Exponentially Weighted Moving Average (EWMA) in PT Astra Agro Lestari Tbk and PT Aneka TambangTbk

Darman Saputra
Department of Mangement
Universitas Bangka Belitung
Indonesia
saputradarman1988@gmail.com

Sumar
Department of Mangement
Universitas Bangka Belitung
Indonesia

Hidayati
Department of Mangement
Universitas Bangka Belitung
Indonesia

Khairiansyah
Department of Mangement
Universitas Bangka Belitung
Indonesia

Abstract—**Exponentially Weighted Moving Average Method the standard deviation calculation described in the previous section assumes that the data volatility is constant (homoscedastic) and can not be applied to unstable (heteroscedastic) data volatility.Therefore, one of the approaches to deal with the volatility of non-constant (heteroscedastic) data is the Exponentially Weighted Moving Average (EWMA) method developed. Data collection The data used in this study is daily stock price data from several stocks, namely PT. Agro Lestari (Persero) and Aneka Tambang Tbk which then will be sought stock return. Period of share data used from March 27, 2013 to March 27, 2014.From the result of VaR analysis shows that the risk of buying AALI shares is bigger that is 1050,25274 compared to buying ANTM stock that is equal to 49,7633,766 in year 2013-2014, so this is one of the reference in decision of share in 2014 - 2015. Assessing VaR this can be a strategy in the company's decision to take stock portfolio policies other.**

Keywords—Coagulation, Heteroskidastity,VaR EWMA, AALI, ANTM

I. Introduction

PT Astra Agro Lestari Tbk (the Company) started to develop the plantation industry in Indonesia since more than 30 years ago.The company started its investment in the field of cassava plantation, after which developed the rubber plant, then in 1984, from now on the cultivation of oil palm plantation in Riau Province. At present, the company continues to grow and is currently one of the best oil palm plantation companies and one of the largest companies in Indonesia with a manageable area of 297,011 hectares spread over the islands of Sumatra, Kalimantan and Sulawesi.

Company's move to maintain the company's sustainability, in addition to managing oil palm plantations, the Company also develops a related downstream industry. The Company has operated a refinery plant in North Mamuju Regency, West Sulawesi Province, and in Dumai, Riau Province. Processed palm oil products in the form of olein, stearin, and PFAD is to meet the demand of export markets, among others, from China and the Philippines. Starting in 2016, the Company has also operated a blending plant or fertilizer mixing plant in Donggala District, Central Sulawesi Province. In addition, the Company also began to develop a business integration of palm-sapi. Therefore, with the rapidly growing company PT Astra Argo Lestari then not one of the companies or the public wants to buy shares of the company.

ANTAM was established as a State-owned Enterprisein 1968 through mergers of several national mining companies producing single commodities. To support the financing of the ferronickel expansion project, in 1997 ANTAM offered 35% of its shares to the public and listed them on the Indonesia Stock Exchange. In 1999, ANTAM listed its shares in Australia with foreign exempt entity status and in 2002 this status was upgraded to ASX Listing with more stringent conditions.

AALI and ANTM companies are expected to develop the potential of existing shares in a company. Stock buyers can see the development of the business world in the company both

II. Methods

Calculation of stock return value To calculate the return value on each stock using the following formula:
$$R = (P\_t - P\_{(t-1)})/P\_{(t-1)}$$
Determine the standard deviation Using the standard deviation of daily stock returns, we calculate the risk level using the equation: $\sigma = \sqrt{(\sum_{(i=1)}^{n} \llbracket (R - \bar{R}) \rrbracket^2)/(n-1)}$

The correlation coefficient represents the relationship between return of a stock and other stock returns. The value of the correlation coefficient can be calculated using the equation:

$$r_{AB} = \rho_{AB} = \frac{COV\ R_a, R_b}{\sigma_{A}, \sigma_{B,}}$$

III. RESULTS AND DISCUSSION

Sample data used in this research is closing price (closing price) some shares of company owned by PT. Astra Argo Lestari (Persero) (AALI) engaged in oil palm plantation and PT. Aneka Tambang Tbk (ANTM) engaged in mining for one trading year (261 business days) starting from March 27, 2013 to March 27, 2014. The company is a big company that dominates the Indonesian market so it becomes a target for investment land.

