Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2020.vol7.no8.025

Return Premium of Financial Distress and Negative Book Value: Emerging Market Case

Yosuke KAKINUMA[1]

Received: June 02, 2020 Revised: June 21, 2020 Accepted: July 12, 2020

Abstract

The purpose of this paper is to examine a financial distress premium in the emerging market. A risk-return trade-off of negative book equity (NBE) and distress firms is empirically analyzed using data from the Stock Exchange of Thailand. This research employs Ohlson's (1980) bankruptcy model as a measurement of distress risk. The results indicate that distress firms outperform solvent firms in the Thai market and deny distress anomaly often found in the developed market. Fama-Frech (1993) three-factor model and Carhart (1997) four-factor model verify the existence of a distress premium in the Thai capital market. Risk-seeking investors demand greater compensation for bearing risks of distress firms' going concern. This paper provides fresh evidence that default risk is a significant explanatory factor in pricing stocks in the emerging market. Also, this study sheds light on the role of NBE firms in asset pricing. Most studies eliminate NBE firms from their sample. However, NBE firms yield superior average cross-sectional returns, albeit with higher volatility. Investors are rewarded with distress risks associated with NBE firms. The outperformance of NBE firms is statistically significant when compared to the overall market. The NBE premium disappears when factoring size, value, and momentum in time-series analysis.

Keywords: Distress Anomaly, Negative Book Equity, Ohlson Model, Emerging Market

JEL Classification Code: C22, G11, G33

1. Introduction

This paper attempts to discover a financial distress premium in the emerging market. Return characteristics of firms with negative book equity (NBE) and those with high bankruptcy risk are empirically analyzed using the data in Thailand. The present literature finds a discrepancy in a distress premium. Distress firms pose a great threat to investors because of a risk associated with their going concern. Nonetheless, in contrast to a financial theory of risk-return trade-off, distress firms puzzlingly earn low returns (Dichev, 1998; Campbell, Hilscher, and Szilagyi, 2008). Distress anomaly – the tendency for distressed stocks to perform poorly – is found in the developed market (Gao, Parsons, and Shen, 2018). On the contrary, the distress risk factor demonstrates significant explanatory power in an asset-pricing model in Asian markets (Li, Lai, Conover, Wu, and Li, 2018). This paper presents evidence that investors demand higher returns from distress firms in the emerging market where fragile financial structure, a high rate of economic growth, and socio-political instability are evident (Spulbar, Ejaz, Birau, and Trivedi, 2019). The Thai capital market takes a dominant position in Southeast Asia. The daily trading turnover is the largest, and the market capitalization is the second largest after Singapore in the region (The Stock Exchange of Thailand, 2020). The Thai market offers alternative investment diversification opportunities to investors around the world.

The contributions of this paper are twofold. First, this article provides fresh empirical evidence that supports a distress premium in Thailand. The premium is significant even after controlling well-documented Fama-French's (1993) size and value and Carhart's (1997) momentum factors. Second, the common practice by scholars is to omit NBE stocks from their data samples, yet the results observed in this study detect the cross-sectional outperformance

[1]First Author and Corresponding Author. International College, Panyapiwat Institute of Management, Thailand [Postal Address: 85/1 Moo 2, Chaeng Watthana Road, Bang Talat, Pak Kred, Nonthaburi, 11120, Thailand] Email: yosukekak@pim.ac.th

of NBE stocks. However, the premium of NBE stocks disappears in the time-series factor model analysis.

2. Literature Review

The standard practice by scholars in the field of asset pricing is to eliminate NBE firms from the sample, initially set by Fama and French (1993, 1995, and 1996). Collins, Pincus, and Xie (1999) describe that NBE has no economic value. Nevertheless, the opinions surrounding NBE firms are mixed among scholars. Jan and Ou (2012) find that NBE firms are priced higher than positive BE firms, while Ang (2015) argues that NBE stocks experience substantial loss subsequent to their announcement of negative book value. Luo, Liu, and Tripathy (2019) conclude that not all NBE firms are financially distressed, and some of them use excessive leverage to finance off-balanced intangible assets.

