

## CHAPTER V

### CONCLUSION AND RECOMMENDATION

This chapter explores all the conclusion of the research study, suggestion for further research, and also gives the research limitations. The purpose of this research to investigate the impact of investor sentiment-based on equity mutual fund on excess return and volatility in Indonesia Stock Exchange (IDX) from the period January 2011 to December 2014.

#### 5.1 Conclusions

From the result of this research study on the impact of sentiment investor-based on equity mutual fund on excess return, the conclusions that can be pointed out are as follows:

1. Investor sentiment-based equity mutual fund and Excess return are stationary in level stage because the probability value is lower than 0.05. From the mean model analysis, the investor sentiment is affecting excess return and volatility because the probability of investor sentiment is less than 0.05.
2. This result does not support  $H_0$  (null hypothesis) where the investor sentiment (which is measured by return of equity mutual fund) is not affecting the excess return in Indonesia Stock Exchange (IDX), but this research study does support  $H_a$  (alternative hypothesis) where the investor sentiment affects the excess return in IDX. It means return of equity mutual fund can be used as a proxy for investor sentiment to gain excess

returns. The return of equity mutual fund can provide some information about investors' behavior.

3. This result provides "hold more" effect which relates to the hypothesis that noise traders hold proportionately more of the risky asset than the sophisticated fundamentalists, when bullish on average. Since noise traders bear more of the risk in the market, they also expect a higher return. On the other hand when average sentiment is bearish, noise traders hold less of the risky asset and therefore require a lower expected return. This result is also providing the "create space" effect, relates to the notion that noise traders increase risk by their own trading and are rewarded for the risk. The effect entails that when the variability in noise traders' belief increases, this increases the volatility of the market.

## **5.2 Research Limitations**

After done with analysis and interpretation, this research study has several limitations, there are:

1. The researcher only use four years as the simple data periode, which is from 2011-2014. Larger period of time will be better to get better result.
2. The forecast accuracy might be needed to be improved long-term forecast.
3. The research only use the simplest model of GARCH, which is GARCH 1.1. The reason a GARCH process is used to model

volatility can be addressed by viewing the strengths of the model and how this correlates with the behaviors, assumptions, and characteristics of a time series of financial data. The advantages, which were summarized before, will provide a model which enable to track volatility evolution. A common disadvantage to standard GARCH models exist since they cannot model asymmetries of the volatility with respect to the sign of past shocks. Therefore they have an effect on the level, but no effect on the sign. Bad news which is identified by a negative sign has the same influence on the volatility as good news, a positive sign if the absolute values are the same.

4. There are many indicators outside that can be used as a proxy of investor sentiment. This research only used equity mutual fund as the indicator.

### **5.3 Recommendation**

Several things could be taken as consideration for the next research on related issues. So, the suggestions that can be gives based on the result of this research study are:

1. In this study, the researcher use equity mutual fund as a proxy for investor sentiment. For the further research can use another proxy for investor sentiment such as investor survey, investor moods, retail investor trades, mutual fund flows, dividend premium, close-end fun

discount, IPO first-day returns, IPO volume, new equity issues, and insider trading.

2. For the next researcher, hopefully can adapt another type of GARCH, such as EGARCH, ARCH-Mean, or TGARCH.
3. For the future research, better to use a longer research period, so that the result of the research will better reflect the impact of investor sentiment on excess returns. Implication for the future research study with similar topic can be considered to the limitations in this research which are the additions of other investor sentiment proxy or modifications of others variables to be analyzed in the same roof. Another wider research is also possible to be conducted by using this research as a benchmark.

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## APPENDIXES

### Appendix A

#### Descriptive Analysis of Return of Equity Mutual Fund and Excess Return

	REMF	ER
Mean	0.002525	0.057220
Median	0.003523	0.057440
Maximum	0.260145	0.169401
Minimum	-0.205020	-0.015850
Std. Dev.	0.041474	0.026292
Skewness	0.903671	0.378494
Kurtosis	20.83041	4.741110
Jarque-Bera	2730.116	30.63821
Probability	0.000000	0.000000
Sum	0.514998	11.67295
Sum Sq. Dev.	0.349177	0.140326
Observations	204	204

### Appendix B

#### The Result of ADF Test on Excess Return

Null Hypothesis: ER has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=14)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.692067	0.0000
Test critical values: 1% level	-3.462737	
5% level	-2.875680	
10% level	-2.574385	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(ER)

