ACCRUALS QUALITY, STOCK RETURNS AND INFORMATION RISK: EVIDENCE FROM VIETNAM*

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Prior studies on whether information risk is relevant for asset pricing have mixed findings across different countries. This study aims to re-examine this risk in an emerging market such as Vietnam. Using data from two stock exchanges in Vietnam, we investigate (1) if there are evidence of mispricing among accrual quality (AQ) portfolios and (2) whether the AQ factor is useful in explaining the time series portfolio returns. We further examine whether AQ measured by innate accruals and discretionary accruals is a priced risk factor by using the two-stage cross-sectional model suggested by Core et al. (2008). Our findings demonstrate that AQ does explain the time-series variation in returns of 06 size-BM portfolios, and AQ portfolios are overpriced in the Vietnamese stock market. However, we find no evidence that AQ is a priced risk factor in such inefficient Vietnamese. This might be because unprofessional investors are unaware of earnings management embedded in each component of AQ and the lack of transparency in the equity market.

Keywords: Accruals Quality, Discretionary accruals, Innate accruals, Informational Risk, Emerging Markets, Vietnam
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1. INTRODUCTION

Information risk has long been of interest to researchers and practitioners due to its capability in explaining future stock returns and equity valuation in an efficient market. Standard setters also frequently refer to the link between accounting information and the cost of capital as one of their most significant interests (Lambert et al., 2007). Theoretically, Easley and Ohara (2004) argue that investors cannot effectively diversify away all the information risk and propose an asset pricing model in which accounting information risk is a priced risk factor, among other factors. According to Easley and Ohara (2004), uninformed investors may require a higher return to compensate for less information received. Thus, the information risk factor which is measured by information asymmetries among participants in the market, is associated with the increase in the cost of capital. In another study, Lambert et al. (2007) argue that although information asymmetries can play a role in the cost of capital, information quality measured by information precision rather than information asymmetries is the key factor that affects the firms' cost of capital in a perfect competition market. However, later, Lambert et al. (2012) suggest that information risk in asset pricing models should be measured by information asymmetries and information precision in an imperfect market. Based on Lambert et al. (2012)'s suggestion, this study, while aiming to explore information risk under the inefficient market condition, adopts information asymmetries as a measure of information risk and information asymmetries is defined by "the likelihood that firm-specific information that is pertinent to investor pricing decisions is of poor quality" (Francis et al., 2005, p.296).

In prior literature, information risk has been proxied by several variables such as accruals anomaly, earning persistence (Sloan, 1996) or accruals quality (AQ) (Francis et al., 2005), among which AQ is a highly adopted proxy for information risk associated with earnings. AQ can directly capture the problems with accounting measurement and cash flow timing and is relevant to accounting information research (Dechow et al., 2010). According to Francis et al. (2005), since accruals quality measures the mapping between cash flows and accounting profits (earnings), extreme accruals (poor AQ) represents a low persistent of earnings, thus leads to high information risk (i.e. earnings quality risk) for investors in pricing decisions making. AQ also reflects the information asymmetries between the firm's insiders and outsiders, as insiders may have more information about the timing of cash flows and the mapping between earnings and net cash flows (Safda and Yan, 2017).

The impact of AQ on future stock returns has long been under debate in the market-based accounting literature (see Dechow et al. (2010) for a review). To further understand the nature of the impact of AQ on the capital market, AQ can also be decomposed into discretionary AQ (i.e. abnormal accruals), capturing distortions induced by earnings management or by application of accounting rules and innate AQ (i.e. normal accruals) which reflects the accruals as a result of fundamental firms' factors such as business model and operating environment (Dechow and Dichev, 2002).

Empirically, mixed findings have been found in various studies of the influence of AQ on future stock returns across different countries. For example, in the US, Francis et al. (2005) find that poor AQ as a proxy for higher information risk links with a higher cost of capital. However, Core et al. (2008), while criticizing the method employed by Francis et al. (2005), argued that AQ is not a priced risk factor in the US if using an appropriate method. In other countries, such as Australia, Gray et al. (2009) document that the cost of capital is influenced by AQ arising from economic fundamentals (i.e. innate AQ) but not discretionary reporting choices (i.e. discretionary AQ). In contrast, Aldamen and Duncan (2013) find that in Australia, both discretionary accruals and innate accruals affect the cost of debt after incorporating several controlling factors specifically for the cost of debt. In particular, higher innate accruals significantly reduce the cost of debt, while discretionary accruals exhibit a positive association with the cost of debt. Similar to Gray et al. (2009)'s study, in the UK, Mouselli et al. (2013) find that AQ, measured by discretionary AQ, is not a priced risk factor.

One important implicit assumption in the studies of the link between accounting information risk and future stock returns is the semi-strong form of the efficient market (Aboody et al., 2002). By hypothesising that information risk is a non-diversifiable systematic risk, Gray et al. (2009) find that in a semi-strong efficient market as Australia, when information risk is reduced by higher information transparent environment and low information risk, the adjustment of the cost of capital and the cost of debt for information risk is also reduced. However, if the market efficiency assumption is to be relaxed, will AQ be a priced risk factor? In other words, if a market is inefficient/ weak efficient, will information risk be more likely reflected in the stock returns across time periods? Studying in the inefficient market is important to further understand how the market incorporates information risk in future stock prices under different conditions. Numerous studies show that information risk is a priced risk factor under semi-strong efficient markets, but limited studies in markets with low-efficiency levels or even inefficiency have been done despite the large numbers of countries in this group. The purpose of this study is to re-examine this issue in an emerging market without any form of efficiency to investigate if investors and the market indeed price the information risk. Our study reports an empirical examination on the AQ as a proxy for information risk to answer the question: "Does AQ explain the cross-sectional variation of stock returns in the Vietnamese stock market over time?". It answers this question by examining three aspects: (i) Is discretionary AQ factor a priced risk factor? (ii) Is the innate AQ factor a priced risk factor? and (iii) If they are priced risk factors, how do they influence the future returns of the constructed portfolios?

This research bases on the data in the Vietnamese market, an emerging and developing country. Vietnam is currently a member of a group of emerging economies – CIVETS countries (including Colombia, Indonesia, Vietnam, Egypt, Turkey and South Africa) with young and growing populations and dynamic economies (Batten and Vo, 2014). Exploring the influence of AQ on stock returns in Vietnam is important and of interest for three reasons. First, Vietnam, while attracting increasing interests from foreign investors in capital markets, also faces some issues in establishing a transparent and reliable information environment. Numerous global fund managers and investors raise their major concerns on the reliability of accounting data in the Vietnamese market (Zhou et al., 2006). In addition, Binh (2012) finds that a number of important information is excluded from voluntary disclosures, which may reflect a high level of information risk in Vietnam. Yet, about 85% of investors in the market are exposed to higher risks than any other type of investor. Findings in this study can raise a warning alert to these investors about risks relating to accounting information, particularly relating to manager's intentional manipulated earnings. Second, Bach and Hang (2016) claimed that the information quality remains rather poor despite the in-progress reform of the Vietnamese accounting system toward international accounting standards. The post-crisis economic restructuring policies have positively impacted the quality of accounting information. Ministry of Finance is in the process of transitioning Vietnamese accounting standards (VAS) to International Financial Reporting Standards (IFRS), yet, whether the current poor quality of the accounting system has resulted in higher information risk, thus affect the stock returns, is not documented. To support the reform, this study aims to provide evidence on the link between accruals quality and stock returns across companies and across times so that standard setters understand the current practice in Vietnam. Finally, with regard to market efficiency, Phan and Zhou (2014) report that the weak-form efficient market hypothesis does not hold for the Vietnamese stock market, although the level of efficiency of the market has been gradually improved during nearly 10 years in operation. In other words, the Vietnamese market is not yet efficient due to incomprehensive legal corridors, small market size and unprofessional investors. This context provides an opportunity to challenge the market efficiency assumption in information risk studies, hence extend the current literature on this topic.