Dichev (1998) and Campbell et al. (2008) remark that distress risk is not rewarded by higher returns. Dichev's (1998) result contradicts a notion suggested by Fama and French (1993) that a higher Book to Market (BM) ratio is a proxy for destress risk. Griffin and Lemmon (2002) report a similar result regarding the relationship between BM and destress risk and conclude that investors tend to misprice firms with high distress risk. Vassalou and Xing (2004) state that firms with high default risk earn higher returns, but the excess return is due to size and value effects. Their results indicate that distress firms achieve higher returns only if they are small in size or their BM ratio is high. The choice of a bankruptcy estimation model can affect the result. Vassalou and Xing (2004) question the reliability of bankruptcy models based on accounting data such as Altman's (1968) and Ohlson's (1980) because accounting information is backward-looking. Instead, Merton's (1974) model estimates default risk with the market value of equity and debt, which reflect investors' expectations in the future. Oz and Yelkenci (2017) develop a distress prediction model that employs accruals and cash flows, which generalizes different prediction models and samples.

Distress anomaly is possibly market-specific. Using the data from 38 countries, Gao et al. (2018) examine distress anomaly in both the developed and emerging markets. Their results showcase that distress anomaly – stocks with a high risk of default earn low returns – is heavily concentrated in North America and Europe. There is no evidence of underperformance of distress stocks in Asian emerging markets. Eisdorfer, Goyal, and Zhdanov (2018) draw a similar conclusion that distress anomaly exists in developed countries, but not in emerging markets. Their results even suggest that distressed stocks earn higher returns than solvent firms. Low returns on stocks with high bankruptcy risk are found in the markets with strong takeover legislation, fewer arbitrage opportunities, and availability of transparent information. Li et al. (2018) improve the explanatory power of Fama-French (1993) three-factor model by adding a distress risk factor in the Asia-Pacific markets. The distress risk factor is measured with Ohlson's (1980) O-score. They argue that the existence of low BM stocks in the portfolio consisted of distress firms fail to capture a distress risk premium. Thus, financial distress is a significant factor in the asset pricing model in the Asia-Pacific markets. Ye, Wu, and Liu (2019) explain that distress anomaly disappears in the Chinese market after controlling institutional ownership. Institutions favor stocks with lower distress risk than those with higher risk, resulting in the superior performance of the former. In Vietnam, Nguyen, Pham, Nguyen, and Dinh (2020) find that the disclosure of corporate social responsibility lowers the risk of bankruptcy. Ngoc, Nguyen, and Nguyen (2020) report that solvent firms are more profitable. In South Korea, excessive short-term borrowing increases the default risk (Gul and Cho, 2019).

3. Data and Methodology

The data sample includes all stocks listed on the Stock Exchange of Thailand for the period from 1997 to 2013. Stock prices and accounting variables are retrieved from Thomson Reuters' Datastream. The returns are calculated using total returns which incorporates dividends, stock splits, and stock repurchase. Following Eisdorfer et al. (2018), Ince and Porter (2006), Gao et al. (2018), and others, several criteria are imposed for filtering the data. First, all financial firms, property funds, REITs, and infrastructure funds are excluded. Second, to prevent look-ahead bias, firms delisted or suspended during the sample period are manually included in the analysis. Third, all variables are winsorized at the 1st and 99th percentiles to cut off extreme samples. Forth, on the contrary to Fama and French (1993, 1995, and 1996), who exclude NBE firms, this study includes them. Fifth, if a firm becomes bankrupt or gets suspended during a holding period, the investment return is counted as -100%. Lastly, microcap firms below the fifth percentile in market capitalization are excluded. After these conditions are imposed, a total of 1,139 firm-year observations is obtained.

Ohlson's (1980) bankruptcy prediction model is employed as a measurement of financial distress. Among the often-cited prominent bankruptcy models such as Altman (1968), Taffer (1983), Zmijewski (1984), and Shumway (2001), Ohlson model provides highly predictive accuracy (Oz and Simgamugan, 2018). Lawrence, Prongstat, and Lawrence (2015) confirm the applicability of Ohlson model to the Thai market. The following equation calculates Ohlson's (1980) O-score:

$$\begin{aligned} O_{score} = {} & -1.32 - 0.407 SIZE + 6.03 TL / TA - 1.43 WC \\ & / TA + 0.0757 CL / CA - 2.37 NI / TA - 1.83 \\ & OCF / TL - 1.72 OENEG - 0.521 CHIN \\ & + 0.285 INTWO \end{aligned} \quad (1)$$

where *SIZE* is a logarithm of total assets to GNP price-level index, *TL/TA* is total liabilities to total assets, *WC/TA* is working capital to total assets, *CL/CA* is current liabilities to current assets, *NI/TA* is net income to total assets, *OCF/TL* is operational cash flows to total liabilities, takes 1 if total liabilities exceed total assets, 0 otherwise, *CHIN* is a change in net income, and *INTWO* takes 1 if a net loss for the last two years, 0 otherwise.

