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FEEDBACK TRADING STRATEGIES: THE CASE OF GREECE AND CYPRUS

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Abstract

This paper examines whether or not feedback trading strategies are present in the Athens (ASE) and Cyprus Stock Exchanges (CSE). The analysis employs two econometric models: the feedback trading strategy model, introduced by Sentana and Wadhwani (1992), and the exponential autoregressive model, proposed by LeBaron (1992). These two theoretical frameworks, separately, were joined with the FIGARCH (1, d, 1) approach. Both models assume two different groups of traders – the "rational" investors that build their portfolio by following the firms' fundamentals and the "noise" speculators that ignore stock fundamentals and focus on a positive (negative) feedback trading strategy. The empirical results revealed that negative feedback trading strategies exist in the two underlying stock markets.

Keywords: *Feedback trading, FIGARCH(1,d,1) model, Hellenic and Cypriot capital markets*

JEL Classification: *G14, C22*

1. INTRODUCTION

Stock brokers and traders buy and sell shares for profit. The way to achieve a profit (neglecting dividends) is simple: buy low (high) and sell high (low), as the feedback trading strategies suggest. This advice seems easy to follow, but it is not. The key to earning a profit in the stock markets is to correctly predict the future changes of share prices. A plethora of techniques (Tayefi and Ramanathan, 2012) have been developed to serve this purpose.

Among others, the academic literature (Bollerslev 1986, Long et al. 1990, Baillie, Bollerslev, and Mikkelsen 1996, Antoniou, Koutmos, and Pericli 2005, Koutmos, Pericli, and Trigeorgis 2006) recognises two different types of speculators, namely, "rational" investors and "noise" speculators. This is the main distinction of trading in this paper, which motivated us to augment the FIGARCH model with the feedback trading approaches and to investigate the existence of this trading in the Greece and Cyprus stock exchanges to determine whether or not this form of trading holds over the long run.

The first group, "rational" investors, value assets according to the cash flows (dividends) that the assets are expected to generate, regarding the expected selling price in the next period. These speculators

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generally follow trends. The overreaction to both good and bad news is known as positive feedback trading ("noise" trading) and can induce autocorrelation in security returns and enhance volatility. Determining when a large number of speculators adopt feedback trading strategies is the main objective of this paper. Security prices may substantially and persistently move away from fundamentals, as can be seen in the second group, the "noise" traders, who base their transactions on strategies far from the fundamental values of investments.

The second group is based on the infancy of positive and/or negative feedback strategies, which may originate in various conflicts between the psychological profiles of investors. In particular, when stocks are rising, the initial investors in the second group believe that further rises are probable and therefore this is an incentive for them to buy. In this way, the rise is reinforced and the positive feedback trading phenomenon appears. Simultaneously, the second pack of investors in the second group believe that there must be a nearby peak when the market falls, which ends up deterring buyers or even, to some degree, imminent sellers. Thus, the negative feedback trading phenomenon takes place, stabilising the rise. Antithetically, when stocks are falling regularly, the initial investors in the second group may expect some days of losing and refrain from buying or start selling. In this way, the fall is reinforced and the positive feedback trading phenomenon appears again. Following what was previously said, the second pack of investors of the second group may decide to buy stocks that have now become a bargain. Thus, the negative feedback trading phenomenon occurs again, and stock markets may thereby be stabilised (Antoniou, Koutmos, and Pericli 2005).

A realistic process for noise trading was estimated by Peress and Schmidt (2015). For this purpose researchers characterised the trades executed by individual investors, who were natural candidates for the role of noise traders because their trades were (on average) cross-correlated, loss making, and weakly correlated with stocks' future fundamentals. They used transactions data from a retail brokerage house and small trades from the New York Stock Exchange's Trade and Quote (TAQ) database, obtaining consistent results. Writers found that noise trading could be treated as approximately i.i.d. normal at the monthly frequency. Weekly trades followed an AR(1) process, but their residuals were not normal. Daily trades required multiple lags and had non-normal residuals.