We adopted the two-stage cross-sectional regression (2SCSR) approach as suggested by Core et al. (2008) since this method expresses a well-specified test for the hypothesis of the association between proposed risk factors and time series cross-sectional variation in expected returns. We decomposed the AQ factor into discretionary AQ factor and innate AQ factor and find that the AQ factor is useful in explaining the time-series variation of future stock returns and AQ portfolios that are mispriced in the Vietnamese market. However, we do not find evidence supporting the hypothesis that AQ is a priced risk factor.

This study contributes to the literature in two aspects. First, this is one of the first studies examining the AQ in the context of emerging and developing countries. Unlike developed countries, the markets in emerging countries are in weak or even inefficient form. High information asymmetries and low information quality will lead to high information risk, yet whether high information risk is incorporated in stock price is unclear. Second, this study advances previous studies (Core et al., 2008; Gray et al., 2009; Francis et al., 2005; Mouselli et al., 2013) by addressing the role of information risk (proxied by accruals quality) in explaining stock returns. When investigating the relationship between accruals quality and future stock returns, we do not find strong evidence to support the notion that higher stock returns should be compensated for suffering higher information risk in the Vietnamese stock market. A potential explanation for our results can be made from the preference in trading large shares of individual investors in the market rather than their true acknowledgement of the difference in accruals quality across firms. Importantly, our study identifies that higher accruals quality firms tend to have higher excess stock returns, which seems to be a unique characteristic of an emerging stock market as Vietnam.

The remainder of the paper is structured as follows. Section 2 provides a review of literature on AQ, information risk, stock returns and the cost of capital. In Section 3, we describe the methodology and data collection process. Results and discussion are provided in Section 4. Finally, Section 5 is the conclusion.

2. LITERATURE REVIEW

2.1. Accruals Quality and Information Risk

Accruals are important elements of earnings quality, which has implications for equity valuation. According to Dechow and Dichev (2002), the primary purpose of accruals recording is to adjust the recognition of cash flow over time. Thus, accruals have an influence on the timing of future cash flows and equity values. Cash flow is a critical element in equity valuation; thus, accruals, while mapping corporate accounting profits with its cash flows, play an important role in investors' pricing decisions (Francis et al., 2005). Dechow and Dichev (2002) also suggest a method to estimate accruals by regressing the changes in working capital on the past, current and future cash flows, then the regression residuals provide the measure of AQ. The rationale of this method is that accruals reflect future cash flows since accruals predict the future cash collection/payment and reverse when cash previously recognised in accruals is received/ paid. The calculation of AQ also demonstrates that the company's accruals quality is affected by the measurement errors arising from both managers' discretion and fundamental performance.

To capture different sources of risks from either manager's discretion or fundamental performance, AQ can be decomposed into innate accruals and discretionary accruals (Francis et al., 2005). Innate accruals capture the accruals driving by fundamental factors such as the firm's business model and operating environment while discretionary accruals capture accruals from accounting choices, implementation decisions, and managerial errors. According to Francis et al. (2005), there are three subcomponents of discretionary AQ, namely performance subcomponent to enhance the ability of earnings to reflect firm's performance, opportunistic and noise subcomponents which are likely to increase information risk. On the other side, innate accruals can also be changed by management (for example managers can change the business model or change the operating environment by exiting from current business lines or geographical locations), although firm's fundamental features drive it. In measuring information risk, innate accruals take time to change (either increase or decrease), being slower concerning discretionary accruals (Gray et al., 2009). In addition, since discretionary accruals consists of three subcomponents combining risk-increase and risk-decrease factors, the overall effect of discretionary accruals on information risk might be lower than innate accruals.

Based on accruals' feature of mapping profits and cash flows, prior literature suggests using AQ as a proxy for information risk (Sloan, 1996; Francis et al., 2005; Gray et al., 2009; Mouselli et al., 2012). According to Sloan (1996), the accruals component of earnings exhibits lower persistence in predicting future earnings than the cash flows component of earnings. In line with Sloan (1996)'s argument, Dechow and Dichev (2002) argue that earnings in firms with extreme accruals tend to exhibit more estimation errors because accruals adjustments are likely to contain more forecasts and more estimations. More importantly, Sloan (1996) finds that earnings management may result in lower earnings performance attributable to the accruals component. This reflects an information risk in pricing stock where accruals can be adopted in earning manipulations (Dechow et al., 1995). Empirical studies also confirm that accruals quality is associated with information asymmetry because different investors have different abilities to process information relating to poor earnings quality and extreme accruals quality; thus, it may exacerbate information asymmetry in the market (Bhattacharya et al., 2013).

Based on the suggestion of using AQ as an information risk proxy, scholars have conducted various studies on the impact of AQ on future stock return (Francis et al., 2005; Kim and Qi, 2010; Mouselli et al., 2013; Ogneva, 2012) to answer the key question whether AQ should be priced. Nevertheless, literature has shown no agreement on this question.

2.2. Accruals Quality and the Costs of Capital

Theoretically, the impact of AQ on the cost of capital is explained by a model proposed by Easley and O'hara (2004), in which the authors argue that accounting information relating to the firm's expected cash flow influences the firm's equilibrium asset price. The differences in the composition of information between public and private information affect the cost of capital. In particular, shares of companies with greater private information and less public information demand a risk premium since uninformed investors will require an additional return (lower purchase price or higher selling price) to compensate for information risk. Therefore, information risk is a non-diversifiable risk factor that is priced by the capital market. Easley and O'hara (2004) further imply that accounting standards, market microstructure and financial analysis can all be thought of as influencing the information structure surrounding a company's stock and may be included in existing asset pricing models because these factors may create more accruals (either innate or discretionary) that lower the earnings quality.

Empirical studies supporting the idea that accruals quality - a proxy for information risk should be priced are Francis et al. (2005), Ecker et al. (2006), Khan (2008), Callen et al. (2013), in the US, and Gray et al. (2009), Alderman and Duncan (2013) in Australia. Francis et al. (2005) report that US firms with poor AQ have a higher cost of capital than do firms with good AQ. In this study, time series regression of each firm's realized returns on the AQ risk factor, controlling for other risk factors (market, firm size and book value to market value) demonstrates that AQ factor is useful in explaining the time-series variation in abnormal returns across firms. Hence, AQ factor, representing for information risk, is a non-diversifiable risk factor. Notably, the authors find that the innate accruals component of AQ, which reflects economic fundamentals, shows a lower effect on the cost of capital than its discretionary counterpart does. In a later study, Kim and Qi (2010) witness a significant AQ risk factor affecting firms' cost of capital and this relation differs subject to different fundamental risks such as low-priced stocks, business cycles, macroeconomic shocks. Ogneva (2012) claims a significant negative association between AQ and returns after controlling for another risk - cash flow shocks. These authors' findings support the notion of Francis et al. (2005) that AQ is a priced risk factor. In line with Francis et al. (2005), Gray et al. (2009) provide evidence that total accruals quality is significantly related to the cost of equity in Australian firms. However, unlike Francis et al. (2005), the authors find that only an innate component of AQ is associated with the cost of equity and no evidence is reported for the impact of discretionary AQ on firms' cost of capital in the Australian market. This is because information risk is lower in the Australian market due to the nature of the debt market and the regulatory environment (continuous disclosures requirements in Australia).

Several studies document different findings in this area in the same strand of literature to explore the link between AQ and stock returns. For example, Core et al. (2008), while criticise the use of time series regression by Francis et al. (2005), propose the use of two-stage cross-sectional regression (2SCSR) to test whether a proposed risk factor is priced. Using the 2SCSR approach, Core et al. (2008) find no evidence that AQ is a priced risk factor in the US. This finding is also supported by Mouselli et al. (2013) who apply the 2SCSR model to test the AQ factor in the UK market and report no evidence of AQ being a priced risk factor. To further explain this finding, Fan and Yu (2013) show that accruals abnormal returns are positively correlated to idiosyncratic risk in international equity markets. However, the impact is lower in developed countries than in emerging countries. Liu and Wysocki (2007) demonstrate that AQ is not related to systematic risk after controlling for firm-specific characteristics. Cohen (2008) argued that the level of AQ is only a management strategic decision.