Quintile portfolios are formed in June based on the O-scores that are calculated using the previous year's accounting data. Annual portfolio returns are obtained every month starting from June in the present year to June in the following year. Portfolios are rebalanced every June with recalculated O-scores. Quintile 1 consists of the most distressed stocks with the highest O-scores, while Quintile 5 contains the most financially solvent firms with the lowest o-scores. NBE stocks form one separate portfolio. Zero-investment portfolios are also constructed by longing the most distressed portfolios (NBE and Quintile 1) and shorting the least distressed portfolio (Quintile 5).

The time-series returns from the portfolios are regressed on Fama-French three-factor model (1993) and Carhart four-factor model (1997) with the following formulas respectively:

$$R_{i,t} - R_{F,t} = \alpha + \beta_1 (MKT - R_{F)t} + \beta_2 SMB_t + \beta_3 HML_t + + \varepsilon_{i,t} \quad (2)$$

$$R_{i,t} - R_{F,t} = \alpha + \beta_1 (MKT - R_{F)t} + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 WML_t + \varepsilon_{i,t} \quad (3)$$

where $R_{i,t}$ is an annual return of portfolios from month t to month t+12 in the following year, $R_{F,t}$ is an interest rate of 1-month Thai government bond in month t, *MKT* is an annual market return calculated from the SET Total Return Index, *SMB* is a portfolio return that longs small stocks and shorts large stocks using the median market capitalization as the size breakpoint, *HML* is a portfolio return that longs high *B/M* stocks (value) and shorts low *B/M* stocks (growth) using the median *B/M* ratio as the value breakpoint, *WML* is a portfolio return that longs winner stocks with high recent 1-month returns and shorts loser stocks with low recent 1-month returns using the median 1-month return as the momentum breakpoint.

4. Results

Table 1 presents the portfolio attributes of distress-risk quintiles and NBE. The mean returns of the portfolios increase almost monotonically as their o-scores increase. The average return of NBE portfolio is the highest among the portfolios. The O-score of NBE portfolio is higher than that of Quintile 1, which confirms that firms with negative BM ratios are severally distressed and on the verge of bankruptcy. The result indicates that returns to distressed stocks are higher than those on solvent stocks (Eisdorfer et al., 2018) and oppose to distress anomaly found in the developed market (Dichev, 1998; and Campbell et al. 2008). T-tests statistically confirm the average cross-sectional returns of NBE portfolio and Quntile 1 are significantly higher than the overall market return. On the other hand, the returns of solvent portfolios, Quntile 4 and 5, are inferior to the average market return with statistical significance. As in Gao et al. (2018), the standard deviations of the portfolio return also get larger monotonically as the O-scores increase. Distressed firms generate higher returns but with higher risk. The distress portfolio returns exhibit greater positive skewness, evidence that investors seek lottery/call option-like payoffs (Cambell et al., 2008, and Eisdorrfer et al. 2018). The skewness of NBE portfolio is particularly large, and this characteristic can be an explanation to spur investors' demand and give rise to the price of NBE stocks.

Distressed stocks are smaller than solvent stocks. Except for Quintile 4 portfolio, size is negatively correlated to the O-score, a similar pattern obtained by Zaretzky and Zumwalt (2007), Kiraci (2019), and Gul and Cho (2019). Chan and Chen (1991) state that distress premium is from the size effect. An extensive number of small firms are financially fragile with low production and a high level of leverage. This size effect is controlled in the three-factor model (Equation 2) and the four-factor model (Equation 3). BM does not increase monotonically along with the distress risk factor. The-hump shaped pattern is similar to Garlappi and Yan (2011). The BM of Quintile 1 portfolio, consisted of the most distressed firms, is the lowest besides NBE portfolio, as found in Zaretzky and Zumwalt (2007). Higher returns by distressed portfolios are less likely from the value effect, and BM does not fully capture a distress premium (Li et al., 2018). This result contradicts Fama and French (1995, 1996), who argue a high BM indicates financial distress and that the market demands premiums for bearing increased risk. In summary, distressed firms post higher returns with statistical significance, and they are exposed to higher risk and higher skewness. Their size is small, and there is no distinct correlation with BM.

