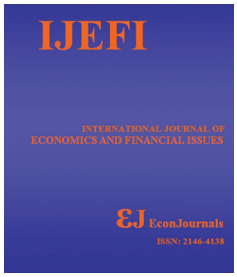


International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2023, 13(2), 46-50.

Investigating Joint Market Hypothesis during Periods of Financial Distress and its Implications

Samuel Tabot Enow*

Research Associate, The IIE Vega School, South Africa. *Email: enowtabot@gmail.com

Received: 11 October 2022 **Accepted:** 21 February 2023 **DOI:** https://doi.org/10.32479/ijefi.13932

ABSTRACT

Empirical finance is about building an understanding of security prices and financial markets so as to foster better decision making while avoiding anecdote biases. Successful investors are often cognisant of their risk exposures coupled with extreme discipline and leverage. Therefore, the aim of this study was to explore the concept of joint market hypothesis in five international stock indexes. This study used the Taleb's ratio which is an extension of the Parkinson model. The financial distress periods were the financial crisis (December 1, 2007-June 30, 2009) and the Covid-19 pandemic (January 1, 2020-December 31, 2021). Joint hypothesis was evident in the JSE, CAC 40, the DAX and the Nikkei 225 while the Nasdaq displayed high levels of market efficiencies. Allocating more capital to the JSE, CAC 40, the DAX and the Nikkei 225 during periods of financial distress in conjunction with the Fama French five factor model will generate higher returns. As per the author's knowledge, this study is the first to explore the concept of joint market hypothesis during periods of distress.

Keywords: Joint Market hypothesis, Market Efficiency, Taleb's Ratio, Financial Crisis, Covid-19 Pandemic
JEL Classifications: G1, G2, G4

1. INTRODUCTION

One of the first statisticians to recognize the concept of random walk in stock market pricing was Louis Bachelier in the early 40 s (Davis and Etheridge, 2006). In the 1950's and 60's, more empirical research emerged suggesting that stock prices moved randomly without any theoretical explanation for the randomness. Economist at that time concluded that stock prices didn't have any economic meaning. Samuelson (1965) proposed that prices in a well-functioning and competitive market changes when new information enters the market as investors adapt to this new information. This theoretical explanation called the fair game model started to bring meaning to the randomness of security prices. The work of Samuelson (1965) was followed by Fama's (1970) famous paper titled the Efficient Market hypothesis. A formalised approach for testing market efficiency was presented in Fama's (1970) paper. Fama (1970) introduced the concept of Efficient Market hypothesis which contends that market participants cannot consistently beat the market because all current and relevant information is reflected in the security price (Enow, 2021). Putting this into perspective, market efficiency simply means "investors should get what they pay for" because the current price is actually the fundamental value. The only way to outperform the market is to hold riskier portfolios which is one of the implications of Efficient market hypothesis (Woo et al., 2020).

Market efficiency contends that, stock prices move randomly and active portfolio managers cannot consistently beat the market (Heymans and Santana, 2018). However, active managers have on average trail the market after cost deductions coupled with the fact that managers with the best returns are no more likely to have strong future returns (Wallo, 2016). Event studies on ex-post returns have revealed that security market prices are very quick to incorporate new information (MacKinlay, 1997). Despite Fama's (1970) ground breaking paper, one of the main challenges of market efficiency is that it cannot be definitely

proven or disapproved. This led to the introduction of the joint market hypothesis by Fama (1991). Attempts to investigate the market efficiency should rather be geared towards the joint market hypothesis comprising of the efficient market hypothesis and the market equilibrium theory. The market equilibrium theory describes how financial markets price their assets in the presence of market anomalies. This theory contradicts the market efficiency hypothesis where value stocks create systematic excess returns that cannot be explained by risk.

