is based on four Asian emerging countries i.e. India, China, Taiwan, and Malaysia, that are critical to study emerging economies. These countries present a wealth of opportunities for empirical research based on their diverse economic, political, and financial markets, technological advancements, and firm governance mechanism. By delving into the intricacies of these economies, we can gain a deeper understanding of Bowman's paradox on a global scale and the factors that shape it considering the characteristics of emerging economies.

The firms selected for analysis are obtained after employing multiple screening and exclusion criteria, such as the exclusion of financial firms, due to their unique operations and risk profile (Alessandri and Khan, 2006, Andersen, 2008), firms with missing data, and non-consistent and extreme values. By excluding firms based on these criteria, we aim to work with a cleaner and more reliable dataset, which leads to more accurate and robust empirical results. The final sample of the study consists of 2872 non-financial listed firms as shown in Table 1, for a period of six years from 2013 to 2018 using the DataStream database.

Table 1 Country-wise Firms

S.no	Country	Total Firms	Financial Institutions	Sample Firms
1	India	5739	523	706
2	China	4049	101	1021
3	Taiwan	1924	56	534
4	Malaysia	949	37	611
Total		***12,661***	***726***	***2,872***

Source: Authors own creation

3.1. Variables

As discussed above, risk is a complex and subjective phenomenon. Therefore, its definition and measurement proxies are still evolving. According to Ricciardi (2008) in the field of behavioral finance risk is measured by 125 different proxies, whereas 57 techniques are used in behavioral accounting literature. As a matter of fact, none of the previously defined risk measures is undisputed and every new measure of risk attracted even further criticism (Collins and Ruefli, 1992). Therefore, we used the most adopted measures of firm risk in academic research. Among these the accounting-based firm risk (AB-FRisk) is obtained by the rolling standard deviation of firm return on equity (Gupta and Guha, 2019, DasGupta and Dhochak, 2021, Becerra and Markarian, 2021, Henkel, 2009) and market-based firm risk (MB-FRisk) is calculated by the standard deviation of firm weekly stock return (Arrfelt et al., 2018).

We also divided firm risk into systematic risk and business risk (Khan et al., 2022, Patel et al., 2018). The market-based systematic risk (MB-SRisk) is calculated by firm beta derived from CAPM equation ($R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$,) and market-based business risk (MB-BRisk) is calculated as the standard deviation of residuals from CAPM equation (Patel et al., 2018, Khan et al., 2022). The accounting-based systematic risk (AB-SRisk) is calculated as the rolling standard deviation of firm annual sales (Miller and Chen, 2003, Andersen, 2008), and accounting-based business risk (AB-BRisk) is conceived as the rolling standard deviation of a firm’s return on asset (Becerra and Markarian, 2021, Henkel, 2009, Andersen, 2008).

Firm accounting-based return (AB-Return) is measured by firm return on equity and Jensen's alpha is used as a market-based firm return (MR-Return). Firm size (FSize) is conceived as the natural logarithm of firm sales, firm leverage (FLev) is conceived as the firm debt to equity ratio, and the country’s GDP growth (GDPG) is used as control variables.

3.2. Econometric Modeling and Analysis Technique

To capture the time-varying effect we used panel data (Arrfelt et al., 2018). The risk-return relationship in each quadrant is estimated by the following model.

$$Return_{it} = \alpha + \beta_1 FRisk_{it} + \beta_2 FSize_{it} + \beta_3 FLev_{it} + \beta_4 GDPG_{it} + \gamma_t + \varepsilon_{it}$$

$Return_{it}$ and $FRisk_{it}$ are the return and risk of the firm *i* at time *t* respectively, time-period fixed-effect is captured by γ_t, $FSize_{it}$, $FLev_{it}$, and $GDPG_{it}$ are control variables and ε_{it} represents idiosyncratic errors.

To account only for the downward fluctuations in return (Miller and Reuer, 1996, Konchitchki et al., 2016) and the normality assumption (Leland, 1999), both the accounting-based and market-based proxies of risk discussed above are readjusted to account for downside variations in returns. Subsequently, we calculate the semi-standard deviation for the re-estimation of the risk-return relationship across each quadrant.