Panel A and B of Table 2 reports the results of equation (2) and (3) respectively. The focus of these models is the alpha which represents excess returns after controlling market, size, value, and momentum effects. Panel A presents the results of the three-factor model. Quintile 1 portfolio, consisted of the most distressed stocks, earns the significant largest alpha of 0.168. The long-short portfolio that buys the most distressed firms (Quintile 1) and sells the most financially-healthy firms (Quintile 5) also posts the significant positive alpha.

Table 1: Attributes of Portfolio Sorted by Distress-Risk

Portfolio	O-score	Mean	SD	Skewness	ME	BM	Firm Year
Negative BE	3.913	0.481** (3.13)	0.952	1.458	1,478	-23.04	99
Ohlson High 1	0.913	0.414* (2.55)	0.576	1.174	1,310	1.102	208
2	-2.296	0.286* (-1.97)	0.531	1.054	1,781	1.309	208
3	-3.438	0.300 (-1.70)	0.386	0.702	3,393	1.763	208
4	-4.708	0.271* (-2.84)	0.487	0.511	10,464	2.010	208
Ohlson Low 5	-7.806	0.267* (-2.84)	0.448	0.678	5.754	1.117	208

This table reports the average Ohlson's (1980) o-score, annual portfolio returns, standard deviation, skewness, market capitalization (ME) in a million Thai Baht, and book-to-market (BM) ratio for each portfolio. Firm Year is the number of firm-year observations that consist of each portfolio. The data is from June 1997 to June 2013. The portfolios are rebalanced in June according to the o-score ranking. Negative BE portfolio consists of stocks with a negative book-to-market ratio. *T*-statistics are shown in the parentheses. The T-test is for the mean difference between portfolio returns and market returns. *, **, and *** indicate significance at 0.05, 0.01, and 0.001 level respectively.

The result of the four-factor model in Panel B also indicates the return premium of distressed firms. Quintile 1 portfolio handsomely attains the largest positive alpha. The alpha of the long-short portfolio in the four-factor model is 0.115 with strong significance. Unlike Anginer and Yildizham (2018), these results reveal the existence of distress premiums in the Thai market even after controlling the well-documented factors. Default risk is a significant factor that may affect asset pricing in emerging market (Li et al. 2018).

The return premium of NBE portfolio diminishes after factoring Fama-French (1993) and Carhart (1997) premium. The loadings on the market, size, value, and momentum are all positively significant. The high returns of NBE firms presented in Table 1 are due to these well-documented factors. The parameter of the size factor is particularly large, and this is because NBE firms are small. The negative coefficient on the value factor is from negative book value. The significant negative parameter on the momentum factor represents that the recent gain in prices negatively influences the successive prices of NBE firms. The zero investment portfolio that longs NBE stocks and shorts solvent firms does not produce significant alpha either. This research does not suggest the presence of the default premium of NBE firms (Brown *et al.*, 2007). Some literature such as Solactive AG (2019) indicates that firms with negative book-to-market earn significant returns and should not be disregarded by academics and market participants. However, the results obtained from this study confirms that NBE stocks do not provide extra returns beyond Fama-French (1993) and Carhart (1997) factors.

5. Conclusion

This study seeks a financial distress premium in the emerging market. Two contributions of this paper are as follows. First, employing Ohlson's (1980) O-score as a measurement of the severity of financial distress, this study supports that distress stocks indeed earn higher returns than solvent stocks in the Thai market. The higher returns from firms with high default risk come with higher standard deviation and higher skewness. They are small in size. Consistent with Eisdorfer et al. (2018) and Li et al. (2018), portfolio analysis with Fama-French three-factor model (1993) and Carhart four-factor model (1997) further confirms that distress stocks generate significant positive alphas after controlling size, value, and momentum effects. Second, this study sheds light on a possible important role of NBE firms in asset pricing. Initiated by Fama and French (1993, 1995, and 1996), NBE firms are eliminated in most researches. Nonetheless, the result of this paper indicates that NBE stocks produce superior cross-sectional returns. Unfortunately, the NBE premium diminishes in the three- and four-factor models.

