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THROUGH THE PORTFOLIO FORMATION IN BANKING INDUSTRY: INSIGHT THE MODEL OF MARKOWITZ

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ABSTRACT

Investment is considered to have an important role in today's dynamic environment and the hobby of investing is growing from day to day. In the modern era, many opportunities are available for investors to invest. But according to the investment decision concerned, it depends on different things but there is no denying the fact that risk and return play an important role in making investment decisions. The method usually used by investors in diversifying is through portfolio formation. This research was conducted on the capital market index, namely IDX30 for the period December 2019-September 2020. Portfolios were formed using the Markowitz model, the data in this study were sourced from the IDX Monthly Statistic or the Indonesia Stock Exchange. Research is carried out to form the Issuer's shares into an optimal portfolio and the proportion of funds from each share formed using the Markowitz method. From these calculations, the results of the 3 most optimal share issuers, namely PT Bank Rakyat Indonesia AgroniagaTbk or AGRO with a proportion of 43%, BBHI or PT Bank Harda International Tbk got a proportion of 44% and the last is PT BTPN Syariah Tbk or BTPS getting a proportion by 13%. With the combination of these three stocks, it has a fairly large portfolio return expectation but also has a large portfolio risk. Expected Return Portfolio is 11.49% and a risk of 7.12%.

KEYWORDS: Optimal Portfolio, Stocks and Markowitz Method

INTRODUCTION

Considered to be an important role in investment environment in the country and a dynamic invest develops from day to day. In the era of modernization, plenty of opportunities available to investors to invest. But according to an investment decision concerned, that depends on different but should not be denied the fact that risk and return played an important role in making an investment decision. Moreover, these two investors sought the main factor when making decisions about investment. Hence, investment opportunities is what we all find occasional, an action that leads to the minimum maximum with risk. (Kazmi, Naaranoja, & Kantola, 2016; Smith & Bergman, 2020)

At this time, lots of alternatives available offer investment return well but preference to utilize one alternative depends on the on the capacity of investors and some other factors such as income and financial goals, and the sexes age group, knowledge and awareness of about probability. Risk, good taste, motivation, etc. The choice in investments alone much of what we need to do not know one example is the invest shares. Hence, many Indonesians especially those who are feel invest in stocks is taboo but the progress of a stock exchange in Indonesia, that it was think this already that we should to wake up about that. (Bell, Filatotchev, & Aguilera, 2013; Houqe, Easton, & van Zijl, 2014; Kirk, McSherry, & Swain, 2015; Schwienbacher, 2013)

Therefore, the capital market (capital markets) his own was a market to numerous instruments be traded with a long-term financial, of debt (bonds) letter well , equity (stake) , in the mutual fund industry , an instrument derivatives and other instrument. The capital market is a means of funding for both firms and other institutions (e.g. government) , and as a way for activities invest. Thus , the capital market facilitate various infrastructures and means activities trading and other related activities. Further, the form of investment has started to attract the help of state-owned investment exchange. (Yu, Li, Tian, & Zhang, 2013)

Indeed, the investment, according to Tandelilin (2010), the commitment on some funds or other resources the current by numerous advantages wherein the purpose of acquiring will and according to Smith & Skousen in Irham (2014), the transactions or events investment is a sale and purchase a security (not of the), building, as well as equipment an assets to be sold and nothing. To in invest there are two factors to be considered by investors, namely the levels of the repayment of advantage (return) and risks (risk). To minimize the risk that borne by the prospective investors, can be done by combining the invest in stocks will be chosen as well as to determine the proportion of students who will be invested in each stock. Efficient portfolio is of the portfolio that they generate a level of certain benefits with the risk of the lowest, or certain risks to the level of the highest profit. (Clua, 2018; Fletcher, 2010; Tan, 2001)

Own portfolio are defined as a collection of documents from someone, the group , institutions , organization , the company , and the like to document the development of a process in accomplish its intended purpose, but the term it differs from one parcel of two other sectors.(Borekci, Rofcanin, & Sahin, 2014; Rouibah, Lowry, & Hwang, 2016) For instance in the field of art , portfolios are defined as a collection of has the best from an artist who deliberately held for the purpose of the exhibition , while in educational world to the portfolio is a collection of the results of the work of a students as the results of the execution of a task on the performance of which determined teacher or by students with teachers. The point, portfolios have different meanings but almost on each areas namely as

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documentation the achievement of a person. (Anna, Boris, & Ivana, 2015; Ferguson, 2014; Harsalim, Wijaya, & Utami, 2013; M.-c. Lee, 2009; Toimil, Díaz-Simal, Losada, & Camus, 2018)