The study also underscores the importance of distinguishing between broader macroeconomic or industry-wide factors affecting firm systematic risk and firm-specific business risk. This differentiation is essential for a more accurate assessment of the factors affecting a firm's returns. To accomplish this, we employ the following model for estimating how each of these risk proxies individually influences firm returns.

$$Return_{it} = \alpha + \beta_1 SRisk_{it} + \beta_2 BRisk_{it} + \beta_3 FSize_{it} + \beta_4 FLev_{it} + \beta_5 GDPG_{it} + \gamma_t + \varepsilon_{it}$$

We started our analysis by employing panel fixed-effect ordinary least squares modeling, as demonstrated in Appendix 1. However, after conducting the Durbin-Wu-Hausman Test, we observed endogeneity issues in these models and thus we can't rely on fixed-effect ordinary least squares results (Wooldridge, 2016, Larcker and Rusticus, 2010). To address endogeneity, we employed 2SLS estimations and incorporated various instruments in our models (Henkel, 2009, Hausman, 1978). However, there has always been debate over the theoretical validity of the instruments used in 2SLS models (Larcker and Rusticus, 2010). To verify the reliability and robustness of the instruments in each model, we thus carried out three identification tests (Roberts and Whited, 2013). To check whether the excluded instruments are irrelevant in each model we used the Kleibergen-Paaprk LM test. The significant p-value of this test confirms instruments validity in a particular model. The second test, used to assess the instrument's strength, is the Cragg-Donald Wald F-statistic test. If the value of Cragg-Donald Wald F-statistic test is greater than all the critical values of the Stock-Yogo weak ID test, it will confirm the strength of the employed instrumental variables. If not, the employed instrumental variables are inadequate and can't be relied upon to adequately handle the endogeneity. Finaly, the Hansen J statistic test is used to confirm that instruments used are uncorrelated with each model's error term (Wooldridge, 2016). An insignificant p-value in the Hansen J statistic test confirms that the instruments are not correlated with error term, and thus confirms that respective model is correctly specified.

Furthermore, there is no issue with multicollinearity, as indicated by the variance inflation factor (VIF) scores for all variables, which are all below (Wooldridge, 2016). Additionally, we generated cluster-robust standard errors to address heteroscedasticity in various models (Gujarati, 2009).

4. Empirical Results

Table 2 presents descriptive and correlation data for the dependent and independent variables in our study. Given that the study's focus is not on providing detailed descriptions of the variables used, we have primarily emphasized the correlation statistics. It is noteworthy that Bowman's seminal work was also rooted in establishing correlations between risk and return across diverse industries. It is interesting to note that MB-Firm Risk exhibits a positive association with MB-Return, while it demonstrates a negative association with AB-Return. In contrast, AB-Firm Risk displays negative correlations with both MB-Return and AB-

Return. Moreover, both MB-SRisk and AB-SRisk exhibit positive correlations with MR-Return and AB-Return. Lastly, AB-Brisk shows a negative correlation with both MR-Return and AB-Return. Therefore, the findings derived from the correlation matrix underscore that employing various proxies to estimate firm risk-return relationships can introduce substantial complexities, thereby impeding the attainment of consistent results.

Table 2 Descriptive and Correlation Statistics

Variables	Mean	Std.Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) **MB-Return**	7.26	4.21	1.00							
(2) **AB-Return**	7.59	3.43	0.01	1.00						
(3) **MB-Firm Risk**	0.07	0.03	0.09***	-0.06***	1.00					
(4) **AB-Firm Risk**	3.96	1.92	-0.03***	-0.14***	0.06***	1.00				
(5) **MB-SRisk**	0.92	0.53	0.15***	0.00	0.09***	0.02**	1.00			
(6) **MB-Brisk**	0.05	0.03	0.10***	-0.09***	0.73***	0.09***	-0.02**	1.00		
(7) **AB-SRisk**	9.58	2.02	0.00	0.03***	0.00	0.08***	0.01	-0.04***	1.00	
(8) **AB-Brisk**	2.59	2.44	-0.04***	-0.11***	0.04***	0.88***	0.01	0.10***	-0.04***	1.00

**** p<0.01, ** p<0.05*

Source: Authors own creation

Table 3 presents the empirical results. Apart from M1 (corresponding to Q1), all three models (i.e., M2, M3, and M4 corresponding to Q2, Q3, and Q4, respectively) indicate negative risk-return relationships. Additionally, the adjusted risk proxies accounting for downside variations of return, as estimated by M5, M6, M7, and M8, consistently reaffirm the results obtained in our earlier estimations. Thus, our results maintain consistency across both standard deviation and semi-standard deviation measures of risk, providing robust empirical support for Bowman's paradox in Asian Emerging Countries (AEC). Consequently, the uniformity of empirical results for risk-return relationships across most quadrants has rejected Bowman’s paradox empirical artifact viewpoint in AEC. The divergence observed between market-based and accounting-based risk-return relationships can be attributed to fundamental disparities in the characteristics, objectives, and risk tolerance of the capital market and its participants as opposed to firm operations and stakeholder perceptions of firm risk at firm level. In the capital market, risk can be relatively easily diversified, hedged, and transferred within a short timeframe. Conversely, at the firm level, risk is perceived as disruptive, challenging to diversify and transfer, cost-incurring, and requires a significant amount of time to mitigate. Thus, risk in the capital market is perceived and managed differently from risk at the firm level.