To another level, Khasawneh (2017) analyzed the behavior of traders in a small market, and specifically in Amman Stock Exchange by using the market return during the period from 1/1/1992 to 31/12/2015. Empirical results highlighted that the common culture of traders on Amman Stock Exchange was Noise Trading; the significance of this finding was statistically proven at the confidence level of 1%.

This paper investigates whether the Athens Stock Exchange (ASE) and Cyprus Stock Exchange (CSE) have feedback trading strategies among their speculators. Both national economies recently suffered a dramatic crisis that affected almost every aspect of financial activity (Paris, Dedes, and Lampridis 2011). First, Greece experienced a crisis beginning on 23 April 2009 involving the odyssey of the Memorandum of Understanding (MoU) and then Cyprus followed in March of 2013. Many believe that this was an unavoidable consequence of the Hellenic economy's collapse due to a domino effect. Considering these evolutions, we have been motivated to investigate investors' behaviour, and specifically whether they prefer to adopt a type of feedback trading strategy. The results of this paper suggest that feedback trading strategies are important in the two markets under investigation.

These two markets can be considered as rather minor and regional since their size is not considerable large. Specifically, at the end of our research, in 2015, Hellenic market presented a capitalization of about 42 billion in US dollars, being at the 53rd place of country ranking list, below countries such as Luxemburg, Morocco and Bangladesh. In parallel, the Cypriot market was even smaller having a capitalization of around 3 billion dollars, to be classified at the 88th world place lower than Zambia, Ghana or even Trinidad & Tobago. Of course, it is important to keep in mind that such figures may be the aftermaths of the economic crisis which led into the shrinking of domestic shares' value.

Comparing the magnitude of two exchanges under investigation to the real economy of their countries, as it is measured by GDP, it is revealed that market capitalization of listed domestic companies as a ratio of GDP was 19.1% for Greece and 12.7% for Cyprus, while the worldwide average was 99.4%, and respective figures for some countries were 80% in Belgium, 87.5% in France, 49.5% in Germany and 110.8% in Netherlands. This is probably an omen of lack of belief by investors on financial organizations as stock markets in Greece and Cyprus.

Beyond the small scale of capitalisation, another essential characteristic of these two markets is the relatively low price of their so-called turnover ratio. Turnover ratio is the value of domestic shares traded, divided by their market capitalization and it can be used as an indicator about how often a share changes hands. Figures were found to be 38.5% and just 3.2% for Greece and Cyprus respectively, significantly lower than the number of global ratio 132.2%, or the figures of big mature European markets such as Switzerland (60.7%), Germany (74.9%) and Spain (97.8%). Therefore, not only several investors had moved away from these capital markets, but also those who had remained were not enough enthusiastic in their transactions, making these stock exchanges small and shallow compared to the large, developed markets and consequently perhaps easier to be manipulated.

As a result, although since 2001 Hellenic share exchange had been already categorized as a developed market by international institutions, the domestic stock market had been downgraded as an advanced emerging market, gradually from May 2013 till March 2016 by different credit rating agencies. These developments have further exacerbated the atmosphere on the Greek stock market, which was also hit by the bad course of economy. On the basis of the above, both the Hellenic and the Cypriot stock exchanges might be considered to be quite different in their behaviour and characteristics from the advanced capital markets.

This paper is structured as follows. Section 2 refers to the methodological part of the study and section 3 describes the dataset, section 4 analyses the empirical results, while section 5 presents a short synopsis and conclusion on the main findings.

2. METHODS

The econometric models that are considered in this study are based on the autoregressive conditional heteroskedasticity (ARCH) processes (Engle 1982), which are employed to characterise time series data of daily stock market returns. For the purposes of the present study, we combine the ARCH volatility process with the conditional mean: i) the positive feedback trading model that Sentana and Wadhwani (1992) introduced, and ii) the exponential autoregressive model that LeBaron (1992) suggested.