The limitation of this study includes a small dataset. NBE firms had become scarce in Thailand after the year 2013 because the Securities and Exchange Commission Thailand (SEC) started taking more severe actions on NBE firms and suspended trading. Also, although the Thai capital market is the second largest in Southeast Asia, it is still relatively small in the world market. Testing a distress premium in other emerging markets will reinforce the validity of this study's

Table 2: Excess Returns and Parameter Estimates of Fama-French and Carhart Three-and Four-Factor Model

Panel A					
Three-Factor Model					
Portfolio	**α**				
Negative BE	0.030 (0.59)	2.261*** (17.27)	3.115*** (11.51)	-1.077*** (-4.91)	
Ohlson High 1	0.168*** (3.39)	1.023*** (9.07)	1.062*** (4.53)	0.181 (0.96)	
2	0.053 (1.91)	1.406*** (18.99)	0.518*** (3.37)	-0.010 (-0.08)	
3	0.131*** (5.21)	0.858*** (12.92)	0.591*** (4.29)	-0.050 (-0.45)	
4	0.014 (0.56)	1.266*** (19.16)	1.288*** (9.38)	-0.227* (-2.06)	
Ohlson Low 5	0.028 (1.02)	0.089*** (12.17)	1.359*** (8.85)	0.118 (0.96)	
Negative BE-Ohlson Low 5	-0.019 (-0.35)	1.370*** (9.84)	1.748*** (6.07)	-1.186*** (-5.08)	
Ohlson High 1-Ohlson Low 5	0.114** (2.06)	0.133 (1.15)	-0.302 (-1.26)	0.08 (0.42)	
Panel B					
Four-Factor Model					
Portfolio	**α**				
Negative BE	0.040 (0.81)	2.225*** (17.48)	3.295*** (12.32)	-1.451*** (-6.15)	-0.765*** (-3.72)
Ohlson High 1	0.167*** (3.85)	1.02*** (8.97)	1.04*** (4.35)	0.234 (1.11)	0.132 (0.72)
2	0.062* (2.37)	1.390*** (20.04)	0.635*** (4.33)	-0.275* (-2.14)	-0.565*** (-5.04)
3	0.135*** (5.60)	0.833*** (13.01)	0.709*** (5.24)	-0.272* (-2.30)	-0.426*** (-4.11)
4	0.014 (0.56)	1.259*** (18.86)	1.313*** (9.31)	-0.267* (-2.16)	-0.06 (-0.61)
Ohlson Low 5	0.024 (0.88)	0.910*** (12.41)	1.290*** (8.33)	0.265 (1.95)	0.305* (2.57)
Negative BE-Ohlson Low 5	-0.005 (-0.98)	1.322*** (10.08)	1.996** (7.28)	-1.704** (-7.01)	-1.065** (-5.03)
Ohlson High 1-Ohlson Low 5	0.115** (2.62)	0.121 (1.04)	-0.251 (-1.02)	-0.01 (-0.04)	-0.166 (-0.88)

This table reports the alpha and the parameter estimates of the following factor models:

$$R_{i,t} - R_{F,t} = \alpha + \beta_1 (MKT - R_{F)t} + \beta_2 SMB_t + \beta_3 HML_t + + \varepsilon_{i,t}$$

$$R_{i,t} - R_{F,t} = \alpha + \beta_1 (MKT - R_{F)t} + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 WML_t + \varepsilon_{i,t}$$

where $R_{i,t}$ is an annual return of zero-investment portfolios from month t to month t + 12 in the following year, $R_{F,t}$ is an interest rate of 1-month Thai government bond in month *t*, *MKT* is an annual market return calculated from the SET Total Return Index, *SMB* is a portfolio return that longs small stocks and shorts large stocks, *HML* is a portfolio return that longs high *B/M* stocks (value) and shorts low *B/M* stocks (growth), is a portfolio return that longs winner stocks with high recent 1-month returns and shorts loser stocks with low recent 1-month returns. *T*-statistics are shown in the parentheses. *, **, and *** indicate significance at 0.05, 0.01, and 0.001 level respectively. The data is from 1997 to 2013.

result. Recent studies propose alternative asset pricing models such as the Q-factor model (Hou, Xue, and Zhang, 2015), the four-factor model (Stambaugh and Yuan, 2016), and the five-factor model (Fama and French, 2015). Future works can examine whether these alternative models can price a distress premium in the emerging market contexts.