The aim of this study is to explore the concept of joint market hypothesis in several financial markets during periods of financial distress. Specifically, this study seeks answers for the following questions; is there any empirical evidence to support the concept of joint market hypothesis during periods of market distress? Is there a strong theoretical and empirical case to suggest that assets are correctly priced during periods of financial distress as a result of market efficiency? This study makes a noteworthy contribution by extending the frontier of asset pricing during periods of financial distress as the prevalence of joint market hypothesis makes it difficult to define violations of efficient market hypothesis. Furthermore, the current study makes a significant contribution to the literature of market efficiency and joint market hypothesis.

2. LITERATURE REVIEW

The Efficient market theory and the concept of behavioural finance was used to provide an appraisal of the research questions. The efficient market hypothesis describes the manner in which security prices fully reflect all available and relevant information. In an efficient market, active management is useless as it cannot consistently add value to a portfolio, hence index funds are the most sensible style of investing. According to Fama (1970), arbitrage opportunities in an efficient market are quickly corrected because price aberrations will precede multiple buying and selling restoring the equilibrium price. Accordingly, the more information is incorporated into the stock market the greater the efficiency. However, the concept of behavioral finance proves otherwise. Behavioral finance contends that markets are inefficient due to the irrational behaviour of market participants (Fromlet, 2001). In other words, markets are not efficient due to persistent patterns of return predictability that violates the market efficiency concept. These known patterns called market anomalies.

Over the years, several anomalies have been observed, ranging from the January effect (Thaler, 1987; Branch and Chang, 1990; Kumar Das and Rao, 2011), size effect (Al-Rjoub et al., 2005), Book-to-market effect (Loughran, 1997; Cakici and Topyan, 2014), momentum effect (Ejaz and Polak, 2013; Zoghlami, 2013), post-earnings announcement drift (Bernard and Thomas, 1989; Jegadeesh and Livnat, 2006; Fink, 2021), asset growth effect (Lipson et al., 2011; Watanabe et al., 2012), price clustering (Enow, 2022), overreaction and underreaction (Enow, 2022). From the abovementioned, the debate on market efficiency and inefficiency still continues till date. However, the United states financial markets are perceived to be informational efficient (Malkiel, 2003) because new information gets incorporated into the security price very quickly.

Although there have been many well documented inefficiencies as described above, it is still not easy to realise consistent abnormal profits. In bringing the concept of market efficiency and behavioural finance school of thought together, asset pricing dynamics should be tailored towards a joint market hypothesis. This is because there is still no clear evidence to disapprove or approve market efficiency and behavioural finance. The literature on joint market hypothesis is almost non-existent. Very little empirical studies have been conducted in this area of finance despite its perceived relevance. Therefore, this study seeks to fill in the gap. The section below highlights the blueprint.

3. METHODOLOGY

This study used the Taleb ratio proposed by Taleb (1997) which is widely used in option trading. The Taleb ration is an extension of the Parkinson (1980) model to include the deviation of the close and opening prices. The intuition behind this ratio is that it relates the mean reverting behaviour of a security to a volatility measure (Taleb, 1997). According to Taleb (1970), the security exhibits market efficiency when the intraday volatility of the security price doesn't exceed 1.66 time the ratio of close/open prices and vice versa. In essence, a joint hypothesis is observed when the intraday volatility exceeds the critical value region denoted by the F-statistics value. The Taleb ratio is given below;

$$Parkinson = \sqrt{\frac{\sum_{i=1}^{t} ln^2\left(\frac{H_t}{l_t}\right)}{4nln2}}$$

$$Close/Open = \sqrt{\frac{\sum_{i=1}^{t} ln^2\left(\frac{c_t}{o_t}\right)}{n}}$$

Where H_t is the highest price for the day, l_t is the lowest price, c_t the closing price and o_t the opening price. Accordingly, five international financial markets the Johannesburg Stock Exchange (JSE), Nasdaq, the French Stock Market Index (CAC 40), the German blue chip companies (DAX), the Nikkei Stock Average (Nikkei 225) where used. The sample period was the Covid-19 pandemic (January 1, 2020-December 31, 2021) and the financial crisis (December 1, 2007-June 30, 2009). The section below highlights the findings and discussion of the data.