Another strand of literature argues that the level of information precision (defined as the quality of information on a firm's expected cash flows made available to investors), rather than information asymmetry affects equilibrium prices in a perfect world (Lambert et al., 2012). Hughes et al. (2007) demonstrated that the pricing effect of private information indicated by Easley and O'Hara (2004) is driven primarily by diversification and would tend to disappear in large economies. In addition, after controlling for betas, Hughes et al. (2007) find no cross-sectional effect of information asymmetries on the cost of capital. Mohanram and Rajgopal (2009) find no evidence that private information is linked with the implied cost of capital derived from analysts' earnings forecasts. Accordingly, it is questionable whether information risk, measured by information asymmetry, is priced.

Given extensive empirical studies focus mainly on the developed markets, including the US, UK and Australia, there is a demand to extend the literature to emerging and developing countries. Although these countries have a different environmental context than developed countries, information risk and its influence on stock returns are of importance and interest to researchers, practitioners, and regulators. To shed further light on this research scheme of incorporating accounting information in asset pricing on capital markets, this study focuses on Vietnam – a developing country, to re-examine the relation between AQ, a proxy for information risk, and stock returns.

3. METHODOLOGY AND DATA

3.1. Data and Sample Selection

The sample comprises monthly data covering all non-financial listed companies in Ho Chi Minh City stock exchange for the period from April 2007 to March 2016. Following Fama and French (1993) and Mouselli et al. (2013), we exclude financial institutions (banks, insurance companies, investment funds and property companies) and companies with negative book value to market value (BM) ratio since financial institutions' accruals are different in nature as compared with non-financial companies. Annual financial data are obtained from the Stoxplus database. Monthly inclusive dividend stock returns are calculated from adjusted stock prices provided by Stoxplus. Annual government bill yields, provided by the State Bank of Vietnam, are used as a proxy for the risk-free rate.

According to the Circular numbered 52/2012/TT/BTC of the Ministry of Finance, public companies are required to disclose annual financial reports no longer than 90 days after the end of the fiscal year which means all the data will be available by the first of April as the latest. Therefore, the monthly return of year t is calculated from April of year t to March of year $t+1$ for the market stock price to incorporate available information. In addition, BM and AQF factors require accounting data of year $t-1$. Therefore, to be included in the sample, companies are required to have accounting data and adjusted stock prices from the first quarter of 2007 to the first quarter of 2016. In total, the sample includes 231 companies with 15,336 monthly observations.

Table 1. The Number of Sample Firms by Industry from 2007-2015

Order	Industry	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	Basic materials	8	15	19	24	34	39	40	40	42
2	Consumption goods	20	26	29	38	46	49	51	51	51
3	Consumption services	2	4	5	7	11	13	13	13	15
4	Health care	4	3	6	6	9	10	10	10	10
5	Industrial	25	31	40	48	68	75	80	81	84
6	Oil and gas	1	1	1	1	1	1	1	1	1
7	Technology	2	3	4	3	8	8	8	8	8
8	Utility	6	6	7	12	16	18	20	20	20
	Total	68	89	111	139	193	213	223	224	231

Notes: Firms are allocated into industries according to Stoxplus's ICB level 1.

3.2. AQ and Future Stock Returns

We use two processes to investigate the relationship between AQ and future stock returns: (i) investigating the association between AQ and individual stock returns; and (ii) estimating the time-series regressions of portfolio excess returns on factor-mimicking portfolios.

In the first stage, we test the relationship between AQ and individual stock returns after controlling for several factors that might influence stock returns, such as firm size and book value ratio to the market value of equity. For each monthly time period t, we run the following pooled OLS regression:

$$R_{i,t} = \alpha_{0,t} + \gamma_{size,t} Size_{i,t} + \gamma_{BM,t} BM_{i,t} + \gamma_{AQ,t} AQ_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where $R_{i,t}$ is the return on stock i in month t; $Size_{i,t}$ is the natural logarithm of the market cap; $BM_{i,t}$ is the ratio of the book value of equity to the market value of equity at the end of the previous fiscal year; and $AQ_{i,t}$ is measured by the absolute value of non-discretionary (NDAC) and discretionary (DAC) accruals estimated by Kothari et al. (2005). We test the null hypothesis $\gamma_{AQ,t} = 0$. Rejection of the null would provide evidence that AQ is relevant in explaining individual stock returns. We also test the null hypothesis $\gamma_{SIZE} = 0$ and $\gamma_{BM} = 0$. If this null is rejected, it is proved that size and BM factors are relevant in explaining individual stock returns.

Second, we examine if there is any evidence of mispricing among the AQ portfolios and whether the estimated mispricing varies between the low and high-AQ portfolios. Following Mouselli et al. (2013), we apply the Fama and French (1993) three-factor model to investigate evidence of mispricing among the AQ portfolios. The Fama and French model specification is

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{m,i}(R_{m,t} - R_{f,t}) + \beta_{SMB,i}SMB_t + \beta_{HML,i}HML_t + \varepsilon_{i,t}. \quad (2)$$

$R_{i,t}$ is the return on the AQ portfolio i in month t; $R_{m,t}$ is the return on the market portfolio; $R_{f,t}$ is the risk-free return; SMB_t is the size HML_t is the BM factor. An estimated intercept term for any portfolio that is significantly different from zero indicates either under-or overpricing. Accordingly, we test the null hypothesis of $\alpha_i = 0$ for each portfolio i. In addition, we investigate the association between AQ and market risk, firm size and book value to market value ratio. If AQ is not associated with market risk, firm size and book value, the estimated $\beta_{m,i}$, $\beta_{SMB,i}$ and $\beta_{HML,i}$ should not differ significantly across the five portfolios. Accordingly, we test the null hypotheses of equality between the $\beta_{m,i}$, between the $\beta_{SMB,i}$, and between the $\beta_{HML,i}$ for $i = 1, \cdots, 5$.

3.3. Asset Pricing Tests

Core et al. (2008) suggest that the two-stage cross-sectional regress (2SCSR) introduced by Fama and MacBeth (1973) should be applied to test if a proposed risk factor is priced. In this paper, following Core et al. (2008) and Mouselli et al. (2013), we apply 2SCSR to examine whether AQ is a priced risk factor. Also, Nguyen and Tran (2012) find that the three-factor model is applicable in the Vietnamese stock market to explain the stock returns; thus the proposed method and model are relevant in this study. In particular, we run two following stages:

Stage 1: We test if the AQ factor that reflects the difference in average returns between low-AQ and high-AQ firms are useful in pricing 6 size-BM portfolios by comparing the R-Square of Eq(3) and Eq(4). If AQ factors are helpful in explaining the time series variation of excess return, the coefficient of AQF ($\beta_{\mathrm{AQ,i}}$) in Eq(4) of at least one portfolio should be significantly different from zero.

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{m,i}(R_{m,t} - R_{f,t}) + \beta_{SMB,i}SMB_t + \beta_{HML,i}HML_t + \varepsilon_{i,t}, \quad (3)$$

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{m,i}(R_{m,t} - R_{f,t}) + \beta_{SMB,i}SMB_t + \beta_{HML,i}HML_t + \beta_{AQF,i}AQF_t + \varepsilon_{i,t}, \quad (4)$$

where $R_{i,t}$ is the average monthly return of BM-size portfolio i in month t, $R_{m,t}$ is the return on the market portfolio, $R_{f,t}$ is the risk-free return. SMB_t is the size factor in month t defined in Section 3.4.3, HML_t is BM factor in month t defined Section 3.4.3, AQF_t is AQ factor constructed in Section 3.4.4 and $\varepsilon_{i,t}$ is the error term.