From the above data obtained that the value of Volatility Ewma to-t is equal to 0.025081. Based on the above table we get the VaR value with EWMA Volatility for one period ahead at 95% confidence level is 1008.095. The value is relative to AALI stock price on March 28, 2013. So the potential losses that will be experienced by investors amounted to 1008,095 / share of shares for one period ahead. While VaR value with Log Distribution Normal for one period ahead at 95% confidence level is equal to 1050.25274. The value is relative to AALI's share price on March 28, 2013. So the potential losses that will be experienced by investors amounted to 1050.25274 / share of shares for one period ahead.

From the above data obtained that the value of Volatility Ewma to-t is equal to 0.023464. Based on the above table obtained value of VaR with EWMA Volatility for one period ahead at 95% confidence level is equal to 44.71593. The value relative to AALI stock price on March 28, 2013. So the potential losses that will be experienced by investors amounted to 44.71593 / share shares for one period ahead, while the VaR value with the Log Distribution Normal for one period ahead at the level of confidence 95 % is 49.7633766. The value is relative to AALI's share price on March 28, 2013. So the potential losses that will be experienced by investors amounted to 49.7633766 / share shares for one period ahead.

IV. CONCLUSIONS

From the result of VaR analysis shows that the risk of buying AALI shares is bigger that is 1050,25274 compared to buying ANTM stock that is equal to 49,7633,766 in year 2013-2014, so this is one of the reference in decision of share in 2014 - 2015. Assessing VaR this can be a strategy in the company's decision to take stock portfolio policies other.

REFERENCES

[1] Buchdadi. A. D. 2007. Perhitungan Value at Risk Portofolio OptimumSaham Perusahaan BerbasisSyariahdenganPendekatan EWMA. JurnalAkuntansidankeuangan Indonesia.

[2] Darmawi. H. (2013). ManajemenRisiko. Jakarta: BumiAksara.

[3] Devi. S. S. 2010. AnalisisRisikoPortofoliodenganMetodeVariansKovarians. Yogyakarta: UniversitasNegeri Yogyakarta.

[4] Gujarati. D. N. 2004. Basic Econometrics; Fourth Edition. The McGraw-Hill Companies.

[5] Rudiyanto. (2012, Maret 11). Rudiyanto, Mengenal Cara KerjaObligasi (2) :AnalisaRisikoHargadanGagal Bayar Obligasi. DipetikMaret 5, 2014, dariRudiyanto, BerbagiTentangPerencanaanKeuangandanInvestasi

[6] Saiful. H., Weng, H., &Zaidi, I. 2011. Different Downside Risk Approaches In Portfolio Optimisation. Jounal of Quality Measurement and Analysis, 77-84.

[7] Somantri. A. 2010. PengukuranRisikoKreditObligasiKorporasidengan Credit Value at Risk (CVAR) danoptimalisasiportofoliomenggunakanmetode Mean Variance EfficientPortofolio (MVEP). Semarang: UniversitasDiponegoro.

[8] Wahyuni. S. 2013. PerbandinganOptimisaasiPortofolioMetode Mean-Variance denganMetode Mean-Semivariance. Yogyakarta: Universitas Atmajaya.

TABLE 1. RESULTS OF AALI SHARE VAR

Mean Logreturn	0,00122	Mean Return	0,00157
		Lamda	0,99
Alfa	0,05	Alfa	0,05
Std Logreturn	0,026411	EWMA Volatility	0,025081
VaR dengan Log Return Berdistribusi Normal	1050,25274	VaR dengan EWMA Volatility	1008,095

TABLE 2. RESULTS OF AALI SHARE VAR

Mean Logreturn	-0,00081	Mean Return	-0,00045
Lamda	0,99	Lamda	0,99
Alfa	0,05	alfa	0,05
Std Logreturn	0,026521	EWMA Volatility	0,023464
VaR dengan Log Return Berdistribusi Normal	49,7633766	VaR dengan EWMA Volatility	44,71593