In contrast to a single proxy for firm risk, the division into systematic risk and business risk yields mixed results. Except for M11 (corresponding to Q3), where both systematic and business risks exhibit negative associations, the models M9, M10, and M12 (corresponding to Q1, Q2, and Q4) demonstrate a positive association between systematic risk and return, and a negative association is projected for business risk and return. This variation in the risk-return relationship is inherently apparent and will persist due to the unique characteristics and composition of risk measures, their impact on various facets of firm operations, and variations in industry and country dynamics. As such, specific risk measures should be adopted based on the particular situation and theoretical perspective, taking into account the sources of risk and reflecting the viewpoint of the relevant stakeholders. For instance, suppliers and employees may be concerned with revenue fluctuations, while investors may focus on variations in stock returns.

Table 3 Empirical Results

	(M1) MB-Return	(M2) AB-Return	(M3) MB-Return	(M4) AB-Return	(M5) MB-Return	(M6) AB-Return	(M7) MB-Return	(M8) AB-Return	(M9) MB-Return	(M10) AB-Return	(M11) MB-Return	(M12) AB-Return
MB-Firm Risk	93.12***	-26.58*			103.11***	-84.80***						
	(23.76)	(25.39)			(27.18)	(26.63)						
AB-Firm Risk			-72.31***	-13.37***			-28.40***	-3.94***				
			(24.82)	(4.41)			(6.31)	(0.49)				
MB-SRisk									77.92***	2.98*		
									(8.21)	(1.74)		
MB-Brisk									-83.74***	-69.56***		
									(35.12)	(23.02)		
AB-SRisk											-92.97**	9.02**
											(40.69)	(3.93)
AB-Brisk											-77.29**	-16.47**
											(34.87)	(6.72)
FLev	-0.03	-0.09***	-0.01	-0.10***	-0.02**	-0.07***	0.45***	-0.03**	0.05	-0.09***	0.09	-0.11***
	(0.02)	(0.01)	(0.05)	(0.01)	(0.01)	(0.02)	(0.12)	(0.02)	(0.05)	(0.01)	(0.07)	(0.02)
FSize	0.35	2.98***	-5.60**	2.51***	-0.70	2.34***	-17.93***	0.84**	-4.16***	2.79***	21.63*	-0.16
	(0.46)	(0.28)	(2.46)	(0.30)	(0.44)	(0.46)	(4.52)	(0.37)	(1.47)	(0.38)	(11.86)	(1.02)
GDPG	-1.46**	0.10	-1.17*	0.17	-2.07***	0.44**	-2.85***	-0.08	-4.92***	-0.04	-2.78**	0.31***
	(0.60)	(0.10)	(0.68)	(0.11)	(0.44)	(0.20)	(0.68)	(0.06)	(0.93)	(0.09)	(1.09)	(0.09)
Cons	-55.24***	-38.87***	153.21***	-12.11*	16.74**	-17.23**	209.64***	9.30	51.15	-21.87***	138.00***	-64.72**
	(8.52)	(3.95)	(44.33)	(6.31)	(8.10)	(6.89)	(43.76)	(6.02)	(33.73)	(5.50)	(23.13)	(25.90)
Year Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Kleibergen-Paap-rk LM statistic	7.814**	7.814**	5.155**	5.155**	7.484**	6.123**	6.794**	6.794**	7.529**	7.529**	5.497*	5.497*
Cragg-Donald Wald F-statistic	363.37	363.37	30.192	30.192	53.478	27.028	34.037	34.037	70.371	70.371	8.514	8.514
Stock-Yogo weak ID test												
10% max IV size	19.93	19.93	19.93	19.93	19.93	19.93	19.93	19.93	13.43	13.43	13.43	13.43
15% max IV size	11.59	11.59	11.59	11.59	11.59	11.59	11.59	11.59	8.18	8.18	8.18	8.18
20% max IV size	8.75	8.75	8.75	8.75	8.75	8.75	8.75	8.75	6.40	6.40	6.40	6.40
25% max IV size	7.25	7.25	7.25	7.25	7.25	7.25	7.25	7.25	5.45	5.45	5.45	5.45
Hansen J statistic	2.230	1.168	7.371	2.107	8.021	0.968	6.245	0.216	0.288	0.933	6.541	1.307
Endogeneity test	4.914**	1.366**	.003**	6.805***	0.853**	5.785**	0.001*	5.734**	1.023*	1.225**	0.004*	0.003**
F-Statistics	763.81***	1249.17***	763.50***	106.45***	988.68***	684.75***	502.41***	5499.50***	881.13***	441.57***	522.12***	100.26***