Stage 2: We run cross-section regressions of portfolio excess returns on the factors' betas for testing if the AQ factor is priced and identifying the model that best explains the cross-sectional variation in portfolio returns. The estimated betas from Eq(3) and (4) are used as independent variables in Eq(5) and (6) as follows:

$$R_{i,t} - R_{f,t} = \gamma_{0,t} + \gamma_{m,t}\hat{\beta}_{m,i} + \gamma_{SMB,t}\hat{\beta}_{SMB,i} + \gamma_{HML,t}\hat{\beta}_{HML,i} + u_{i,t}, \quad (5)$$

$$R_{i,t} - R_{f,t} = \gamma_{0,t} + \gamma_{m,t}\hat{\beta}_{m,i} + \gamma_{SMB,t}\hat{\beta}_{SMB,i} + \gamma_{HML,t}\hat{\beta}_{HML,i} + \gamma_{AQF,t}\hat{\beta}_{AQF,i} + u_{i,t}, \quad (6)$$

where $R_{i,t}$ is the average monthly return of BM-size portfolio i in month t, $\gamma_{0,t}$ is the zero-beta risk premium in month t, $\gamma_{m,t}$ is the risk premia on the market factor in month t, $\gamma_{SMB,t}$ is the risk premia on size factor in month t, $\gamma_{HML,t}$ is the risk premia on BM factor in month t, $\gamma_{AQF,t}$ is the risk premia on AQ factor in month t and $u_{i,t}$ is pricing error. $\hat{\beta}_{m,i}; \hat{\beta}_{SMB,i}; \hat{\beta}_{HML,i}$ in Eq(5) are coefficients obtained from the estimation of Eq(3) and $\hat{\beta}_{m,i}; \hat{\beta}_{SMB,i}; \hat{\beta}_{HML,i}; \hat{\beta}_{AQF,i}$ in Eq(6) are coefficients obtained from the estimation of Eq(4).

Eq(5) and (6) are estimated for every month in the sample period, providing 108 observations of a time series of its risk premium for each factor. We use the average estimated value of 108 observations to present for risk premia of each factor in Eq(5) and (6). Particularly, we denote $\bar{\gamma}_0 = \sum_1^t \frac{\gamma_{0,t}}{108}$; $\bar{\gamma}_m = \sum_1^t \frac{\gamma_{m,t}}{108}$; $\bar{\gamma}_{SMB} = \sum_1^t \frac{\gamma_{SMB,t}}{108}$; $\bar{\gamma}_{HML} = \sum_1^t \frac{\gamma_{HML,t}}{108}$; $\bar{\gamma}_{AQF} = \sum_1^t \frac{\gamma_{AQF,t}}{108}$. We examine the null hypotheses that these average estimated risk premia are zero. The goodness-of fits of Eq(5) and (6) are compared using a cross-sectional adjusted-R^2 measure (Jagannathan and Wang, 1996).

3.4. Measurement of Variables

3.4.1. Calculation of Monthly Stock Returns and Monthly Portfolio Returns

Inclusive dividend monthly stock returns are calculated based on adjusted closing prices of the first and the last trading day of month t. Monthly portfolio returns are equally weighted average returns of all stocks in a portfolio. Since the kurtosis of monthly portfolio returns is relatively high (4.7), we winsorize the monthly portfolio returns at the 1% level to control for the effect of potential outliers.

3.4.2. Measurement of Market Risk Premium $(MRP = R_{m,t} - R_{f,t})$

We use Vn-Index as monthly market returns. Accordingly, Vn-Index returns are calculated from closing Vn-Index of the first and the last trading day every month. The average monthly risk-free rate is the annual closing bid yields of government bonds divided by 12 months. The market risk premium is the difference between the monthly market return ($R_{m,t}$) and the risk-free rate ($R_{f,t}$).

3.4.3. Measurement Size Factor (SMB) and BM Factor (HML)

We follow Fama and Frech (1993) and Mouselli et al. (2013) in the construction of SMB and HML factors. At the end of April for each year t, all stocks are allocated into one of two size groups, small (1) or big (2), depending on whether they fall below or above the median of market cap. According to Fama and French (1993), the market capitalization of a stock is equal to the product of the average number of outstanding shares in year t and the stock price at the end of April for year t. We then independently allocate all stocks into one of three book value to market value (BM) groups, namely low (1), medium (2) and high (3) being defined with reference to the breakpoints of the bottom of 40%, middle of 20% and top of 40% of BM values recorded at the end of the previous year (year $t-1$). BM is equal to book value divided by market value in year $t-1$. Book value is the difference between equity and preferred share in year $t-1$. In total, six size BM portfolios (11, 12, 13, 21, 22, 23 – SH, SM, SL, HH, HM, HL) are identified by the intersections of the two size and three BM groups. Then, the equally weighted monthly returns for the six size-BM portfolios over the following 12 months are calculated. The size factor SMB_t is the difference between the average returns on the three small size portfolios (11, 12, 13) and the average returns on the three big-size portfolios (21, 22, 23). The BM factor HML_t is the difference between the average returns in the two high-BM portfolios (13, 23) and the average returns on the two low-BM portfolios (11, 21).

3.4.4. Measurement of AQ Factor

a. Measurement of Accruals Quality

In this paper, we employ both discretionary accruals and innate accruals as proxies for AQ. Discretionary accruals are used as a measure of earnings management that requires managers' adjustments and discretions (Dechow et al., 1995; Jones, 1991; Kothari et al., 2005; Mouselli et al., 2013; Xie, 2001) while innate accruals (non-discretionary accruals) reflect economic fundamentals (Francis et al., 2005; Gray et al., 2009). In particular, total accruals is divided into two components: non-discretionary (NDAC) and discretionary (DAC) accruals. We use the model proposed by Kothari et al. (2005) to estimate DAC and NDAC. Following Mouselli et al. (2013), we estimate a cross-sectional regress in order to maximize the sample size and avoid the problem of survivor bias that arises from firm-specific time-series regression. The total accruals ($TAC_{i,t}$) of firm i in year t is:

$$TAC_{i,t} = NI_{i,t} - CFO_{i,t}, \tag{7}$$

where $NI_{i,t}$ is net profit of firm i in year t and $CFO_{i,t}$ is cash flow from operating activities of firm i in year t. To compute DAC for any firm-year observation, we estimate the following cross-sectional ordinary least squares (OLS) regression for all firms in each industry sector with at least 10 observations in year t:

$$\frac{TAC_{i,t}}{TAC_{i,t-1}} = \alpha \frac{1}{TA_{i,t-1}} + \beta_1 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{TA_{i,t-1}} + \beta_3 ROA_{i,t-1} + \varepsilon_{i,t}, \tag{8}$$

where $\Delta REV_{i,t}$ is the change in revenue; $\Delta REC_{i,t}$ is the change in account receivables, $PPE_{i,t}$ is the total fixed asset and $ROA_{i,t-1}$ is the return on asset of year $t-1$. All variables of Eq(8) is deflated by lagged total assets ($TAC_{i,t-1}$). The residual of Eq(8) is the proxy for $DAC_{i,t}$. Finally, $NDAC_{i,t}$ is the remaining portion of $TAC_{i,t}$ after subtracting $DAC_{i,t}$:

$$NDAC_{i,t} = \frac{TAC_{i,t}}{TA_{i,t-1}} - DAC_{i,t}. \tag{9}$$

Large positive or negative values of $NDAC_{i,t}$ and $DAC_{i,t}$ indicate a large divergence between cash flows and earnings. Accordingly, the absolute value of $NDAC_{i,t}$ and $DAC_{i,t}$ are used as measures of AQ. On these measures, large values of NDAC and DAC reflect low AQ while small values of NDAC and DAC imply high AQ. However, DAC refers to accruals quality arising from discretions and adjustments of managers, while NDAC implies accruals quality associated with economic fundamentals such as accounting regulations, business conditions, and legal corridors.

b. Construction of AQ factor (AQF)

For the AQ factor, we construct portfolios to be held for 12 months from April of year t, based upon the quintiles of the absolute value of DAC and NDAC in year $t-1$. The firms are then allocated to five quintile portfolios ($i = 1, \cdots, 5$) sorted by the absolute value of $DAC/NDAC$, and equally weighted portfolio monthly returns are calculated. The construction of the AQ portfolios is repeated for each of 9 years. The AQ factor (AQF_t - based on the absolute value of DAC and AQF'_t - based on the absolute value of NDAC) is the difference between the average returns of the two high accruals quintile (low AQ) portfolios and the average returns of the two low accruals quintiles (high AQ) portfolios.