For the purposes of this study, we prefer the fractionally integrated generalized autoregressive conditional heteroskedasticity (FIGARCH) approach. This is because, due to its long memory nature, this model is appropriate to describe in a proper way the persistence in the volatility of a time series measurement, such as stock market returns. FIGARCH was introduced by Baillie, Bollerslev, and Mikkelsen (1996) in an effort to overcome some imperfections, as some extreme dependencies on the initial conditions and also long memory in the autocorrelations of squared returns of time series variables. Hence, the ambition of the FIGARCH model was to build up a more elastic class of processes for the conditional variance that would be able of explaining in a more effective way the observed temporal dependencies in financial markets volatilities. In particular, the FIGARCH model permits only a slow hyperbolic rate of decline for the lagged squared in the conditional variance function. This approach can nest the time dependence of the variance and a leptokurtic unconditional distribution for the returns with a long memory behavior for the conditional variances.

A FIGARCH(1,d,1) model is obtained by replacing the first difference operator (1 – L) with the fractional differencing operator $(1 - L)^d$, where d is a fraction $0 < d < 1$. Thus, the FIGARCH model can be obtained by considering:

$$\sigma_t^2 = c + \beta\sigma_{t-1}^2 + [1\text{-}\beta L\text{-}(1\text{-}eL)(1\text{-}L)^d]\,\varepsilon_t^2 \qquad (1)$$

The above model allows for the values of d to be between 0 and 1 for the long-term dependence in the conditional variance. If $0<d<0.5$, the series is covariance non-stationary, while if $0.5<d<1$ the series is stationary, with the effect of shocks fading in the long-run.

The demand for shares by rational investors is given by the following formula:

$$D_{1,t} = (E_{t-1}(r_t) - \beta_0) / \beta_1\sigma_t^2 \qquad (2)$$

where, $D_{1,t}$ stands for stocks demand at time t,,
E_{t-1} is the expectation of return at t-1 time,
r_t is the ex-post shares' return at time t,
β_0 is the rate of return on the risk-free assets,
σ_t^2 represents the conditional variance as a measurement of risk at time t, and
β_1 symbolizes the risk aversion

Note, that according to (2), whether all the investors had the same demand behavior, then the function would be transformed as $E_{t-1}(r_t) - \beta_0 = \beta_1\sigma_t^2$, which actually is the dynamic capital asset pricing (CAPM) model by Merton (1973).

Whether feedback trading is of the positive kind (speculators buy stocks when prices rise and sell if prices fall), stock prices overshoot levels based on fundamentals and exhibit excess volatility. Hence, the activities of positive feedback traders may potentially destabilize stock prices. In contrast, negative feedback traders buy when prices are low and sell when prices are high and thereby may stabilize stock markets (Bohl and Siklos 2004).

According to Sentana and Wadhwani (1992) approach, when stock return volatility is low, stock returns exhibit positive autocorrelation, while during periods of high volatility the autocorrelations of stock returns

turns negative. The reversal in the sign of stock returns and autocorrelations is consistent with the presence of positive feedback traders in the stock market.

So, the demand function for positive feedback traders is given by:

$$D_{2,t} = \rho r_{t-1} \quad (3)$$

where, D_2,t stands for stocks demand at time t-1,
r_{t-1} is the ex-post shares' return at time t-1, and
ρ is a coefficient greater than zero

Whether $\rho < 0$ there would be negative feedback trading. It should not be considered that positive feedback trading is in any case an irrational pattern adopted by traders. It may be an outcome of a specific portfolio insurance strategy and the employment of stop-loss orders.