Cluster robust standard errors are in parenthesis

**** p<0.01, ** p<0.05, * p<0.1*

Source: Authors own creation

Recent empirical findings also cast doubt on the appropriateness of linear models for modeling risk-return relationships (Mahmood and Kunst, 2022). However, our estimated empirical results based on quadratic models are largely inconclusive, except for Q1. This is also confirmed by the scatter plot presented in Figure 4. The only exception is in Figure 4a, where there appears to be a slight potential for a non-linear relationship. Nevertheless, we maintain confidence in the robustness of our empirical results based on linear models, as there is no substantial evidence supporting a non-linear risk-return relationship.

Figure 4 Linear/Quadratic Fit

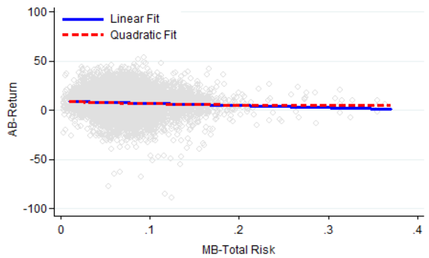


Figure 4b
Linear/Quadratic Fit for Q2

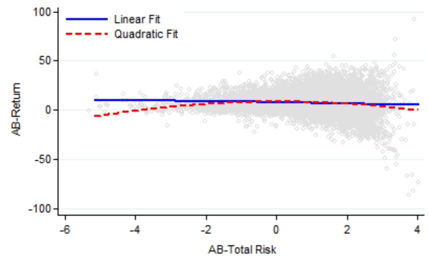


Figure 4d
Linear/Quadratic Fit for Q4

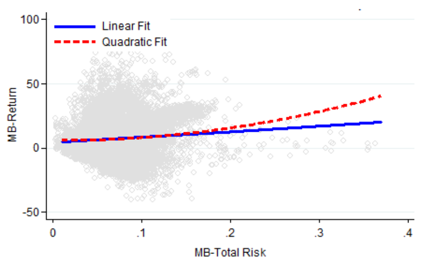


Figure 4a
Linear/Quadratic Fit for Q1

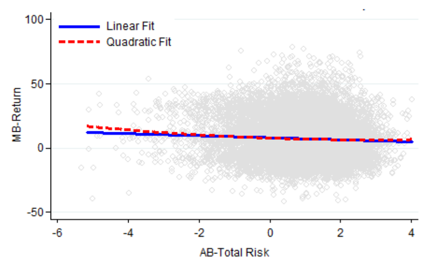


Figure 4c
Linear/Quadratic Fit for Q3

Source: Authors own creation

However, when plotting risk-return relationships on a country-by-country basis, as depicted in Figure 5, we not only observe signs of non-linearity but also found disparities among the countries. For instance, in Figure 5a, the risk-return relationship of Chinese firms follows a U-shaped pattern, and it is notably steeper than that of the other three countries. In Figure 5c, the risk-return relationship for Chinese firms is U-shaped, while other countries exhibit an inverted ∩-shape. Conversely, in Figure 5b and Figure 5d, the risk-return relationships are similar across countries and appear more linear. As a whole, Chinese firms display significant variations in their risk-return relationships compared to the other countries.