4. RESULTS AND ANALYSIS

The Figures below present the output data obtained in this paper.

4.1. Covid-19 Pandemic

The output present interesting findings regarding the joint market hypothesis during the covid-19 pandemic (See Figures 1-5). During the Covid-19 pandemic, the Taleb's ratio fluctuates around 1 suggesting larger volatility deviations in the CAC 40, JSE, DAX and Nikkei 225 as seen in figures 1, 2 and 3. However, the volatility spikes in the Nasdaq and Nikkei 225 in Figures 4 and 5 respectively were within the threshold limits. More specifically, the

Figure 1: CAC 40

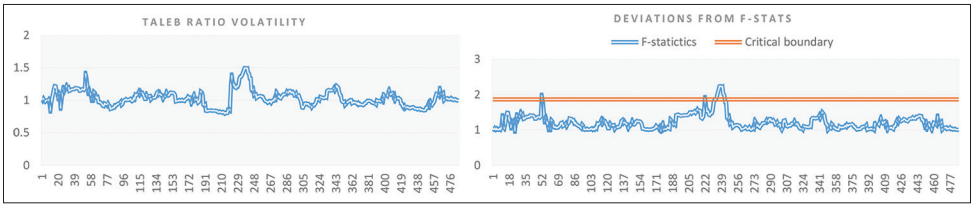


Figure 2: DAX

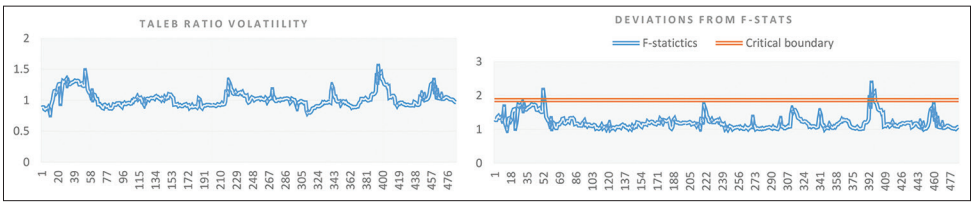


Figure 3: JSE

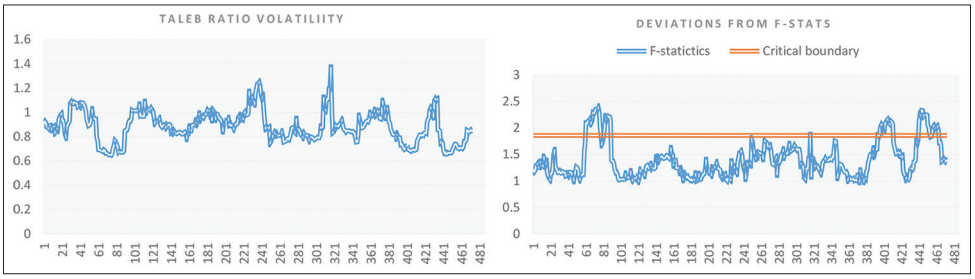


Figure 4: Nasdaq

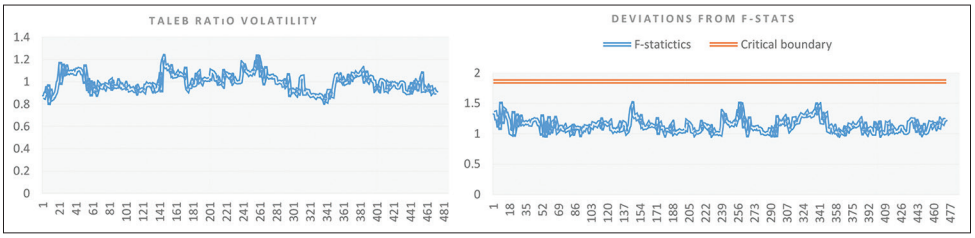


Figure 5: NIKKEI 225

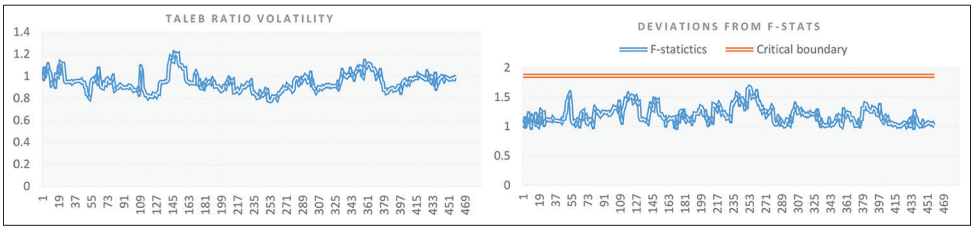


Figure 6: CAC-40

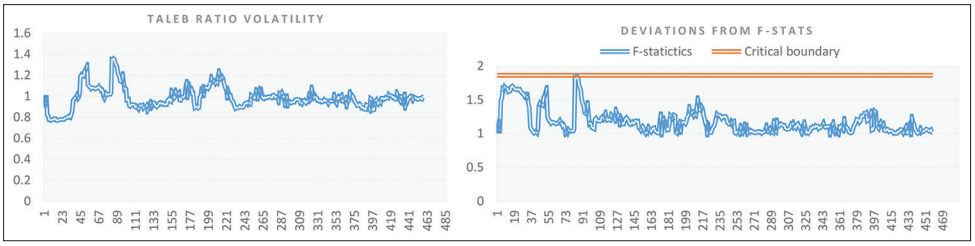


Figure 7: DAX

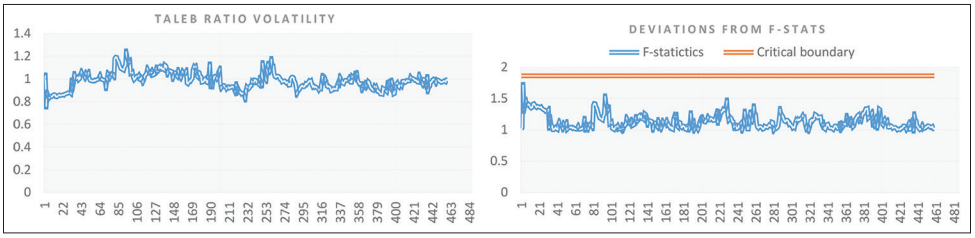


Figure 8: JSE

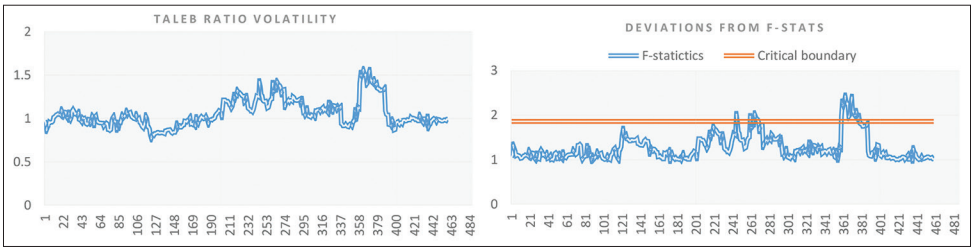


Figure 9: Nasdaq

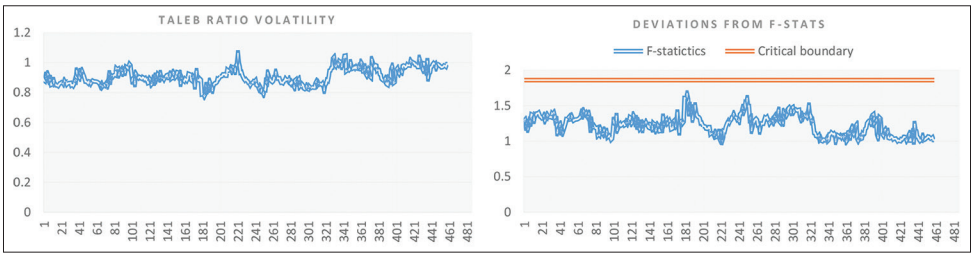
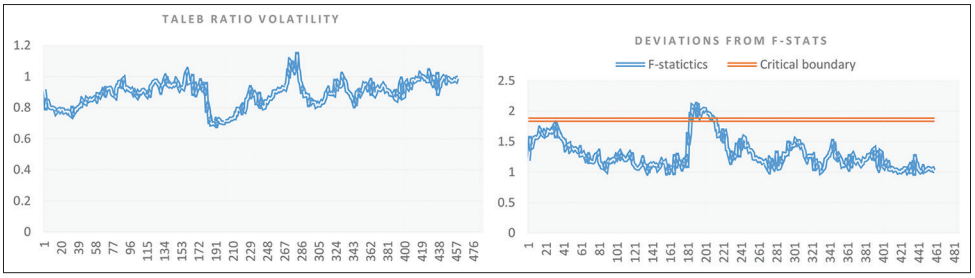


Figure 10: Nikkei-225



volatility spikes were observed in both directions in all the markets under consideration indicating that market participants tend to adjust to the changing market conditions suggesting joint market hypothesis during the covid-19 pandemic (Enow, 2022). From the deviation of F-stat variance, the Nasdaq seemed to portray high levels of market efficiencies where the intraday volatility barely touched the critical boundary during the Covid-19 pandemic as shown in Figure 4.