In balance, all stocks must be held, so the sum of $D_{1,t}$ and $D_{2,t}$ will be equal to unity. Thus, $D_{1,t} = 1 - D_{2,t}$ or $D_{1,t} = 1 - \rho r_{t-1.}$ Following equality (2) the new form can be written as: $1 - \rho r_{t-1} = (E_{t-1}(r_t) - \beta_0) / \beta_1\sigma_t^2$, and by isolating the expectation of return at t-1 time on the left part, the equation becomes:

$$E_{t-1}(r_t) = \beta_0 + \beta_1\sigma_t^2 - \beta_1\sigma_t^2 \rho r_{t-1} \quad (4)$$

The term $-\beta_1\sigma_t^2 \rho$ in equality (4) implies that the presence of positive (negative) feedback trading will induce negative (positive) autocorrelation in returns. Also, the higher the volatility the more negative (positive) the autocorrelation. By defining the ex-post shares' return at time t equal to $E_{t-1}(r_t)$ plus a stochastic error term, equation (4) is transformed into a regression equation, namely the positive feedback trading model.

The positive feedback trading model, as proposed by Sentana and Wadhwani (1992), is formed as follows:

$$r_t = \beta_0 + \beta_1\sigma_t^2 + (\beta_2 + \beta_3\sigma_t^2)r_{t-1} - \quad (5)$$

where, r_t is the stock return at time t,
β_0 is the constant vector,
r_{t-1} is the stock return of the previous period,
$\beta_1 \sigma_t^2$ is the risk premium, modelled as a positive function of the conditional variance of stock price,
β_2 picks up the possibility of constant correlation in the model, and
β_3 , which links autocorrelation to volatility, should be both negative (positive) and statistically important for the presence of positive (negative) feedback trading.

The advantage of this model is that it can capture not only the feedback trading strategies, but also the relation between autocorrelation and long-memory volatility. At low volatility levels, β_2 plays a more important role in determining autocorrelation. When volatility rises, the impact of β_3 on return autocorrelation increases compared to β_2 and induces negative autocorrelation due to the dominance of positive feedback trading at a high volatility level. The higher the volatility, the more negative the autocorrelation.

According to the exponential autoregressive model, the yield of shares is linked to its previous values in a nonlinear pattern. Based on LeBaron (1992), a specific equilibrium is employed as follows:

$$r_t = \beta_0 + \beta_1\sigma_t^2 + (\beta_2 + \beta_3 \exp\{-\sigma_{t-1}^2\})r_{t-1} + \varepsilon_t \quad (6)$$

The conditional return, given by the above equation, is an exponential autoregressive process of order one, in conjunction with a FIGARCH equation. The autocorrelation of returns is an exponential function of the conditional variance.

3. DATA

Information is continuously compounded and consists of daily closing prices for the General Index of ASE and CSE, respectively. These two major indices represent the respective stock markets of Greece and Cyprus pretty well. The period covers ten years, from 2006 until 2015, for Greece and a shorter period, from 2010 until 2015, for the Cyprus stock exchange. Figure 1 presents the trend over time for the two stock indices.

Figure 1: Time series plot of the two stock indices.

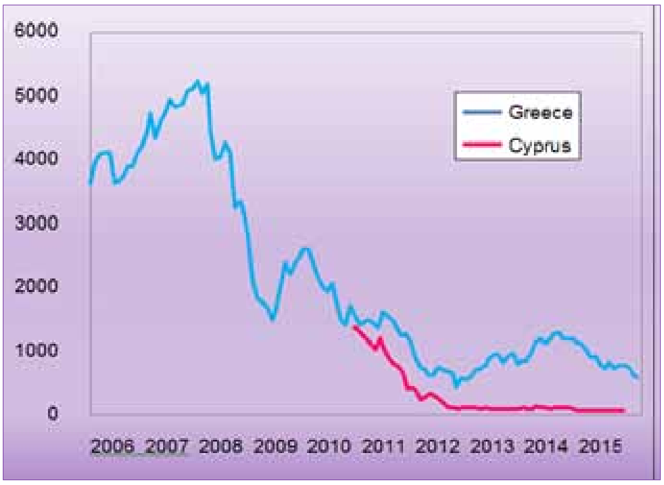

Figure 1 captures, for both the Greek and Cyprus markets, the recession during the overall period of investigation. The outcomes are not unexpected, as during the investigated periods, the domestic financial crisis led to the MoU. Thus, investors acted nervously and did not invest in the Cypriot and Greek exchange markets. It is noteworthy that the Athens stock exchange was closed 27 June 2015 because of the crisis and reopened 3 August 2015.