Figure 5 Country-wise Quadratic Fit

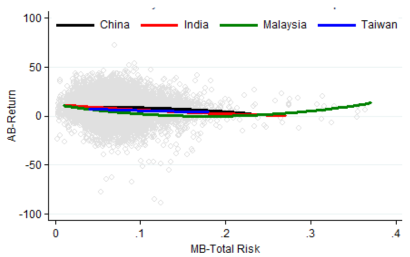


Figure 5b
Country-wise Quadratic Fit for Q2

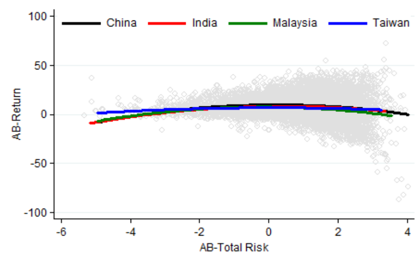


Figure 5d
Country-wise Quadratic Fit for Q4

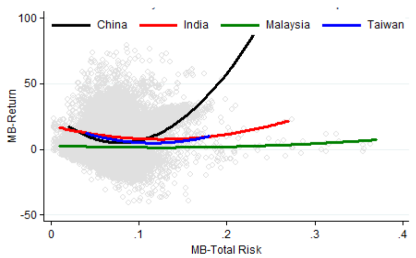


Figure 5a
Country-wise Quadratic Fit for Q1

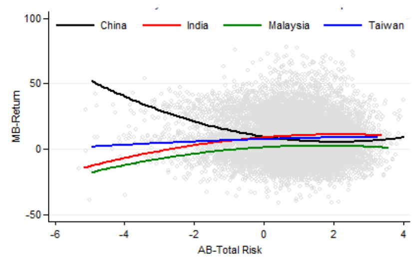


Figure 5c
Country-wise Quadratic Fit for Q3

Source: Authors own creation

4.1. Robustness analysis

The reliability of our findings has been reaffirmed through an extensive range of robustness tests, all of which are documented in Table 4. To assess the influence of individual countries on our outcomes, we systematically excluded firms of each country one by one and examined the results based on the firms of the remaining three countries. Specifically, Panel 1, Panel 2, Panel 3, and Panel 4 are constructed from samples where we have excluded firms of China, India, Taiwan, and Malaysia, respectively. Our analysis revealed that there are no significant differences compared to the results presented in Table 3, especially when using a single risk proxy (M1 to M8). Our results remained consistent across both risk measures based on standard deviation and semi-standard deviation.

However, in Panel 1, where firms from China were omitted from the sample, we observed notably different results compared to our previous findings. Furthermore, our empirical results based on models M9 to M12, where we divided firm risk into systematic risk and business risk, exhibited substantial variations across each panel and differ significantly from the results presented in Table 3 for the same models.

Table 4 Robustness Tests

	(M1) MB-Return	(M2) AB-Return	(M3) MB-Return	(M4) AB-Return	(M5) MB-Return	(M6) AB-Return	(M7) MB-Return	(M8) AB-Return	(M9) MB-Return	(M10) AB-Return	(M11) MB-Return	(M12) AB-Return
Panel 1: Without China												
MB-Firm Risk	76.64***	70.05			-81.19***	-53.10						
AB-Firm Risk			2.68	2.05			51.40	5.59				
MB-SRisk									26.10***	1.62		
MB-Brisk									-68.10	-62.72		
AB-SRisk											34.43***	-1.20
AB-Brisk											-3.66	3.16
Panel 2: Without India												
MB-Firm Risk	65.37***	-43.72***			86.19***	-85.10***						
AB-Firm Risk			-34.06**	-5.22			-27.81***	-4.82***				
MB-SRisk									-75.27***	3.04		
MB-Brisk									77.50***	-89.42***		
AB-SRisk											-67.43**	16.84*
AB-Brisk											-74.71*	-3.60
Panel 3: Without Taiwan												
MB-Firm Risk	67.06***	-27.23			-86.10***	-62.75*						
AB-Firm Risk			-61.75**	-11.83**			-47.21***	-3.01***				
MB-SRisk									91.24***	3.72		
MB-Brisk									-79.81***	-68.77***		
AB-SRisk											-76.00**	8.88***
AB-Brisk											-77.32*	-12.26
Panel 4: Without Malaysia												
MB-Firm Risk	94.90***	-27.64			51.62***	-37.45**						
AB-Firm Risk			-72.51***	-12.98**			-65.42***	-2.55***				
MB-SRisk									88.64***	3.96		
MB-Brisk									94.04***	-68.87		
AB-SRisk											48.68	37.11*
AB-Brisk											-85.90**	-34.71*

Cluster robust standard errors
**** p<0.01, ** p<0.05, * p<0.1*

Source: Authors own creation

5. Conclusion

The theoretical foundation underlying Bowman's paradox carries significant implications for management research. Nevertheless, the use of multiple proxies, models, and the distinctions between proponents of financial theory and corporate strategy researchers have prompted notable voids. In our effort to address this gap, we sought to bridge this divide by exploring four distinct risk-return relationships based on capital market and accounting data within the context of AEC. Based on our comprehensive investigation, we assert that the relationship between risk and return remains consistently negative, regardless of whether market-based or accounting-based single proxies are employed. Additionally, our examination confirmed that adjusting risk proxies to account for downside variations did not yield significant alterations in the risk-return relationship. Furthermore, we did not find any evidence of a non-linear risk-return relationship in AEC.

