Optimum financing portfolio of islamic microfinance institutions: Indonesia case

Cartera óptima de financiamiento de instituciones islámicas de microfinanzas: caso de Indonesia

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ABSTRACT

The purpose of this paper is to analyze the risk-return of financing and find the optimum financing instruments portfolio of Islamic microfinance institutions (IMFI).The optimum portfolio financing is determined by the minimum coefficients of variation of financing instruments portfolio, namely Murabahah, Mudharabah-Musyarakah, and Ijarah. The methodology of this study is quantitative, which is using risk and return theory to compute risk, return, variance, and coefficient of variation of financing instruments portfolio. The solver program of Microsoft Excel is used to find the optimum combination and composition of financing portfolio. This research found that ijarah financing has the highest return.

Keywords: Financing Portfolio, Islamic Microfinance Institution, Murabahah, Mudharabah-Musyarakah

RESUMEN

El propósito de este documento es analizar el retorno del riesgo del financiamiento y encontrar la cartera óptima de instrumentos financieros de las instituciones de microfinanzas islámicas (IMFI). La financiación óptima de la cartera está determinada por los coeficientes mínimos de variación de la cartera de instrumentos de financiación, a saber, Murabahah, Mudharabah-Musyarakah e Ijarah. La metodología de este estudio es cuantitativa, que utiliza la teoría del riesgo y el rendimiento para calcular el riesgo, el rendimiento, la varianza y el coeficiente de variación de la cartera de instrumentos financieros. El programa de solución de Microsoft Excel se utiliza para encontrar la combinación óptima y la composición de la cartera de financiación. Esta investigación encontró que el financiamiento de ijarah tiene el mayor rendimiento.

Palabras clave: Institución Islámica de Microfinanzas, Murabahah, Mudharabah-Musyarakah, Portafolio de Financiamiento.

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Año 24, n° Extra 5, 2019, pp. 268-274
269

1. INTRODUCTION

Islamic Micro Finance Institutions (IMFI) is a microfinance institution that is run according to Islamic law. In Indonesia, most IMFI is known as *Baitul Maal wa Tamwil* (BMT), but their legal status are cooperatives. According to Minister of Cooperatives and SMEs Regulation Number 16, 2015, IMFI that is incorporated cooperative called sharia loan and lending cooperatives. Maintaining IMFI sustainability is exceptionally significant because it aims at alleviating poverty and improving the living standard of the poor at the same time (Ab Manan & Shafiai: 2015). Some high potentiality of IMFI that can cater to the needs of the poor (Ahmed: 2002). IMFI has some inherent characteristics that can mitigate some of the problems faced by conventional microfinance. Empirical evidence from three IMFI operating in Bangladesh, in general, supports some of the theoretical assertions. The case studies, however, reveal that IMFI has not yet tapped some of the sources of funds.

As of 2015, there were more than 6,000 IMFI in Indonesia, and 562 of which are in East Java province. IMFI does intermediation function to bridge surplus and deficit units. IMFI receive deposits and distribute it to customers who are members of the cooperative-agreement contract of IMFI with appropriate Islamic contract.

According to the Minister of Cooperatives and SMEs Report, mostly, IMFI channel financing through *murabahah* contract. *Murabahah* is a purchase contract that the price of goods is known, and the seller sets a certain margin to buyers who pay by cash or credit (Antonio: 2001).

The composition of financing in IMFI based on contract is as follows:

Contract Type	Percentage
Murabahah	68.30
Mudharabah	15.20
Ijarah	10.20
Musyarakah	6.30

Source: East Jawa Microfin, 2015
Table 1. Composition of financing in IMFI based on contract

According to the table above, it can be seen that *murabahah* contract dominates the financing agreement on IMFI. *Mudharabah*, *Ijarah*, and *Musyarakah* contracts do not reach 30 percent of total financing.

Financing composition as above has considerable risk, and the non-performing financing (NPF) was 6.8 percent (net). This figure is quite high, considering the tolerance granted by the Ministry of Cooperative and SMEs is 5% maximum. In addition, the risk, which is a deviation on the expected return, is quite significant, visible from the fluctuations of return obtained IMFI. Based on data from the Ministry of Cooperative, the average rate of return on equity (ROE) of IMFI in 2011 reached 35.23%; in 2012 fell to 24.22%; in 2013, it was 38.00%, 34.77% in 2014 and 2015 amounting to 31.88%.

From these data, despite IMFI has very high returns, but the risk of financing is also quite high. Several researchers have studied and found similar results in Islamic banking and found different results, in which the *murabahah* financing remains dominant, followed mudarabah and *Ijarah* (Ismal: 2013; Zuhdi: 2015). Ismal also found that the financing of the *murabahah* contract combined with a certain percentage mudarabah gives higher returns with lower risk than 100 percent *murabahah* (Ismal: 2013). Furthermore, the rapid and dynamic changes in the global financial landscape pose various risks to Islamic financial institutions, and the future of Islamic financial institutions will depend to a large extent on how well they manage risks (Ahmad & Ahmad: 2004). This is the background for this research, which is to obtain the optimal financing portfolio that generates high returns and relatively low risk.