4. RESULTS AND DISCUSSION

4.1. Summary Statistics

Table 2 reports the summary statistics of all variables. Panel A reflects the mean values, the median values and the standard deviations of the factors consisting of MRP_t, SMB_t HML_t, AQF_t and $AQF_t^{\prime}$, calculated over 108 monthly data points. Panel B reports the correlations between these factors. There is no significant relationship between AQF and SMB_t but significant positive relationships between AQF and market risk premium and BM factor at 1% level while AQF' reflects a significant negative correlation with size and BM factor. The significant negative relationship between AQ and size factor may demonstrate a tendency for small firms to have lower AQ (high absolute DAC or NDAC) in Vietnam. Similarly, the significant negative correlation between HML and AQF' suggests that high BM firms tend to have lower AQ on average than low BM firms.

Table 2. Summary Statistics for the Three Fama–French Factors and the AQ Factors

	MRP_t	SMB_t	HML_t	AQF_t	$AQF_t^{\prime}$
Panel A: Factor means and standard deviations					
Mean	-0.0004	-0.0017	0.0151	-0.0003	0.0026
Median	-0.0082	-0.0019	0.0116	-0.0015	0.0065
Standard deviation	0.0792	0.0281	0.0414	0.0200	0.0272
Panel B: Correlations					
MRP_t	1.000				
SMB_t	0.0025	1.0000			
HML_t	0.0091	-0.1199***	1.0000		
AQF_t	0.0462***	0.0065	0.0299***	1.0000	
$AQF_t^{\prime}$	-0.1350***	-0.2386***	-0.4480***	-0.0030	1.0000

Notes: This table reports summary statistics and correlations for three Fama and Frech (1993) factors and the AQ factors (measured by the absolute values of DAC and NDAC). The sample mean values are calculated over 108 monthly observation from April 2007 to March 2016. The market factor MRP_t is the difference between the return on the market portfolio and the risk –free rate on return. The size factor SMB_t is the difference between the average returns on the three small-size portfolios and the average returns on the three big-size portfolios. The BM factor HMLt is the difference between the average returns on the two high-BM portfolios and the average returns on the two low-BM portfolios. The AQ factors, AQF_t and $AQF_t^{\prime}$, are the differences between the average returns of the two highest AQ score quintiles and the average returns of the two lowest AQ score. All returns are monthly. ***, **, * Denote statistical significance level at the 1%, 5% and 10% respectively

4.2. Empirical Results

4.2.1. AQ and Future Stock Returns

Refer to Section 3.2, our first investigation of the association between AQ and stock returns comprises a pooled OLS regression of the returns on individual stocks, controlling for firm size, the ratio of book value-to-market value of equity. Table 3 reports the coefficients from monthly-pooled OLS regressions of individual returns on size, book value to market equity and accruals quality measures in Eq(1). In models 1 to 4, each of these four variables is used individually as the explanatory variable for returns.

Table 3: Coefficients from Monthly-Pooled OLS Regressions of Individual Returns on Size, Book Value to Market Equity and Accruals Quality Measures

Model	α	β_{SIZE}	β_{BM}	β_{DAC}	β_{NDAC}	Adj.R^2
1	-0.022*	0.001**				0.0003
	(-1.76)	(2.24)				
2	-0.005***		0.005***			0.0077
	(-4.14)		(10.58)			
3	0.001***			-0.033***		0.0030
	(11.21)			(-6.66)		
4	0.008***				-0.068***	0.0026
	(9.27)				(-5.43)	
5	-0.105*	0.004***	0.007***			0.0106
	(1.81)	7.17	(11.89)			
6	-0.094***	0.003***	0.007***	-0.027***		0.0125
	(-6.53)	(6.57)	(11.31)	(-5.30)		
7	-0.109***	0.004***	0.009***		-0.052***	0.0165
	(-7.10)	(6.90)	(12.49)		(-4.18)	

Notes: This table reports Coefficients from monthly pooled OLS regressions of individual returns on size, book value to market equity and accruals quality measures. Size is the logarithm of market cap. BM is equal to book value divided by market value in year $t-1$. DAC is the absolute value of discretionary accruals of a stock in year $t-1$ and NDAC is the absolute value of non discretionary accruals of a stock in year $t-1$. Discretionary accruals and non discretionary accruals are estimated using Kothari et al. (2005). Individual stock returns are winsorized at 1%. ***, **, * Denote statistical significance level at the 1%, 5% and 10% respectively

We find some interesting results that reflect the nature of an inefficient market. First, the coefficients on $Size_{i,t}$ in models 5 to 7 are significantly positive, opposite most of the papers in the literature employing data from the developed market. However, our result is consistent with Vo and Bui (2016) investigating liquidity risk and stock returns in Vietnam. The first explanation for this might be the characteristic of the Vietnamese market, where small individual investors are dominant and are trading more frequently than large institutional investors. According to Vo and Bui (2016), individual investors tend to prefer the shares of large firms leading to a surge in demand for large and liquid stocks, thus, results in the higher returns of these stocks. In addition, Gervais et al. (2001) suggest that stocks that are traded in high volume over a period of time could make the stocks more visible to investors, stimulate the demand of the shares, and push up the stock price. Therefore, our findings are supported by the fact that the Vietnamese stock market is at infant age of development. When stock of a large firm is listed on the exchange, it becomes well known to investors, creating high demand and leading to a rise in this stock price (Miller, 1977; Merton, 1987).

Conversely, the coefficients on $BM_{i,t}$ in models 2,5,6,7 are all significantly positive, expressing a positive association with stock returns. This pattern is consistent with a BM effect found in most studies in literature, such that firms with high BM produce higher returns than low BM firms. This result is supported by Fama and French (1993), Core et al. (2008) and Mouselli et al. (2013) in developed markets (US and UK); Vo and Bui (2016) and Eun and Huang (2007) in emerging markets (Vietnam and China). The value of the coefficients on AQ_t (measured by both proxies) in models 3 and 4 is negative and significantly different from zero, which is different from some developed countries such as UK (Mouselli et al., 2013). A plausible explanation for this might be the differences in ranking AQ portfolios. Mouselli et al. (2013) use the AQ score as an AQ proxy; meanwhile, we use the absolute value of NDAC and DAC as a proxy for AQ. In model 6 and model 7, the values of coefficients of $AQ_{i,t}$ are negative and significantly different from zero. This result aligns with Core et al. (2008) and proves that AQ explains firm returns after controlling for size and BM factors.

Our second investigation on finding evidence on mispricing among AQ portfolios involves estimating time series regression of portfolio excess returns, based on the Fama-French three-factor model (1993). Table 4 reports the estimation results of Eq(2), where $i = 1, \cdots, 5$ represents the five quantile AQ portfolios. In Panel A, AQ is measured by DAC and in panel B, AQ is proxied by NDAC. The intercept coefficients (α_i) estimates are negative for all five portfolios in panels A and B. The estimated α_i is significantly different from zero for portfolios 1, 2, 4, 5 in panel A and the portfolios 1, 2, 3 in panel B, suggesting that these portfolios are overpriced. The results could imply that the Vietnamese stock market does not recognize firms with poor financial reporting quality. Two reasons can explain this fact. First, the accounting measurement and disclosure regime fail to report adequate and relevant information concerning accruals. Second, investors are not able to acknowledge the difference in accruals quality across firms. In both panels A and panel B, the F-test for all three coefficients ($\beta_{m,i}$, $\beta_{SMB,i}$, $\beta_{HML,i}$) rejects the null hypothesis statistically. These results suggest that different quintile AQ portfolios have significantly different risk-adjusted returns.