4. RESULTS

Table 1 reports skewness, kurtosis, normality and dependence for the stock price returns.

Skewness is absent only in the Greek stock market at the 1% level of significance. In Cyprus, skewness is positive, with small magnitude, and is sharp. This means that, together with a negative mean, that the investors are impatient. Kurtosis shows the so-called "tailedness" of distribution. It was found to be statistically important at the 1% level of significance for both cases. The Kolmogorov-Smirnov statistic rejects the null hypothesis of normality at the 1% level of significance.

The absence of normality, as indicated above, is due to temporal return dependencies. This phenomenon may be augmented by the second-moment of temporal dependencies. Such dependencies are tested using the Ljung-Box (LB) statistic. The LB statistics with 20 lags are tested for the first moment of dependencies (linear), and applied to squared returns to test for the second moment of dependencies (nonlinear), namely testing for heteroscedasticity.

As far as the first moment of dependencies (linear) is concerned, the null hypothesis of autocorrelation up to the 20th lag is rejected at the 5% level of significance for Cyprus and at the 10% level of significance for Greece. These findings provide evidence that the autocorrelation is present in the returns of the two markets for the different levels of significance. Furthermore, the LB statistics for the squared returns are higher than are the corresponding LB statistics for the returns.

Table 2 presents the coefficients of equations (5) and (6) for the positive feedback trading strategies augmented via the FIGARCH (1,d,1) model, the skewness, the kurtosis and the LB statistic for standardised simple and squared residuals.

First, we focus on the parameters that govern the autocorrelation of returns, as equations (5) and (6) show (i.e. β_2 and β_3). The constant component of the autocorrelation, β_2, is statistically significant in both markets and for both approaches, even at the 1% level of significance. This particular type of autocorrelation is related to non-synchronous trading (Lo and Mackinlay 1990). The time variation in ex ante returns causes autocorrelation in the ex post returns (Conrad and Kaul 1988). Atchison et al. (1987) estimated the theoretical portfolio autocorrelation due solely to nonsynchronous trading. Parameters were calculated based upon a random sample of 280 NYSE firms with known trading frequencies over a period of time. They revealed that the theoretical autocorrelation due solely to nonsynchronous trading was much lower than that observed empirically. The above can be considered as markets' inefficiencies.

The Greek market has a positive sign for the constant correlation (β_2) of both equations, while the sign for the Cypriot stock exchange is negative. Thus, serial correlation is positive for the first country and negative for the second one. This means that non-synchronous trading and inefficiencies are apparent in the two markets and this may affect the investors' decisions on the construction of their portfolios.

The empirical results indicate that β_3 is statistically different from zero in both cases. Hence, it can be inferred that feedback trading strategies exist in the two examined stock markets, being an important determinant of short-terms movements. Of course, positive feedback trading causes negative autocorrelation that rises |in absolute terms| with the level of volatility. Hence, β_3 should be both negative and statistically significant for the presence of positive feedback trading. However the sign of β_3 coefficient is positive for both ASE and CSE markets. Thus, negative feedback trading strategies are present in these two stock exchanges. In particular, traders buy stocks when prices fall and sell when prices rise. This is because, when stocks are rising, investors believe that there must be a peak near, after which the market falls, which ends up to reluctant buyers and willing sellers. On the other hand, when stocks are falling, investors may decide to buy