Method: Least Squares

Date: 06/10/15 Time: 10:34

Sample (adjusted): 3 204

Included observations: 202 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ER(-1)	-0.703440	0.091450	-7.692067	0.0000
D(ER(-1))	-0.237062	0.067798	-3.496610	0.0006
C	0.039842	0.005520	7.217946	0.0000
R-squared	0.497008	Mean dependent var	-0.000301	
Adjusted R-squared	0.491953	S.D. dependent var	0.035473	
S.E. of regression	0.025284	Akaike info criterion	-4.502545	
Sum squared resid	0.127217	Schwarz criterion	-4.453412	
Log likelihood	457.7570	Hannan-Quinn criter.	-4.482666	
F-statistic	98.31639	Durbin-Watson stat	2.028220	
Prob(F-statistic)	0.000000			

## Appendix C

### The Result of ADF Test on Sentiment Proxy

Null Hypothesis: REMF has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=14)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-24.18183	0.0000
Test critical values: 1% level	-3.462574	
5% level	-2.875608	
10% level	-2.574346	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(REMF)

Method: Least Squares

Date: 06/10/15 Time: 10:36

Sample (adjusted): 2 204

Included observations: 203 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REMF(-1)	-1.486238	0.061461	-24.18183	0.0000
C	0.003936	0.002554	1.541443	0.1248

R-squared	0.744197	Mean dependent var	0.000205
Adjusted R-squared	0.742924	S.D. dependent var	0.071629
S.E. of regression	0.036318	Akaike info criterion	-3.783223
Sum squared resid	0.265113	Schwarz criterion	-3.750581
Log likelihood	385.9972	Hannan-Quinn criter.	-3.770017
F-statistic	584.7609	Durbin-Watson stat	1.858361
Prob(F-statistic)	0.000000		

## Appendix D

### The Result of Mean Model Analysis

Dependent Variable: ER  
Method: Least Squares  
Date: 06/10/15 Time: 10:38  
Sample: 1 204  
Included observations: 204

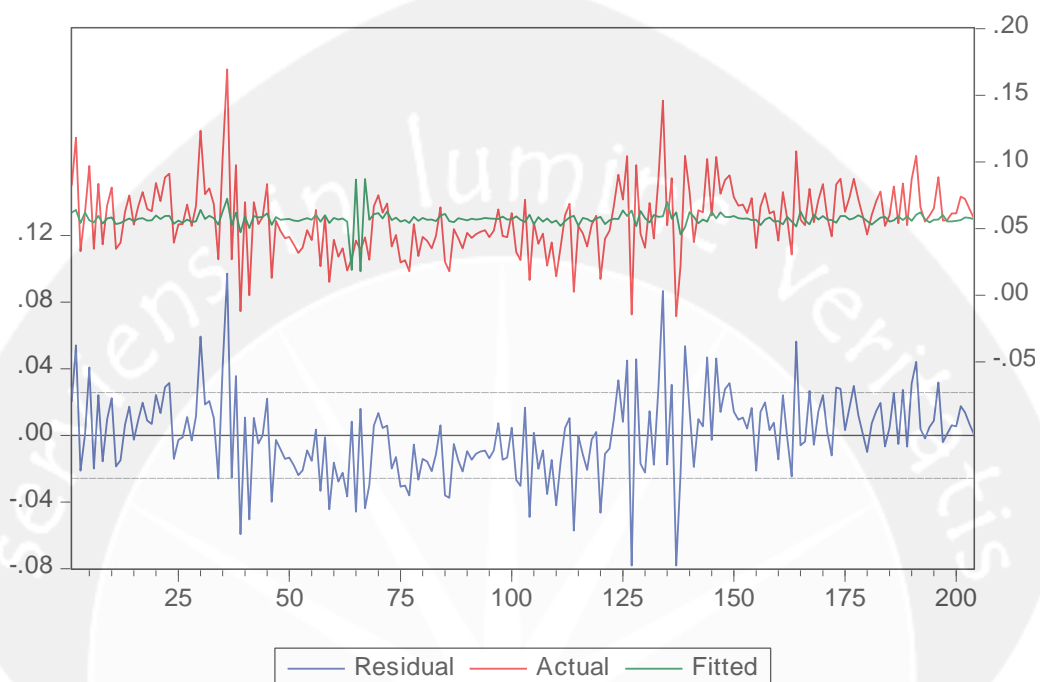
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.057604	0.001795	32.09440	0.0000
REMF	-0.152024	0.043302	-3.510763	0.0006