Table 4. Factor Loadings from the FF Three-Factor Model for 5 AQ Score Portfolios

Portfolio i	α	$\beta_{M,i}$	$\beta_{SMB,i}$	$\beta_{HML,i}$	Adj.R^2
Panel A: AQ is estimated by DAC					
1	-0.005***	-0.150***	-0.425***	0.793***	0.229
	(-4.14)	(-10.22)	(-10.21)	(28.05)	
2	-0.006***	-0.130***	-0.493***	0.608***	0.172
	(-4.74)	(-8.90)	(-11.87)	(21.52)	
3	-0.001	-0.137***	-0.677***	0.718***	0.226
	(-0.90)	(-9.03)	(-15.72)	(24.59)	
4	-0.005***	-0.141***	-0.504***	0.661***	0.203
	(-3.83)	(-9.91)	(-12.54)	(24.19)	
5	-0.007***	-0.114***	-0.399***	0.764***	0.192
	(-5.33)	(-7.26)	(-8.97)	(25.30)	
Panel B: AQ is estimated by NDAC					
1	-0.004***	-0.179***	-0.505***	0.662***	0.165
	(-3.16)	(-10.77)	(-10.67)	(20.61)	
2	-0.011***	-0.029**	-0.236***	1.077***	0.298
	(-8.92)	(-1.99)	(-5.62)	(37.74)	
3	-0.007***	-0.169***	-0.446***	0.699***	0.203
	(-5.20)	(-11.36)	(-10.56)	(24.40)	
4	0.000	-0.126***	-0.642***	0.547***	0.195
	(0.10)	(-9.22)	(-16.49)	(20.70)	
5	-0.002	-0.171***	-0.674***	0.554***	0.186
	(-1.35)	(-11.19)	(-15.62)	(18.95)	

Notes: This table reports Regressions estimations of the FF three-factor model for five equally weighted portfolios formed based on AQ score. Portfolio 1 comprises the lowest quintile of firms sorted by AQ score (high AQ). Portfolio 5 comprises the highest quintile of firms sorted by AQ score (low AQ). The observation period is 2007-2015, αi is the intercept coefficient. $\beta_{M,i}$ is the coefficient on the market factor, $R_{m,t} - R_{f,t}$. $\beta_{SMB,i}$ is the coefficient on the size factor($SIZE_t$); and $\beta_{HML,i}$ is the coefficient on the BM factors. See Section 3.3 for estimations of factors. T-Statistics are reported in parentheses. ***, **, * Denote statistical significance level at the 1%, 5% and 10% respectively

4.2.2. Asset Pricing Test

Table 5 reports estimations of the factor loadings from Eq(3) and Eq(4) for 6 size-BM portfolios. The F-test for the joint significance of the beta coefficients on a particular factor across the Eq(3) and (4) identifies the factors that explain the time-series variation in portfolio returns. Panel A reports the coefficients of Eq(3). Panel B and Panel C represent the coefficients of Eq(4), of which AQF is proxied by the absolute values of DAC in Panel B and AQF' measured by the absolute values of NDAC in Panel B C. It can be seen that the intercept coefficients (α_i) of Eq(3) and (4) of 3/6 portfolios are not significant and approximately equal to zero. The factor loadings of market risk ($\beta_{M,i}$) show a significant negative relationship with excess return at p-value < 0.01 or 1% level in all six portfolios in 3 panels. The coefficients of size factor ($\beta_{SMB,i}$) report a significant negative relationship with an excess return at p-value < 0.01 in 4/6 portfolios in Panel A, Panel B and 6/6 portfolios in Panel C. The coefficients of BM factor ($\beta_{HML,i}$) show a significant positive relationship with portfolios' excess return at p-value < 0.01 in all 06 portfolios in Panel A and panel B and 4/6 portfolios in Panel C. Regarding to AQF measured by discretionary accruals, the factor loadings of accruals quality risk ($\beta_{AQF,i}$) report significant positive relationship at 0.1 and 0.05 level in 3/6 portfolios (Panel B). When it is proxied by innate accruals, its corresponding coefficients are negatively significant at a p-value of 0.01 for all size-BM portfolios (Panel C). The adjusted R-squared values reported in Panel C and Panel B are generally higher than the corresponding values in Panel A. This result suggests that the AQ factor measured by both proxies explains the time-series variation in excess returns of size-BM portfolios. These findings go in line with the results of Core et al. (2008) and Mouselli et al. (2013).

The answer to the question of whether the AQ factor is found at the second state of the 2SCSR method. Table 6 reports $\overline{\gamma_0}$, $\overline{\gamma_m}$, $\overline{\gamma_{SMB}}$, $\overline{\gamma_{HML}}$, $\overline{\gamma_{AQF}}$, $\overline{\gamma_{AQF'}}$, the average values of the coefficient of Eq(5) and (6) obtained from the estimations of unrestricted and restricted versions of these cross-sectional regressions for portfolio returns over the 6 size-BM portfolios in each of the 108 monthly time periods. Four alternative specifications are considered: the unrestricted versions of Eq(5) and (6); and two restricted versions of Eq(6), with the size factor excluded and with both of the size and BM factors excluded, respectively. Panel A reports the coefficients of Eq(5). Panel B and Panel C represent the factor loadings of Eq(6) and its alternative specifications, of which AQF is proxied by the absolute values of DAC in panel B and AQF' is measured by the absolute values of NDAC in Panel C. If the models are correctly specified, the intercept coefficients should be zero because assets with zero should earn the risk-free rate (Jagannathan and Wang, 2007; Mouselli et al., 2013). It can be found that the null hypothesis $\overline{\gamma_0} = 0$ is not rejected for all four specifications. This implies that all four tested models correctly explain the returns for the 6 size-BM portfolios.

The results reported in Panel A and Panel B of table 6 suggest that BM is the only priced risk factor. $\overline{\gamma_{HML}}$ is significantly different from zero at the 0.01 level in each of the three specifications, including the factor loading on the BM factor. This finding is consistent with various empirical studies in both developed countries and developing countries such as Mouselli et al. (2013) - UK market, Core et al. (2008) - USA market, Ali (2019) and Eun and Huang (2007) - China market. However, the market beta is not a significant determinant of the cross-section of returns. This is similar to the previous unsupportive evidence of the three-factor model in emerging markets such as Ali (2019), Eun and Huang (2007) and Wang and Di Iorio (2007). Lambert et al. (2007) argue that

Table 5. Time Series OLS Estimations Of Eq(3) and Eq(4) of Six Size-BM Portfolios

BM Size	1	2	3	1	2	3	1	2	3
	Panel A: The three factor model (Equation 3)			*Panel B: Four factor model (Equation 4): AQF measured by the absolute values of DAC*			*Panel C: Four factor model (Equation 4) : AQF' measured by the absolute values of NDAC*		
	α_i			α_i			α_i		
1	-0.004*** (-2.67)	-0.005*** (-5.52)	-0.005*** (-5.28)	-0.005*** (-2.78)	-0.006*** (-6.28)	-0.005*** (-5.48)	0.001 (0.47)	-0.001 (-1.12)	0.000 (0.01)
2	-0.001 (-0.53)	0.001 (0.34)	-0.003 (-1.53)	-0.002 (-1.05)	0.000 (0.13)	-0.004 (-2.15)	0.004** (1.98)	0.006*** (3.53)	0.003** (1.98)
	$\beta_{m,i}$			$\beta_{m,i}$			$\beta_{m,i}$		
1	-0.087*** (-3.17)	-0.116*** (-7.32)	-0.085*** (-5.10)	-0.105*** (-5.24)	-0.137*** (-11.90)	-0.104*** (-9.09)	-0.120*** (-4.48)	-0.144*** (-9.39)	-0.118*** (-7.42)
2	-0.121*** (-4.61)	-0.096*** (-3.08)	-0.116*** (-4.54)	-0.149*** (-6.92)	-0.104*** (-4.56)	-0.119*** (-6.09)	-0.151*** (-5.90)	-0.135*** (-4.58)	-0.151*** (-6.18)
	$\beta_{SMB,i}$			$\beta_{SMB,i}$			$\beta_{SMB,i}$		
1	-0.198*** (-3.42)	-0.817*** (-26.84)	0.045 (1.40)	-0.183*** (-3.26)	-0.879*** (-26.90)	0.011 (0.35)	-0.391*** (-6.12)	-1.000*** (-30.53)	-0.169*** (-4.90)
2	0.059 (0.89)	-1.027*** (-14.49)	-0.728*** (-13.43)	0.098 (1.58)	-1.095*** (-17.29)	-0.972*** (-17.43)	-0.139** (-2.00)	-1.268*** (-17.57)	-0.948*** (-15.75)