4.2. 2007/2008 Financial Crises

The results of the 2007/2008 financial crisis present a similar result to that of the Covid-19 pandemic (Figures 6-10). The volatility spikes during the 2007/2008 financial crisis also portrays larger deviations but at a lower scale than the pandemic. In tandem with the findings of pandemic, the Nasdaq still displayed high levels of mean reverting properties compared to the other financial markets as seen in figure 9 where the realised volatility did not exceed the threshold. A similar observation can be seen in the CAC 40. This finding concurs with the study of Malkiel (2003) who found high levels of market efficiencies in the US markets. Conversely, the actualised volatility in DAX, JSE and Nikkei 225 moved above and below the critical boundary also indicating the presence of joint market hypothesis during the financial crisis as shown in Figures 7, 8 and 10.

5. CONCLUSION

The aim of this study was to investigate the joint market hypothesis during periods of financial distress. Without evidence of this hypothesis, the concept of adaptive markets and behavioural finance will be a collection of anecdotes. Market participants and financial experts who believe in the joint market hypothesis have evaluated financial theories by their rejectable predictions as opposed to observing the individual outcomes of different financial

markets. Joint market hypothesis has important implications in financial markets. At its core, market participants should invest in low cost index funds in the JSE, CAC 40, the DAX and the Nikkei 225 during periods of financial distress where there is sufficient evidence of joint market hypothesis.

Investors can generate slightly higher than average returns in these markets during periods of financial distress. However, there was no evidence of joint market hypothesis in the Nasdaq due to high market efficiency. Therefore, accepting what the market has to offer in the JSE, CAC 40, the DAX and the Nikkei 225 is not a smart choice during periods of financial distress. Allocating more capital to these markets (JSE, CAC 40, the DAX and the Nikkei 225) in conjunction with the Fama French five factor model are perceived to generate higher returns. From this result, investors and market participants will have a clear understanding on the pricing dynamics in the different financial markets under study during periods of distress as opposed to relying on an anecdote that is replicated.

REFERENCES

Al-Rjoub, S.A.M., Varela, O., Hassan, M.K. (2005), The size effect reversal in the USA. Applied Financial Economics, 15, 1189-1197.

Bernard, V.L., Thomas, J.K. (1989), Post-earnings-announcement drift: Delayed price response or risk premium? Journal of Accounting Research, 27,1-36.

Branch, B., Chang, K. (1990), Low price stocks and the January effect. Journal of Business and Economics, 29(3), 90-118.