References

Altman, E. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, *23*(4), 589-609. https://doi.org/10.1111/j.1540-6261.1968.tb00843.x

Ang, T. C. C. (2015). Are Firms with Negative Book Equity in Financial Distress? *Review of Pacific Basin Financial Markets and Policies*, *18*(3), 1-41. https://doi.org/10.1142/S0219091515500162

Anginer, D., & Yildizham, C. (2018). Is There a Distress Risk Anomaly ? Pricing of Systematic Default Risk in the Cross-section of Equity Returns. *Review of Finance*, *22*(2), 633-660. https://doi.org/10.1093/rof/rfx044

Campbell, J. Y., Hilscher, J., & Szilagyi, J. A. N. (2008). In Search of Distress Risk. *Journal of Finance*, *63*(6), 2899-2939. https://doi.org/10.1111/j.1540-6261.2008.01416.x

Carhart, M. (1997). On Persistence in Mutual Fund Performance. *Journal of Finance*, *52*(1), 57-82. https://doi.org/10.2307/2329556

Chan, K. C., & Chen, N.-F. (1991). Structural and Return Characteristics of Small and Large Firms. *Journal of Finance*, *46*(4), 1467-1484. https://doi.org/10.2307/2328867

Collins, D. W., Pincus, M., & Xie, H. (1999). Equity Valuation and Negative Earnings : The Role of Book Value of Equity. *The Accounting Review*, *74*(1), 29-61. https://doi.org/10.2308/accr.1999.74.1.29

Dichev, I. D. (1998). Is the Risk of Bankruptcy a Systematic Risk ? *Journal of Finance*, *53*(3), 1131-1147. https://doi.org/10.1111/0022-1082.00046

Eisdorfer, A., Goyal, A., & Zhdanov, A. (2018). Distress Anomaly and Shareholder Risk : International Evidence. *Financial Management*, *47*(3), 553-581. https://doi.org/10.1111/fima.12203

Fama, E., & French, K. (1993). Common risk factors in the returns stocks and bonds. *Journal of Financial Economics*, *33*(1), 3-56. https://doi.org/10.1016/0304-405X(93)90023-5

Fama, E., & French, K. (1995). Size and Book-to-Market Factors in Earnings and Returns. *Journal of Finance*, *50*(1), 131-155. https://doi.org/10.1111/j.1540-6261.1995.tb05169.x

Fama, E., & French, K. (1996). Multifactor Explanations of Asset Pricing Anomalies. *Journal of Finance*, *51*(1), 55-84. https://doi.org/10.1111/j.1540-6261.1996.tb05202.x

Fama, E., & French, K. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, *116*(1), 1-22. https://doi.org/10.1016/j.jfineco.2014.10.010

Gao, P., Parsons, C. A., & Shen, J. (2018). Global Relation between Financial Distress. *Review of Financial Studies*, *31*(1), 239-277. https://doi.org/10.1093/rfs/hhx060

Garlappi, L., & Yan, H. (2011). Financial Distress and the Cross-section of Equity Returns. *Journal of Finance*, *66*(3), 789-822. https://doi.org/10.1111/j.1540-6261.2011.01652.x

Griffin, J. M., & Lemmon, M. L. (2002). Book-to-Market Equity, Distress Risk, and Stock Returns. *Journal of Empirical Finance*, *57*(5), 2317-2336. https://doi.org/10.1111/1540-6261.00497

Gul, S., & Cho, H. R. (2019). Capital structure and default risk: Evidence from Korean stock market. *Journal of Asian Finance, Economics and Business*, *6*(2), 15-24. https://doi.org/10.13106/jafeb.2019.vol6.no2.15

Hou, K., Xue, C., & Zhang, L. (2015). Digesting Anomalies: An Investment Approach. *Review of Financial Studies*, *28*(3), 650-705. https://doi.org/10.1093/rfs/hhu068

Ince, O. S., & Porter, R. B. (2006). Individual Equity Return Data from Thomson Datastream: Handle with Care! *Journal of Financial Research*, *XXIX*(4), 463-479. https://doi.org/10.1111/j.1475-6803.2006.00189.x

Jan, C.-L., & Ou, J. A. (2012). Negative-Book-Value Firms and Their Valuation. *Accounting Horizons*, *26*(1), 91–110. https://doi.org/10.2308/acch-50094

Kiraci, K. (2019). Determinants of financial risk: An empirical application on low-cost carriers. *Scientific Annals of Economics and Business*, *66*(3), 335-349. https://doi.org/10.2478/saeb-2019-0025

Lawrence, J. R., Prongstat, S., & Lawrence, H. (2015). The Use Of Ohlson's O-Score for bankrupty predition in Thailand. *Journal of Applied Business Research*, *31*(6), 2069-2078. https://doi.org/https://doi.org/10.19030/jabr.v31i6.9468