R-squared	0.057508	Mean dependent var	0.057220
Adjusted R-squared	0.052842	S.D. dependent var	0.026292
S.E. of regression	0.025588	Akaike info criterion	-4.483649
Sum squared resid	0.132256	Schwarz criterion	-4.451118
Log likelihood	459.3322	Hannan-Quinn criter.	-4.470489
F-statistic	12.32546	Durbin-Watson stat	1.961166
Prob(F-statistic)	0.000551		

## Appendix E

### Time Series Residual Plot Data



## Appendix F

### ARCH LM Test

Heteroskedasticity Test: ARCH

F-statistic	0.633380	Prob. F(1,201)	0.4271
Obs*R-squared	0.637673	Prob. Chi-Square(1)	0.4246

Test Equation:

Dependent Variable: RESID<sup>2</sup>

Method: Least Squares

Date: 06/10/15 Time: 10:41

Sample (adjusted): 2 204

Included observations: 203 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000613	9.51E-05	6.450795	0.0000
RESID <sup>2</sup> (-1)	0.056080	0.070466	0.795852	0.4271
R-squared	0.003141	Mean dependent var	0.000650	

Adjusted R-squared	-0.001818	S.D. dependent var	0.001185
S.E. of regression	0.001186	Akaike info criterion	-10.62681
Sum squared resid	0.000283	Schwarz criterion	-10.59417
Log likelihood	1080.621	Hannan-Quinn criter.	-10.61361
F-statistic	0.633380	Durbin-Watson stat	1.988098
Prob(F-statistic)	0.427057		

## Appendix G

### GARCH (1.1) Model Test

Dependent Variable: ER

Method: ML - ARCH (Marquardt) - Normal distribution

Date: 06/10/15 Time: 10:44

Sample: 1 204

Included observations: 204

Convergence achieved after 20 iterations

Presample variance: backcast (parameter = 0.7)

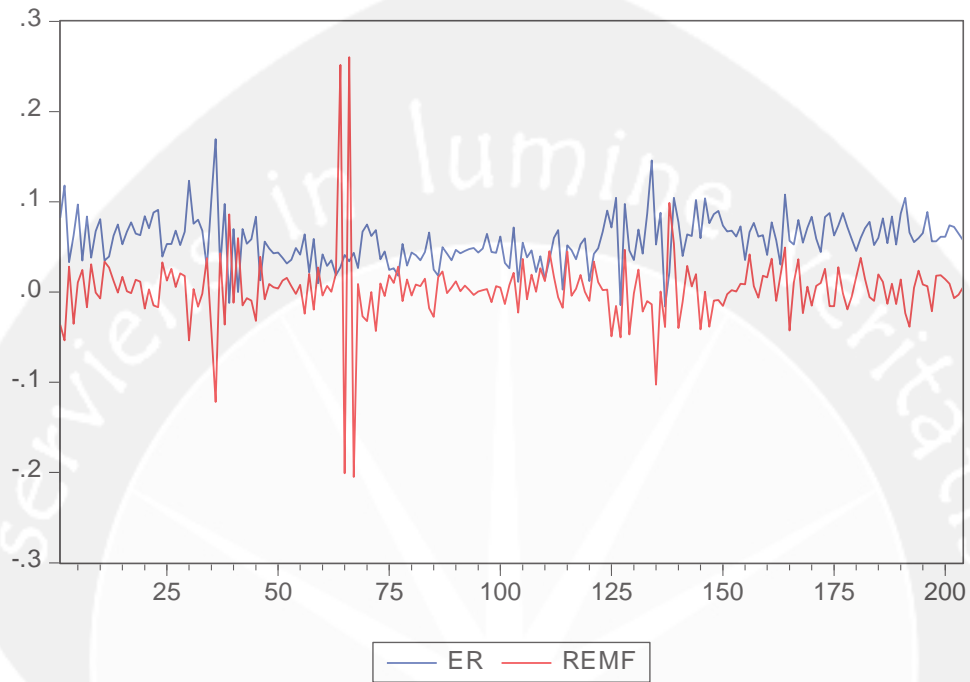
GARCH = C(3) + C(4)\*RESID(-1)^2 + C(5)\*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.057482	0.001875	30.65965	0.0000
REMF	-0.135180	0.038907	-3.474436	0.0005