As the portfolios that we use in comparison is stocks listed on the Indonesia stock exchange (BEI), that it was comprises (Chiambaretto, Gurău, & Le Roy, 2016; González, Rodríguez Gil, Martorell Cunill, & Merigó Lindahl, 2016):

The BBCA or PT Bank Central Asia Tbk,, BBRI PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank IBK Indonesia Tbk (AGRS), PT Bank Rakyat Indonesia AgroniagaTbk (AGRO), PTBank JagoTbk (ARTO), PT Bank MNC International Tbk (BABP), PT BankCapital Indonesia Tbk (Baca), PT Bank Central Asia Tbk (BBCA), PT BankHardaInternasionalTbk (BBHI), PT Bank BukopinTbk (BBKP), PT BankMestika Dharma Tbk (BBMD), PT Bank Negara Indonesia (Persero) Tbk (BBNI),PT Bank Rakyat Indonesia (Persero) Tbk (BBRI), PT Bank Tabungan Negara(Persero) Tbk (BBTN), PT Bank Ina Perdana Tbk (BINA), PT Bank BTPNSyariah Tbk (BTPS), PT Bank NationalnobuTbk (NOBU), PT Bank MayapadaInternasionalTbk (MAYA), PT Bank Maybank Indonesia Tbk (BNII), PT BankMaspion Indonesia Tbk (BMAS),PT Bank Mega Tbk (MEGA), dan PT Bank Panin Dubai Syariah Tbk (PNBS).

Furthermore, based on study above, the scholars will analysis within the Markowitz model, to explain the more important to balance risk on the future business. (Casaló, Flavián, Guinalíu, & Ekinci, 2015; Chin, Harris, & Brookshire, 2018; Tarasi, Bolton, Hutt, & Walker, 2011; Thurston & Glendon, 2018)

LITERATURE REVIEW

According to Tandelilin (2010: 26), the capital market is a meeting between parties who have these surplus funds with the party who needs funding by means of selling and buying- securities. Thus, the capital market can also are defined as the market to securities which generally have age for more than a year, as of stocks and bonds. The success of factors influencing the capital market, among them were: 1). supply securities; 2) the demand side will securities; 3) the political conditions and economic; 4) the problem of laws and regulations; 5) the existence of the agency that organizes and to supervise the activities of the capital market and various institutions that allows transaction done in an efficient way. (Chiambaretto et al., 2016; Thomas, 2015; Thurston & Glendon, 2018).

Moreover, the reason the formation of capital market prevails in most the state of owing capital market economic and financial carries on the function. Hence, according to Tandelilin (2010): investment can be defined as commitment to infuse several funds at the time with the aim of gain an advantage in the future. The purpose of investment: (a) to get a decent life to their own generation to come; (b) easing the prevailing inflationary pressure; (c) an urge to save tax. Investment to in financial assets in the form of direct investment and investment indirectly (Jogiyanto, 2008:). (a) direct investment, directly of assets in the financial an enterprise; (b) indirect investment, on share purchase of portfolio investment company that have a active finance from the many other companies.

Therefore, an investment decision process consisting of five steps the run constantly to reach the resolution Tandelilin, (best investment 2010: 12): (a) determination, investment objectives the first step in the process of an investment decision is the determination of the investment will be; (b) determination, investment policy the second is the determination to meet goals investment policy is; (c) election, portfolio strategy portfolio strategy chosen must be consistent with the previous two. There are two strategies portfolio get chosen, portfolio strategy portfolio strategy active and passive; (d) election asset, this stage requires evaluated any securities who want to put in their portfolio. The purpose of this stage was to find a combination of efficient portfolio, the portfolio return offer the highest level of certain risks and offers return via the lowest risk; (e) measurements and evaluating the performance of the portfolio, this is the latest phase of the process an investment decision. (González et al., 2016; Rahman & Soesilo, 2018)

Hence, the measuring process and evaluation of performance has been passed and it turns out outcomes are less than good, the process an investment decision should be started again from the first phase, so on until the most optimal achieved an investment decision. The measuring process and performance evaluation performance measurement portfolio these involve the other through a process benchmarking is used to. (Borekci et al., 2014; Ferguson, 2014; Harsalim et al., 2013; Rouibah et al., 2016; Toimil et al., 2018) Further, a group of investment portfolio is the identification of stock shares which to be employed in select , determining the proportion of funds that induced in them on each the shares. Measuring return and it is important to retain risk for securities single, but for portfolio managers are, all securities in return and the risk in their portfolios more needed (Jogiyanto , 2008: 239).