Li, H., Lai, S., Conover, J. A., Wu, F., & Li, B. (2018). Stock Returns and Financial Distress Risk: Evidence from the Asian-Pacific Markets. *Research in Finance*, *33*, 123-158. https://doi.org/10.1108/S0196-382120170000033007

Luo, H., Liu, I., & Tripathy, N. (2019). A Study on Firms with Negative Book Value of Equity. *International Review of Finance*. https://doi.org/10.1111/irfi.12260

Merton, R. (1974). On the pricing of corporate debt: the risk structure of interest rates. *Journal of Finance*, *29*(2), 449-470. https://doi.org/10.1111/j.1540-6261.1974.tb03058.x

Ngoc, T., Nguyen, L., & Nguyen, V. C. (2020). The Determinants of Profitability in Listed Enterprises : A Study from Vietnamese Stock Exchange. *Journal of Asian Finance, Economics, and Business*, *7*(1), 47-58. https://doi.org/10.13106/jafeb.2020.vol7.no1.47

Nguyen, S. La, Pham, C. D., Nguyen, A. H., & Dinh, H. T. (2020). Impact of Corporate Social Responsibility Disclosures on Bankruptcy Risk of Vietnamese Firms. *Journal of Asian Finance, Economics, and Business*, *7*(5), 81-90. https://doi.org/10.13106/jafeb.2020.vol7.no5.081

Ohlson, J. A. (1980). Financial Ratios and the Probabilistic Prediction of Bankruptcy. *Journal of Accounting Research*, *18*(1), 109-131. http://dx.doi.org/10.2307/2490395

Oz, I. O., & Simga-mugan, C. (2018). Bankruptcy prediction models' generalizability : Evidence from emerging market economies. *Advances in Accounting*, *41*(C), 114-125. https://doi.org/10.1016/j.adiac.2018.02.002

Oz, I. O., & Yelkenci, T. (2017). A theoretical approach to financial distress prediction modeling. *Managerial Finance*, *43*(2), 212-230. https://doi.org/10.1108/MF-03-2016-0084

Shumway, T. (2001). Forecasting Bankruptcy More Accurately : A Simple Hazard Model. *Journal of Business*, *74*(1), 101-124. https://doi.org/10.1086/209665

Solactive AG. (2019, July). *What Goes Down , Must Come Up! Investigating Companies with Negative Book Value*. Retrieved from https://www.solactive.com/wp-content/uploads/2019/07/Solactive_Companies-with-Negative-Book-Value_July-2019.pdf

Spulbar, C., Ejaz, A., Birau, R., & Trivedi, J. (2019). Sustainable investing based on momentum strategies in emerging stock markets: A case study for Bombay Stock Exchange (BSE) of India. *Scientific Annals of Economics and Business*, *66*(3), 351-361. https://doi.org/10.2478/saeb-2019-0029

Stambaugh, R. F., & Yuan, Y. (2016). Mispricing Factors. *The Review of Financial Studies*, *30*(4), 1270-1315. https://doi.org/10.1093/rfs/hhw107

Taffer, R. J. (1983). The Assessment of Company Solvency and Performance Using a Statistical Model. *Accounting and Business Research*, *13*(52), 295-307. https://doi.org/10.1080/00014788.1983.9729767

The Stock Exchange of Thailand. (2020). *SET Focus*. Retrieved from https://www.set.or.th/en/news/econ_mkt_dev/files/202003_SET_Focus.pdf

Vassalou, M., & Xing, Y. (2004). Default Risk in Equity Returns. *Journal of Finance*, *59*(2), 831-868. https://doi.org/10.1111/j.1540-6261.2004.00650.x

Ye, Q., Wu, Y., & Liu, J. (2019). Institutional preferences , demand shocks and the distress anomaly. *The British Accounting Review*, *51*(1), 72-91. https://doi.org/10.1016/j.bar.2018.04.003

Zaretzky, K., & Zumwalt, J. K. (2007). Relation between distress risk , book-to-market ratio and return premium. *Managerial Finance*, *33*(10), 788-797. https://doi.org/10.1108/03074350710779232

Zmijewski, M. E. . (1984). Methodological Issues Related to the Estimation of Financial Distress Prediction Models. *Journal of Accounting Research*, *22*, 59-82. https://doi.org/10.2307/2490859