#### Variance Equation

C	8.61E-05	5.52E-05	1.559424	0.1189
RESID(-1)^2	0.124951	0.061604	2.028297	0.0425
GARCH(-1)	0.740785	0.123607	5.993073	0.0000

R-squared	0.056793	Mean dependent var	0.057220
Adjusted R-squared	0.052124	S.D. dependent var	0.026292
S.E. of regression	0.025597	Akaike info criterion	-4.502778
Sum squared resid	0.132357	Schwarz criterion	-4.421452
Log likelihood	464.2834	Hannan-Quinn criter.	-4.469880
Durbin-Watson stat	1.937545		

**Appendix H****Data Pattern of Return Equity Mutual Fund and Excess Return January 2011-December 2014**

DATA AVERAGE RETURN NET ASSET VALUE (NAV) AND EXCESS RETURNS PERIOD JANUARY 2011 – DECEMBER 2014

Date	Return NAV	Excess Return	Date	Return NAV	Excess Return	Date	Return NAV	Excess Return	Date	Return NAV	Excess Return
07/01/2011	-0.029218236	0.082158102	06/01/2012	0.012685721	0.031766188	04/01/2013	-0.018721393	0.011341236	03/01/2014	0.00697016	0.035341621
14/01/2011	-0.042805109	0.11812228	13/01/2012	0.005249235	0.035792447	11/01/2013	0.030106138	0.054644732	10/01/2014	0.034139489	0.066607923
21/01/2011	0.022276372	0.03302315	20/01/2012	-0.001656342	0.048826334	18/01/2013	-0.006614757	0.038476693	17/01/2014	0.005446565	0.076488527
28/01/2011	-0.028017743	0.06254593	27/01/2012	0.006593541	0.04139006	25/01/2013	0.015856835	0.046250494	24/01/2014	-0.005168715	0.061457991
04/02/2011	0.008426061	0.096962069	03/02/2012	-0.019564183	0.063986159	01/02/2013	0.000279717	0.022211224	30/01/2014	0.014848587	0.063036062
11/02/2011	0.019519475	0.03474784	10/02/2012	0.016365675	0.021803662	08/02/2013	0.021835413	0.03963279	07/02/2014	0.013548141	0.041063901
18/02/2011	-0.01330015	0.08365493	17/02/2012	-0.015841518	0.058815897	15/02/2013	0.010197861	0.014094411	14/02/2014	0.03056359	0.07728247
25/02/2011	0.024456478	0.038242099	24/02/2012	0.02220103	0.009876941	22/02/2013	0.037765923	0.035531133	21/02/2014	-0.007996171	0.057485443
04/03/2011	-0.000485144	0.067390536	02/03/2012	-0.003095609	0.041626944	01/03/2013	0.014185674	0.06001828	28/02/2014	0.015487968	0.030565248
11/03/2011	-0.005639725	0.080795387	09/03/2012	0.005520593	0.029032118	08/03/2013	-0.004947538	0.068654051	07/03/2014	0.041136664	0.107873331
18/03/2011	0.026959417	0.034847194	16/03/2012	0.000319122	0.035067569	15/03/2013	-0.014600234	0.002581152	14/03/2014	-0.035817741	0.056819381
25/03/2011	0.021850437	0.039373309	22/03/2012	0.01646225	0.018507712	22/03/2013	0.037762304	0.051719229	21/03/2014	0.008960778	0.052495096
01/04/2011	0.01013905	0.062541983	30/03/2012	0.455906564	0.027424666	28/03/2013	-0.003376384	0.046438137	28/03/2014	0.030574059	0.079815471
08/04/2011	-0.000386305	0.074819682	05/04/2012	-0.312932105	0.041003438	05/04/2013	0.003126629	0.036494009	07/04/2014	-0.019616967	0.054691951
15/04/2011	0.01369292	0.052883269	13/04/2012	0.462563003	0.033988668	12/04/2013	0.016069956	0.052892049	14/04/2014	0.005026328	0.071279252
21/04/2011	0.000773762	0.066923264	20/04/2012	-0.315223072	0.043458256	19/04/2013	0.000234525	0.059550569	21/04/2014	-0.012639597	0.083422783
29/04/2011	-0.000892202	0.077314677	27/04/2012	0.007312017	0.026643797	26/04/2013	-0.008118003	0.012263166	28/04/2014	0.005602699	0.059128589
06/05/2011	0.011058399	0.064789532	04/05/2012	-0.021987227	0.066717943	03/05/2013	0.028520452	0.042415709	02/05/2014	0.008569363	0.044258502
13/05/2011	0.009439081	0.062918461	11/05/2012	-0.026364155	0.074884078	10/05/2013	0.009277291	0.048371349	09/05/2014	0.021664724	0.083129305
20/05/2011	-0.015024338	0.084063063	16/05/2012	0.000148603	0.06199254	17/05/2013	0.001861925	0.066972703	16/05/2014	-0.013059319	0.087415548
27/05/2011	0.002330484	0.070575786	25/05/2012	-0.034986266	0.068727159	24/05/2013	0.002169776	0.090310206	23/05/2014	-0.013158711	0.06265889