METHODS

Used the quantitative approach a descriptive, descriptive research namely research for the purpose explained an object which that is several variables, without connecting one variable to other variables. Hence, the research locations company performed on the mining sector and consumer goods that registered in an index idx 30 of December 2019- September, 2020. Moreover, the formed with the portfolio Markowitz, data on this study sourced from idx or Indonesian’s stock exchange. An early stage in the formation of the portfolio namely in collecting data each stock price. The next stage of the counting return with the formula in each sample:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

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The next stage of the, the third stage counting is expected return from each share od the firms, sample or formula for calculating the return is expected and:

$$E(R_i) = \frac{\sum_{i=1}^{n} R_{it}}{n} \qquad \text{..(2)}$$

$$SD = \sqrt{\sum_{t=1}^{n} \frac{[R_{it} - E(R_i)]^2}{n}} \qquad (3)$$

Hence, the counting the covariant between shares are to investigate a tendency among stock moved simultaneously to (Hartono, 2017) covariant calculated by a formula:

$$\sigma_{RA,RB} = \sum_{i=1} \frac{[(R_{Ai} - E(R_A)).(R_{Bi} - E(R_B))]}{n} \qquad \text{..........................(4)}$$

Further, the sixth is counting a correlation coefficient between share for measuring how much the relationship between, shares a correlation coefficient can be calculated using formulas (Hartono, 2016: 322):

$$r_{AB} = \rho_{AB} = \frac{Cov\,(R_A, R_B)}{\sigma_A . \sigma_B} \qquad \text{...(5)}$$

The seventh is measuring expected return portfolio had been formed with the formula:

$$E\,(R_p) = \sum_{i=1}^{n} W_i E(R_i) \qquad \text{...(6)}$$

Eighth stage counting portfolio risk, calculation using standard deviations coupled with the value of covariant to count a tendency the movement of shares simultaneously (Hartono, 2016: 352) portfolio risk can be calculated in the formula:

$$\sigma_p = \sqrt{\sum_{i=1}^{n} \sum_{j=1}^{n} W_i W_j \sigma_{ij}} \qquad \text{.......................................(7)}$$

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Furthermore, the ninth stage of the calculation of the weight or the optimal. solver program. The aim of the program is to compute the solver a large division of the optimal weight or proportion of each a share in any. Portfolio After performing calculations, solver program the last phase next count is expected return and, optimal portfolio standard deviations this calculation using formulas:

$$\sigma_p = \sum_{i=1}^{n} W_i \sigma^2{}_i + 2 \sum_{i=1}^{n} \sum_{j=1}^{n} W_i W_j \sigma_{ij} \quad \text{................(8)}$$

RESULT AND DISCUSSION

Based on the data the value of shares in the period of December 2019 until November 2020, then 20 shares in finance with banking industry, 6 shares provide the value of expected positive return, so as to be candidates in optimal portfolio. Hence, other share, were not included partly in the formation of optimal portfolio. The results of for six shares are presented in the table 1 as below:

Table 1. Expected Return

No	Kode Saham	$\sum R_{it}$	$E(R_i)\%$
1	AGRO	41,94%	3,50%
2	ARTO	78,89%	6,58%
3	BBKP	144,58%	12,05%
4	BBHI	1133,84%	94,49%
5	BBRI	231,01%	19,25%
6	BBTN	438,45%	36,62%

Table 2. The Standard Deviation on Stock- Remittent

No	code	SD
1	AGRO	36,79%
2	ARTO	43,68%
3	BBKP	28,68%
4	BBHI	24,91%
5	BBRI	10,23%
6	BBTN	36,32%
7	BTPS	18,54%

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Table.3 The value correlation