Table 1: Diagnostic test on indices' returns

Country	Index	Skewness	Kurtosis	Kolmogorov-Smirnov	LB(20)	LB2(20)
Cyprus	General Index	0.526*	5.649*	-7.097*	34.089**	259.846*
Greece	General Index	-0.07	5.646*	2.79*	30.552***	627.329*

Notes: Asterisks (*), (**), (***) indicate significance at the 1%, 5%, and 10% levels, respectively

Table 2: Feedback Trading Model & Exponential Autoregressive Model's Results

Variables	Cyprus Feedback Trading	Cyprus Exponential Autoregressive	Greece Feedback Trading	Greece Exponential Autoregressive
β_0	-0.215	-0.25	-0.062	0.135
	(0.001)*	(0.001)*	(0.001)*	(0.001)*
β_1	-0.033	0.001	0.004	-0.025
	(0.001)*	(0.001)*	(0.001)*	(0.001)*
β_2	0.005	0.076	-0.002	-0.014
	(0.001)*	(0.001)*	(0.006)*	(0.001)*
β_3	0.007	0.124	0.009	0.274
	(0.001)*	(0.001)*	(0.001)*	(0.001)*
c	2.288	-0.237	-0.022	-0.144
	(0.001)*	(0.001)*	(0.001)*	(0.001)*
β	0.275	0.001	0.481	0.392
	(0.001)*	(0.012)**	(0.001)*	(0.001)*
e	0.22	-0.086	-0.03	-0.02
	(0.001)*	(0.001)*	(0.001)*	(0.001)*
d	0.689	0.355	0.511	0.431
	(0.001)*	(0.001)*	(0.001)*	(0.001)*
Log-likelihood	-3074.157	-2974.542	-5179.592	-5179.592
Diagnostic tests for Residuals				
Skewness	0.44*	0.496*	-0.084*	0.005
Kurtosis	6.959*	5.526*	5.837*	5.678*
LB(20)	48.355*	20.525	30.535***	31.096***
LB^2 (20)	353.2*	197.365*	604.023*	621.101*

Notes: (*), (**), (***) indicate significance at the 1%, 5%, and 10% levels, respectively

as stocks become more and more of a bargain. Again, the negative feedback trading strategies take place. It is noteworthy to say that these findings are somehow similar for the two econometric approaches.

The implication for this phenomenon is that traders do not trust in the long run stock markets, but rather behave as speculators by buying stocks when prices fall and selling when prices rise, aspiring a fast and modest profit and detesting potential losses. This practice may have as its source the lack of confidence in a given market in the long run.

Regarding the FIGARCH (1,d,1) model, attention should be paid to the d coefficient of equation (1). Values of d should be allowed between 0 and 1 when modeling long-term dependence in the conditional variance. As long as $0<d<0.5$, it is considered that the series are covariance stationary, while whether $0.5<d<1$ the series are no longer stationary but they are mean reverting, with the effect of shocks dying away in the long-run. Both samples are non-stationary ($d<0.5$) with the exponential autoregressive approach; however, when the feedback trading model is in conjunction with Sentana and Wadhwani's model, the series are stationary. This means that both series are stationary ($d>0.5$) with the last approach and shocks to the conditional variance are ultimately dying out slowly. Notice that the two different approaches result in conflicting conclusions, meaning that shocks in the two markets die out quickly or slowly, respectively.

A likelihood function characterises the importance of the parameters of a statistical model. In our two methodologies, the natural logarithm of the likelihood function is employed, namely the log-likelihood one. The log-likelihood function is an expression of optimal values of estimated coefficients. Thus, the log-likelihood function should be maximised, as a higher value is better than is a lower one. As can be seen in table 2, the log-likelihood values, which are obtained by different models, are equal in the Greek market. In contrast, in the Cypriot market, the exponential autoregressive model's results are superior to the first model's results. This may imply that samples in different markets provide different estimations, and as a result, different conclusions can be obtained regarding the efficiency of the two markets.