Cakici, N., Topyan, K. (2014), Book-to-market ratio. In: Risk and Return in Asian Emerging Markets. New York: Palgrave Macmillan.

Davis, M., Etheridge, A. (2006), Louis Bachelier's Theory of Speculation: The Origins of Modern Finance. United States: Princeton University Press.

Ejaz, A., Polak, P. (2013), The origin of short-term momentum effects' profits. Investment Management and Financial Innovations, 10(3), 8-18.

Enow, S.T. (2021), The impact of Covid-19 on market efficiency: A comparative market analysis. Eurasian Journal of Economics and Finance, 9(4), 235-244.

Enow, S.T. (2022), Overreaction and underreaction during the Covid-19 pandemic in the South African stock market and its implications. Eurasian Journal of Business and Management, 10(1), 19-26.

Enow, S.T. (2022), Price clustering in international financial markets during the Covid-19 pandemic and its implications. Eurasian Journal of Economics and Finance, 10(2), 46-53.

Fama, E.F. (1970), Efficient capital markets: A review of theory and empirical work. The Journal of Finance, 25(2), 383-417.

Fama, E.F. (1991), Efficient Capital Markets: II. The Journal of Finance, 46(5), 1575-1617.

Fink, J. (2021), A review of the post-earnings-announcement drift. Journal of Behavioral and Experimental Finance, 29(3), 100446.

Fromlet, H. (2001), Behavioral finance-theory and practical application: Systematic analysis of departures from the homo oeconomicus paradigm are essential for realistic financial research and analysis. Business Economics, 36(3), 63-69.

Heymans, A., Santana, L. (2018), How efficient is the Johannesburg stock exchange really? South African Journal of Economic and Management Sciences, 21(1), 1-14.

Jegadeesh, N., Livnat, J. (2006), Post-earnings-announcement drift: The role of revenue surprises. Financial Analysts Journal, 62(2), 22-34.

Kumar Das, P., Rao, S.P.U. (2011), Value premiums and the January effect: International evidence. The International Journal of Business and Finance Research, 5(4), 1-15.

Lipson, M.L., Mortal, S., Schill, M.J. (2011), On the scope and drivers of the asset growth effect. Journal of Financial and Quantitative Analysis, 46(6), 1651-1682.

Loughran, T. (1997), Book-to-market across firm size, exchange, and seasonality: Is there an effect? The Journal of Financial and Quantitative Analysis, 32(3), 249-268.

MacKinlay, A.C. (1997), Event studies in economics and finance. Journal of Economic Literature, 35(1), 13-39.

Malkiel, B.G. (2003), The efficient market hypothesis and its critics. Journal of Economic Perspectives, 17(1), 59-82.

Parkinson, M. (1980), The extreme value method for estimating the variance of the rate of return. The Journal of Business, 53(1), 61-65.

Samuelson, P.A. (1965), Rational theory of warrant pricing. Industrial Management Review, 6(2), 13-39.

Taleb, N. (1997), Dynamic Hedging: Managing Vanilla and Exotic Options. United States: John Wiley and Sons.

Thaler, R.H. (1987), Anomalies: The January effect. Journal of Economic Perspectives, 1(1), 197-201.

Wallo, S.A. (2016), Stock Market Strategies: Are You an Active or Passive Investor? Available from: https://www.research.stlouisfed.org/publications/page1-econ/2016/04/01/stock-market-strategies-are-you-an-active-or-passive-investor [Last accessed on 2022 Nov 15].

Watanabe, A., Xu, Y., Yao, T., Yu, T. (2012), The asset growth effect: Insights from international equity markets. Journal of Financial Economics, 108(2), 529-563.

Woo, K.Y., Mai, C., McAleer, M., Wong, W.K. (2020), Review on efficiency and anomalies in stock markets. Economies, 8(1), 20.

Zoghlami, F. (2013), Momentum effect in stocks' returns between the rational and the behavioural financial theories: Proposition of the progressive rationality. International Journal of Finance and Banking Studies, 2(1), 1-10.