	AGRO	AGRS	ARTO	BABP	BACA	BBCA	BBHI	BBKP	BBMD	BBNI	BBRI	BBTN	BINA	BTPS	NOBU	MAYA
AGRO	1	-0,52	-0,24	-0,12	0,14	0,02	0,05	-0,11	0,04	-0,09	0,12	0,08	-0,22	0,06	0,00	-0,60
AGRS	-0,52	1	-0,14	-0,11	0,10	-0,06	0,06	0,10	-0,01	-0,09	0,00	-0,07	0,08	-0,03	-0,08	0,15
ARTO	-0,24	-0,14	1	0,22	0,08	0,08	-0,01	0,13	0,01	0,12	-0,01	0,01	0,07	0,10	0,01	0,05
BABP	-0,12	-0,11	0,22	1	0,11	0,05	0,03	0,15	0,04	0,11	-0,04	0,20	0,03	0,07	0,03	0,03
BACA	0,14	0,10	0,08	0,11	1	0,03	0,04	0,11	0,03	0,01	-0,02	-0,09	0,02	0,07	0,00	-0,06
BBCA	0,02	-0,06	0,08	0,05	0,03	1	0,00	0,09	0,01	-0,01	0,03	0,12	-0,01	0,03	0,02	-0,03
BBHI	0,05	0,06	-0,01	0,03	0,04	0,00	1	0,05	0,00	0,02	0,00	0,10	-0,02	0,02	0,00	0,00
BBKP	-0,11	0,10	0,13	0,15	0,11	0,09	0,05	1	0,03	0,05	-0,01	0,42	0,02	0,09	0,02	-0,09
BBMD	0,04	-0,01	0,01	0,04	0,03	0,01	0,00	0,03	1	0,02	-0,03	0,18	0,00	0,02	0,01	0,01
BBNI	-0,09	-0,09	0,12	0,11	0,01	-0,01	0,02	0,05	0,02	1	-0,03	0,41	0,02	0,02	0,02	0,00
BBRI	0,12	0,00	-0,01	-0,04	-0,02	0,03	0,00	-0,01	-0,03	-0,03	1	0,41	-0,03	0,00	0,00	-0,06
BBTN	0,08	-0,07	0,01	0,20	-0,09	0,12	0,10	0,42	0,18	0,41	0,41	1	-0,03	0,00	0,00	-0,06
BINA	-0,22	0,08	0,07	0,03	0,02	-0,01	-0,02	0,02	0,00	0,02	-0,03	-0,03	1	0,00	-0,01	0,07
BTPS	0,06	-0,03	0,10	0,07	0,07	0,03	0,02	0,09	0,02	0,02	0,00	0,00	0,00	1	0,00	-0,04
NOBU	0,00	-0,08	0,01	0,03	0,00	0,02	0,00	0,02	0,01	0,02	0,00	0,00	-0,01	0,00	1	-0,01
MAYA	-0,60	0,15	0,05	0,03	-0,06	-0,03	0,00	-0,09	0,01	0,00	-0,06	-0,06	0,07	-0,04	-0,01	1

The rest of the process by counting expected return and risk by the same proportion. Moreover, with basket of stocks that we are working so each share get as much as , 14 % or 0.14. Hence, the result of reckoning uses the excel. The result of reckoning will be able to see in table under: table 4. The result of reckoning expected return and risk by who have the same proportions.

Table 4. The result of reckoning expected return and risk by who have the same proportions

No	code	Proportions
1	AGRO	14%
2	ARTO	14%
3	BBHI	14%
4	BBKP	14%
5	BBRI	14%
6	BBTN	14%
7	BTPS	14%

Expected Return Portfolio	**9,2%**
Risk- Portfolio	**7,3%**

To find the formation of portfolio optimally, then i use application solver to determine any issuers proportions. Moreover, the of calculation can be seen in table 5 as below:

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Table 5. Return- expected this is different and risk by the proportion and the optimal

NO	CODE	PROPORTIONS
1	AGRO	43%
2	ARTO	0%
3	BBHI	44%
4	BBKP	0%
5	BBRI	0%
6	BBTN	0%
7	BTPS	13%

The calculation using solver in the table above can be seen that there are three shares could in select in the formation of bank stocks portfolio which is: agro optimal (43%) ,bbhi (44 %) and btps (13 %). Therefore, a combination of the shares shall be expected return portfolios that have large at the presentation 11,49 %, but a combination of tend to have a third the risk of having 7,12 % is too high. (Casanueva, Gallego, & Sancho, 2013; Chan & Park, 2013; Haapanen, Juntunen, & Juntunen, 2016; Karpen, Gemser, & Calabretta, 2017; G. Lee, Morrison, & O'Leary, 2006).

CONCLUSIONS

The formation of using a Markowitz portfolio on a stock bank by the period following finally yield to a has been chosen a candidate 3 of the optimal portfolio. The in large issuers of worthy of being a member of the optimal portfolio among others PT Bank Rakyat Indonesia Agroniaga tbk or agro with proportions of 43 %, bbhi or the bank international tbk harda have proportions of 44 % and the latter is pt syariah was tbk or btps get of 13 %. (Lavie, 2007; Mitrega & Pfajfar, 2015; Tarasi et al., 2011)

By a coalescence third have the portfolio return of the considerable risk portfolio but also have a portfolio of return and an excepted 11,49 % and risk of 7,12 %. The formation of this get for optimal portfolio and solver program in Microsoft excel. Investors suggested not only invest funds available

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in one kind of stock but spread using diversified that may not only in spread in finance category alone but also other sub could category. (Ding, 2012; Jim Yuh, Joseph, & Yu-Cheng, 2016; A. O. Robert, 2010; G. Robert, 2012; Sołoma, 2015; Tarasi et al., 2011)

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