03/06/2011	-0.01208954	0.088264874	01/06/2012	0.007631006	0.036472804	31/05/2013	-0.041658293	0.071694987	30/05/2014	0.027629027	0.073629292
10/06/2011	-0.013536528	0.091094997	08/06/2012	-0.003574939	0.045087156	07/06/2013	-0.012848306	0.104340697	06/06/2014	-0.000916357	0.087427465
17/06/2011	0.026414669	0.039425864	15/06/2012	0.015123461	0.02449596	14/06/2013	-0.042253387	-0.01441992	13/06/2014	-0.016063968	0.071929608
24/06/2011	0.010473592	0.053192412	22/06/2012	0.008159822	0.026217467	21/06/2013	0.03908119	0.097641792	20/06/2014	-0.004334862	0.058873739
01/07/2011	0.021011736	0.053296279	29/06/2012	0.022917656	0.018015274	28/06/2013	-0.039517716	0.046216891	27/06/2014	0.013910633	0.045558492
08/07/2011	0.004745183	0.067926752	06/07/2012	-0.008209464	0.053360097	05/07/2013	-0.001306509	0.03549331	04/07/2014	0.031680374	0.060087488
15/07/2011	0.016892527	0.052015589	13/07/2012	0.011421901	0.029293325	12/07/2013	0.020818933	0.069072017	11/07/2014	0.012113884	0.070548595
22/07/2011	0.01462432	0.066961417	20/07/2012	-0.003060566	0.043862232	19/07/2013	-0.01810641	0.04248684	18/07/2014	-0.004672254	0.077786098
29/07/2011	-0.044038083	0.123433471	27/07/2012	0.00668412	0.040780149	26/07/2013	-0.008403479	0.086875701	25/07/2014	-0.00810636	0.052062116
05/08/2011	0.002782454	0.075734733	03/08/2012	0.005360096	0.035216372	02/08/2013	-0.011262245	0.145896319	08/08/2014	0.016340544	0.060002105
12/08/2011	-0.013366594	0.080080558	10/08/2012	0.017323572	0.044474029	16/08/2013	-0.085454971	0.052541782	15/08/2014	0.009569396	0.081631997
19/08/2011	-0.001438876	0.068064678	16/08/2012	-0.019965312	0.065921036	23/08/2013	0.000588107	0.087856799	22/08/2014	-0.010992982	0.054034374
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28/10/2011	-0.012038676	0.069797262	19/10/2012	0.001965615	0.04756009	25/10/2013	-0.034511127	0.059743891	24/10/2014	0.005576558	0.088565254
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11/11/2011	-0.007568937	0.058652964	02/11/2012	0.000505945	0.043628587	08/11/2013	-0.031614111	0.076233788	07/11/2014	0.015153007	0.056311193
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23/12/2011	0.003062794	0.043857974	14/12/2012	-0.010973284	0.032360048	20/12/2013	0.000539021	0.061593942	19/12/2014	0.004531391	0.0573948
30/12/2011	0.010413997	0.037992046	21/12/2012	0.006311338	0.026378555	27/12/2013	0.007513641	0.072832248	29/12/2014	-1	1.069
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