5. CONCLUDING REMARKS

This paper examined whether or not feedback trading strategies were present in the Athens stock exchange (ASE) and the Cypriot stock exchange (CSE). Empirical results showed that feedback trading strategies existed in the examined stock markets, and they were negative.

Specifically, the constant component of the autocorrelation, β_2, was statistically significant in both markets and for any approach, even at the 1% level of significance. As far as the coefficient β_3 is concerned, it was 0.007 for Cyprus according to the initial feedback model of Sentana and Wadhwani and 0.124 based on LeBaron's exponential autoregressive approach. For Greece, figures remained positive 0.009 and 0.274, respectively. All these figures were statistically important at the 1% level of significance. Thus, empirical results revealed that negative feedback trading strategies existed in the two underlying stock markets, as figures for coefficient β_3 proved positive and statistically important.

The findings were quite similar for the two different econometric approaches as far as the fact that feedback trading strategies are apparent in the Greek or Cypriot stock markets. These outcomes are consistent with Koutmos, Pericli, and Trigeorgis (2006) results for the Cypriot stock exchange.

Trying to provide an explanation for the above findings, we can state that traders in these markets do not generally trust long-term investments and they do not pay great attention to the fundamentals. Macroeconomic domestic recessions, unstable tax environments regarding listed companies and received dividends, and lack of investing culture may enhance feedback trading.

REFERENCES

Antoniou, A., Koutmos, G., and Pericli, A. 2005. Index futures and positive feedback trading: evidence from major stock exchanges. Journal of Empirical Finance 12: 219–238.

Atchison, A., Butler, K., and Simonds, R. 1987. Nonsynchronous security trading and market index autocorrelation. Journal of Finance 42: 111–118.

Baillie, R.T., Bollerslev, T., and Mikkelsen, H.O. 1996. Fractionally integrated generalized autoregressive conditional heteroscedasticity. Journal of Econometrics 74: 3–30.

Bohl, M., and Siklos, P. 2004. Empirical evidence on feedback trading in mature and emerging stock markets. Quantative Finance Research Centre. Research paper 137, October 2004

Bollerslev, T. 1986. Generalized autoregressive conditional heteroscedasticity. Journal of Econometrics 31: 307–327.

Conrad, J. and Kaul, G. 1988. Time-variation in expected returns. Journal of Business 61: 409–425.

Engle, R. 1982. Autoregressive conditional heteroskedasticity with estimates of the variance of United Kingdom inflation. Econometrica 50: 987–1007.

Khasawneh, O.A.H. 2017. Noise trading in small markets: Evidence from Amman Stock Exchange (ASE). Research in International Business and Finance 42: 422–428.

Koutmos, G., Pericli, A., and Trigeorgis, L. 2006. Short-term dynamics in the Cyprus stock exchange. The European Journal of Finance 12: 205–216.

LeBaron, L. 1992. Some relations between volatility and serial correlations in stock market returns. The Journal of Business 65: 199–219.

Lo, A. and Mackinlay, C. 1990. An econometric analysis of nonsynchronous trading. Journal of Econometrics 45: 181–211.

Long, B., Shleifer, A., Summers, L., and Waldmann, L. 1990. Positive feedback investment strategies and destabilizing rational speculation. The Journal of Finance 45: 379–395.

Merton, R. 1973. An inter-temporal capital asset pricing model. Econometrica 41: 867-887.

Paris, A., Dedes, S., and Lampridis, N. 2011. Greek financial crisis. Global Business and Management Research 3: 319–341.

Peress, J., and Schmidt, D. 2015. Noise Traders Incarnate: Describing a Realistic Noise Trading Process.

Sentana, E. and Wadhwani, S. 1992. Feedback traders and stock returns autocorrelations: Evidence from a century of daily data. The Economic Journal 102: 415–425.

Tayefi, M. and Ramanathan, T.V. 2012. An overview of FIGARCH and related time series models. Austrian Journal of Statistics 41: 175–196.