Notes: This table reports OLS estimations of the three factor model (Eq(3)) and the four factor model (Eq(4)) for 6 portfolios sorted by size and BM in Ho Chi Minh Stock Exchange. α_i, $\beta_{m,i}$, $\beta_{SMB,i}$, $\beta_{HML,i}$, and $\beta_{AQF,i}$ are coefficients of Eq(3) and Eq(4). Panel A reports coefficients of the three factor model (Eq(3)). Panel B and Panel C represent coefficients of the four factor model (Eq(4)), of which AQF is measured by the absolute values of DAC in Panel B and AQF is measured by the absolute values of NDAC in Panel C. The t-statistics are corrected for heteroscedasticity, using robust standard errors, after checking for autocorrelation by Breusch-Godfrey test. The F-statistics test the null hypothesis of joint zero restrictions on the intercept coefficients, and the null hypothesis of joint zero restrictions on the loadings for each risk factor. ***, **, * Denote statistical significance level at the 1%, 5% and 10% respectively

Table 5. Time Series OLS Estimations Of Eq(3) and Eq(4) of Six Size-BM Portfolios (cont')

BM Size	1	2	3	1	2	3	1	2	3
	Panel A: The three factor model (Equation 3)			*Panel B: Four factor model (Equation 4): AQF measured by the absolute values of DAC*			*Panel C: Four factor model (Equation 4) : AQF' measured by the absolute values of NDAC*		
	$\beta_{HML,i}$								
1	0.179*** (3.62)	0.249*** (10.32)	1.115*** (52.23)	0.168*** (4.37)	0.283*** (12.82)	1.168*** (53.29)	-0.041 (-0.71)	0.049 (1.62)	0.881*** (32.84)
2	0.522*** (10.00)	0.451*** (8.49)	0.868*** (20.07)	0.606*** (14.38)	0.521*** (12.08)	1.037*** (27.17)	0.305*** (5.15)	0.183*** (3.32)	0.621*** (12.27)
				$\beta_{AQF,i}$			$\beta_{AQF',i}$		
1				0 .125* (1.67)	0.112** (2.45)	0.067 (1.49)	-0.692*** (-10.57)	-0.632*** (-15.92)	-0.731*** (-17.31)
2				0.096 (1.10)	0.061 (0.69)	0.141* (1.81)	-0.699*** (-9.29)	-0.822*** (-11.01)	-0.795*** (-12.11)
	R^2			R^2			R^2		
1	0.032	0.188	0.372	0.033	0.189	0.374	0.090	0.238	0.450
2	0.103	0.243	0.311	0.113	0.250	0.355	0.149	0.305	0.364

Notes: This table reports OLS estimations of the three factor model (Eq(3)) and the four factor model (Eq(4)) for 6 portfolios sorted by size and BM in Ho Chi Minh Stock Exchange. α_i, $\beta_{m,i}$, $\beta_{SMB,i}$, $\beta_{HML,i}$, and $\beta_{AQF,i}$ are coefficients of Eq(3) and Eq(4). Panel A reports coefficients of the three factor model (Eq(3)). Panel B and Panel C represent coefficients of the four factor model (Eq(4)), of which AQF is measured by the absolute values of DAC in Panel B and AQF is measured by the absolute values of NDAC in Panel C. The t-statistics are corrected for heteroscedasticity, using robust standard errors, after checking for autocorrelation by Breusch-Godfrey test. The F-statistics test the null hypothesis of joint zero restrictions on the intercept coefficients, and the null hypothesis of joint zero restrictions on the loadings for each risk factor. ***, **, * Denote statistical significance level at the 1%, 5% and 10% respectively.

Table 6. Cross Sectional Estimation of Eq(5) and Eq(6) for Six Size-BM Portfolios

	$\overline{\gamma_0}$	$\overline{\gamma_m}$	$\overline{\gamma_{SMB}}$	$\overline{\gamma_{HML}}$	$\overline{\gamma_{AQF}}$	$\overline{\gamma_{AQF'}}$	Average R^2
Panel A: Cross-sectional estimation of Eq(5)							
Estimate	-0.011	-0.004	-0.003	0.018***			0.652
FM t-stat	-1.06	-0.04	-0.82	3.31			
NW t-stat	-1.04	-0.04	-0.77	2.89			
Panel B: Cross sectional estimations of Eq(6) and its two specifications. AQF is measured by DAC							
Estimate	-0.004	0.029	-0.002	0.015***	-0.024		0.842
FM t-stat	-0.36	0.38	-0.58	3.19	-0.54		
NW t-stat	0.34	0.42	-0.56	2.82	-0.60		
Estimate	-0.002	0.039		0.015***	-0.019		0.603
FM t-stat	-0.18	0.51		3.21	-0.42		
NW t-stat	-0.16	0.55		2.86	-0.46		
Estimate	0.016	0.083			-0.047		0.378
FM t-stat	1.33	1.09			-1.08		
NW t-stat	1.13	1.16			-1.18		
Panel C: *Cross sectional estimations of Eq(6) and its two specifications. AQF' is measured by NDAC*							
Estimate	-0.085***	-0.112	-0.002	0.021***		-0.081***	0.804
FM t-stat	-3.09	-1.13	-0.45	3.69		-3.01	
NW t-stat	-3.20	-1.10	-0.42	3.21		-3.11	
Estimate	-0.089***	-0.133		0.020***		-0.085***	0.587
FM t-stat	-3.28	-1.40		3.79		-3.14	
NW t-stat	-3.37	-1.37		3.34		-3.16	
Estimate	-0.053	-0.053				-0.025	0.357
FM t-stat	-0.60	-0.60				-0.97	
NW t-stat	-1.05	-0.60				-1.02	