From theoretical point of view, the risk-return relationship established on market-based single measure proxies aligns with the positive association proposed in financial theory. In contrast, when constructing a risk-return relationship based on accounting-based ratios or a combination of these ratios with market-based measures, it supports Bowman's negative risk-return paradox. Although this contrasting theoretical divide seems alarming, we assert that there is no inherent conflict between financial theory and corporate strategy regarding the risk-return relationship. Both schools of thought have some valid and deep-rooted theoretical foundations, which prevail under distinct circumstances. Most importantly risk-return relationship in the capital market is perceived and managed differently from risk at the firm level. Therefore, risk-return relationship will be consistently validated, as in this study, if properly theorized and operationalized within their respective domain. That is, positive from a financial theory point of view and negative in corporate strategy research, if single measure risk-return proxies are utilized. However, our results reveal a significant divergence when we dissect firm risk into systematic risk and business risk based on firm exposure to various levels of operation. Furthermore, we identified no significant differences between estimates based on standard deviation and semi-standard deviation. Additionally, we did not detect any evidence of a non-linear risk-return relationship within the AEC context. As a result, our empirical findings reject Bowman's paradox empirical artifact viewpoint in AEC to the extent of single proxy used for risk and return.

No research is without limitations, and this study is no exception. The first limitation pertains to the calculation of capital market-based risk-return measures, which rely on financial models, with some inherent limitations and assuming efficient markets. Similarly, accounting principles and practices across the four AEC countries are not entirely harmonized, leaving space for potential discrepancies based on accounting standards and practices adopted in different AEC. Second, researchers must consider the specific circumstances in which risk-return proxies are assessed. Numerous organizational decisions and external events may confound both firm risks and returns, underscoring the importance of distinguishing whether the risk-return relationship is influenced by confounding factors or represents a direct impact on firm returns. Lastly, the temporal scope of our study is limited, and we recommend extending it for future research.

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Appendix 1 Fixed Effect OLS Pannel Results

	(M1) MB-Return	(M2) AB-Return	(M3) MB-Return	(M4) AB-Return	(M9) MB-Return	(M10) AB-Return	(M11) MB-Return	(M12) AB-Return
MB-Firm Risk	98.34***	2.84						
	(7.49)	(2.02)						
AB-Firm Risk			-0.57	-0.57***				
			(0.44)	(0.14)				
MB-SRisk					6.39***	-0.07		
					(0.30)	(0.11)		
MB-Brisk					81.09***	8.16**		
					(7.31)	(3.44)		
AB-SRisk							0.19	0.15
							(0.30)	(0.12)
AB-Brisk							-0.33	-0.58***
							(0.32)	(0.13)
FLev	0.00	-0.09***	0.01	-0.09***	0.01	-0.09***	0.01	-0.09***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
FSize	-1.33***	3.05***	-1.62***	3.04***	-1.58***	3.06***	-1.66***	3.00***
	(0.29)	(0.31)	(0.35)	(0.30)	(0.33)	(0.30)	(0.33)	(0.30)
GDPG	-1.60***	0.11	-1.62***	0.11	-1.86***	0.11*	-1.61***	0.11
	(0.40)	(0.09)	(0.39)	(0.09)	(0.11)	(0.07)	(0.11)	(0.07)
Cons	25.56***	-33.15***	31.68***	-36.21***	24.78***	-32.99***	34.56***	-32.94***
	(5.13)	(4.67)	(5.12)	(4.06)	(4.71)	(4.25)	(5.13)	(4.09)
Year Dummies	Y	Y	Y	Y	Y	Y	Y	Y
F-Statistics	3081.17***	532.09***	10032.24***	2954.44***	708.86***	122.03***	1097.38***	111.06***
Endogeneity test	4.914**	1.366**	.003**	6.805***	1.023*	1.225**	0.004*	0.003**
R-squared	0.22	0.08	0.20	0.09	0.26	0.08	0.20	0.09

Cluster robust standard errors are in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors own creation