Notes: This table reports the average estimated coefficients from 108 Fama-MacBeth cross-sectional regressions of portfolios excess returns on full-period factor betas for 6 portfolios sorted by size and BM ratio (Eqs(5) and (6)). $\overline{\gamma_0}$ is the average value of the intercept coefficients $\gamma_{0,t}$. $\overline{\gamma_m}$ is the average value $\gamma_{m,t}$, the factor loading on the market factor. $\overline{\gamma_{SMB}}$ is the average value of $\overline{\gamma_{SMB}}$, the factor loading on the size factor. $\overline{\gamma_{HML}}$ is the average value of γ_{HML}, the factor loading on the BM factor. $\overline{\gamma_{AQF}}$ is the average value of $\overline{\gamma_{AQF}}$, the fator loading on the AQ factor, measured by the absolute value of DAC. $\overline{\gamma_{AQF'}}$ is the average value of $\gamma_{AQF'}$, the factor loading on the AQ factor, measured by the absolute value of NDAC. Adjusted R-square follows Jagannathan and Wang (1996) and is reported as a percentage. FM t –statistics are calculated using E. F. Fama and MacBeth (1973) approach; NW t-statistics are calculated using Newey and West (1994), lag(2), to correct for heteroskedasticity and autocorrelation. ***, **, * Denote statistical significance level at the 1%, 5% and 10% respectively market beta captures information risk. However, in the context of Vietnam, information risk may be captured by other risk factors, such as the BM factor. In contrast to Ali (2019) and Eun and Huang (2007), who focus on asset pricing in China, an emerging market with similar characteristics with Vietnam, we do not find any evidence of size effect as a priced risk factor in the Vietnamese stock market even though we do find the positive relationship between size and individual stock returns (see the Section 4.2.1). Consistent with Core et al. (2008), Mouselli et al. (2013) and Gray et al. (2009), AQF, proxied by discretionary accruals, is not significantly different from zero in each of the three specifications that include the factor loadings for accruals quality (Panel B). Although adjusted R squared value indicates that the modified four-factor model provides the best fit, with an adjusted R squared value of 0.842 (comparing with adjusted R squared for three-factor model of 0.652), the insignificant premium on the AQ factor implies that AQ, which reflects discretionary accruals related to managers' discretions and adjustments on earning, is not a priced risk factor in the 6 size-BM portfolios. Notably, when the proxy of AQ is changed to innate accruals, referring to economic fundamentals, AQF' is significantly different from zero at the P-value of 0.01 levels in two of three specifications that include the coefficients for accruals quality (Panel C). However, we argue that this finding does not provide evidence that AQF is a priced risk factor in the Vietnam stock market. Previous literature supporting the hypothesis AQ is a priced risk factor (e.g. Core et al., 2008; Gray et al., 2009; Francis et al., 2005) shows a positive relationship between AQ and excess portfolios stock returns. It means that higher accruals portfolios (lower accruals quality) should have higher excess returns to compensate for higher information risk. However, in the context of Vietnam, we find the reverse relationship between the two variables, which implies that lower accruals portfolios (higher accrual quality) have higher excess returns. A plausible explanation for this finding might be the fact that individual investors, who dominate in Vietnamese stock market, prefer trading with large firms (this is confirmed by the positive relationship between excess stock returns and firm size in Section 4.2.1), leading to a rise in demand on large stocks in the market. Previous literature pointed out that large firms tend to have lower motivation to manage earnings than small ones since large firms have more effective internal control systems, higher quality audits and greater pressure and scrutiny of the market if their manipulation activities are detected (Kim et al., 2003; Gul et al., 2009). Hoang and Nguyen (2018) also provide evidence supporting that large firms in the Vietnam stock market tend to manage earnings less than small firms. Therefore, when individual investors hunt for large firms, at the same time, they surge the demand on lower accruals firms, leading to an increase in those shares' price. However, the negative relationship between AQ and stock returns implies that investors do not fully price information risk (measured by innate accruals) in an emerging market of Vietnam. The above empirical finding might only result from the preference of individual investors in trading large shares rather than their true recognition of the difference in accruals quality across stocks.

In summary, the cross-section evidence reported in Table 5 and Table 6 for 6 size-BM portfolios suggests that the AQ factor, measured by both discretionary accruals and non-discretionary accruals, is not a priced risk factor in Vietnam. This finding is similar to what has been found in the US with 25 size-BM portfolios reported by Core et al., 2008 and 16 size-BM UK portfolios indicated by Mouselli et al. (2013). Unlike the US and UK markets where the efficiency level is high, and information risk is low, under the inefficient market in Vietnam, the possible explanation for this finding is due to unprofessional investors who may not be aware of AQ and not incorporate it into stock prices. Vo and Phan (2017) find evidence that herding exists in the Vietnamese equity market. It means that Vietnamese investors make an investment based on collective decisions, and the stock prices are driven away from their underlying fundamentals. Vo and Phan (2017) argue that the lack of transparency in the Vietnamese equity market is the key reason leading to herding behaviour. We, therefore, argue that it is naïve investors and the lack of transparency in the equity market is the reason for the unawareness of both discretionary AQ and innate AQ in Vietnam.

4.3. Additional Test

Vietnam has two trading centres. The first is the Ho Chi Minh City stock exchange (HOSE), established in 2000, and the second is the Hanoi stock exchange (HNX), born in 2005. Ho Chi Minh stock exchange is much larger than Hanoi Stock Exchange. According to Decree 58/2012/ND-CP and Decree 60/2015/ND-CP, only firms with registered capital of at least 120 billion VND are eligible to be listed on HOSE. By the end of 2015, HOSE had 307 listed stocks with a total capitalization of 1.14 quadrillion VND (equal to 27.3% of GDP 2015), accounting for 88% of total listing capitalization in the Vietnamese stock market. Almost all the equitized blue chips in the fields of banking, real estate, oil and gas, manufacturing are listed on HOSE.

On the other hand, the Hanoi Stock exchange is much smaller. As regulated by law, firms with registered capital of at least 30 billion VND are allowed to be listed on HNX. By the end of 2015, HNX had 372 listed stocks with a total capitalization of 151 trillion VND. Even though State Securities Commissions of Vietnam run both exchanges with the same trading system, HOSE and HNX are different in price range limit, causing difficulties in calculating portfolio returns when putting all firms listed on both exchanges in one sample. Therefore, we have chosen firms listed on HOSE to run the main test for our study. However, we do an additional test for firms listed on HNX to make the comparison.

In particular, we do a further test by replicating all the estimations reported above for 305 companies listed in the Hanoi stock exchange from 2007-2015. The results of the test are presented in Tables 7-12 in Appendix[1]. Similar to the Ho Chi Minh City stock exchange, we find evidence of the association between individual stock returns and size,

[1] Available at https://jed.cau.ac.kr/archives/49-2/49-2-4-Appendix.pdf

BM, AQ factors. In addition, the results of the second step of the 2SCSR model show that only HML is a priced risk factor. AQF measured by both discretionary AQ and innate AQ is not a priced risk factor in the Hanoi stock exchange.

5. CONCLUSION

Literature on the financial reporting quality and, in particular, AQ as a priced risk factor is still under debate, with mixed results found in numerous studies. Previous empirical studies mostly focused on developed countries where the market is efficient to a high level with a strong legal setting that helps to reduce the risk associated with information asymmetries and the precision of information. Yet, there are very limited studies in emerging and developing countries in this area.

Considering the unique context in the Vietnamese stock market where the market is inefficient, and the company lacks strong internal and external corporate governance control mechanisms, we predicted that the accrual quality as a proxy for information risk is a non-diversifiable risk and is a priced risk factor. With a low level of information disclosure (Binh, 2012) and an inefficient market in Vietnam, information asymmetries in the stock market are relatively high, and the precision of information is rather low; hence, the information risk associated with opportunistic managerial reporting and disclosure choices can be high. In that situation, investors may require a premium to compensate for the risk associated with a poorer AQ factor that leads to an increase in the future return.

However, the results of the 2SCRS model suggested by Core et al., (2008) demonstrate that the AQ factor measured by both proxies (innate accruals and discretionary accruals) is not priced in the Vietnamese market. This result is in line with previous studies providing unsupportive evidence for a priced AQ risk factor such as Mouselli et al. (2013) and Core et al. (2008). Researchers using a sample of developed countries argued that the AQ factor not being priced is because discretionary AQ is not an appropriate proxy for information risk or AQ is diversifiable, or other risk factors capture AQ. Nevertheless, in this study, we suspect that under the condition of inefficient capital market and unprofessional investors, AQ is not priced by the market, probably due to the unawareness of the investors of the earning management embedded in components of AQ and the lack of transparency in the market. This is consistent with Huang et al. (2020), who demonstrate that the main driver of accrual anomaly in the Chinese market is the mispricing of corporate accruals by investors.

Our study is relevant to investors, managers and regulators. Investors should improve their knowledge in analysing financial reporting quality and take it into account when making their investment decisions since earnings quality affects future stock returns. In addition, firm managers should gradually enhance their financial reporting quality to reduce information risk and mitigate firms' cost of capital. Such positive effects of financial reporting quality also motivate policymakers to reform the regulation of financial reporting, which is really in need for emerging markets like Vietnam, where the accounting system is not fully integrated with the global accounting framework.

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