MAWARDI et al.
Optimum financing portfolio of islamic …
270

Portfolio theory becomes the basis for the selection of portfolios, which aims to minimize the risk. The primary input of portfolio theory is the expected return, variance, and correlation of security with other securities included in the portfolio (Hannam et al.: 2015). Markowitz first formally introduced the concept of modern portfolio. Markowitz showed statistically that the risk could be reduced by combining several single assets in the portfolio.

The portfolio theory assumes that investors take investment decisions based on expected return and risk portfolios (Pardosi & Wijayanto: 2015). Modern portfolio theory portfolio analysis based on quantitative techniques became known as modern portfolio theory (MPT).

IMFI portfolio is an investment collection of various assets such as *murabahah* financing, *mudharabah* financing, *musyarakah* financing, and *ijarah* financing. In the distributing funds (investment), IMFI needs to do not choose only one type of financing, with consideration of a combination of types of financing that will optimize the rate of return and minimize risk through diversification.

The concept of the portfolio is the deployment of investment in several sectors in order to minimize the risks that may occur (Candradewi: 2008). This applies to any investment, either the investment in securities, industry, or financing on financial institutions. The financing portfolio of each IMFI can be different or similar – the portion of the portfolio in each instrument deployment is different.

In the establishment of a portfolio, investors of IMFI always want to maximize the expected return with a certain risk level that is willing to bear or is looking for a portfolio that offers the lowest risk to the level of a certain return. Characteristics of such a portfolio are referred to as an efficient portfolio (Tandelilin: 2010). An efficient portfolio is the portfolio with the same return level, but has a lower risk (Fatihudin et al.: 2017) or has the same risks while providing a higher level of return. Generally, investors have more than two investment opportunities; investors will consider all investment alternatives and choose an efficient investment.

Efficient portfolios are not optimal portfolios. The efficient portfolio has only one good factor, but not the best, i.e., the expected return factor or a risk factor, not the best of both. The optimal portfolio is a portfolio with the best combination of the expected return and risk (Pardosi & Wijayanto: 2015).

The optimal portfolio is the selected portfolio of efficient portfolios (Tandelilin: 2010). Surely selected portfolio IMFI investors in this regard is the portfolio according to the preferences of investors concerned about returns and the risks they are willing to bear. The arrangement of the portfolio in sharia and conventional institution is different since, in the sharia institution, Syariah compliance exits, and must be fulfilled (Derigs & Marzban: 2009). Shariah-compliant portfolios can be realized which have return and risk profiles comparable to the conventional non-constrained portfolios. Furthermore, Islamic value in IMFI does influence investment behavior (Tahir & Brimble: 2011).

During financing activity, IMFI needs to consider the rate of return of the financing. This is because IMFI is a profit-oriented business, and the financing function of IMFI is the source of profit. Therefore, in these financing activities, IMFI needs to be cautious about the level of profitability status for IMFI.

The return of the portfolio can be divided into two: 1. The portfolio realized a return, which is a weighted average of the realized return every single security in the portfolio. 2. Portfolio expected return, which is a weighted average of the return expectations every single security in the portfolio (Pardosi & Wijayanto: 2015). The expected return can be calculated using the arithmetic mean – for calculating a return flow circuit in a given period (Tandelilin: 2010).

The risk of a possible difference between actual returns received by the expected return (Tandelilin: 2010). The more possibility difference, the higher the risk of the investment. Risks arise because there is uncertainty, and it often happens in our lives, whether it is small or big things.

The concept of portfolio risk that we are continually adding to the types of securities in our portfolio, and the risk reduction benefits that we get will be greater until the point that the benefits of these reductions began to decrease – In understanding the concept of portfolio risk, we may assume that the return of the securities in the portfolio are not mutually influenced one another, so that the portfolio risk can be estimated by measuring the portfolio variance (Tandelilin: 2010).

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Año 24, n° Extra 5, 2019, pp. 268-274
271

Statistically, this risk level can be represented by the size of the deviation or size of data dissemination, and the size of the deployment is often used to represent the value of the variance and standard deviation. The variance, as well as the standard deviation, is a considerable measure of the distribution of random variable data from its mean value. The higher the spread of the distribution of returns of an investment, the higher the investment risk.

Statistical correlation is a measure of the relation of the data series, indicating the relative concurrent movement (relative co-movements) between data series (Tandelilin: 2010). If the data series move in the same direction is called a positive correlation, whereas if the opposite direction is called a negative correlation.

During financing analysis activities, two factors must be considered, i.e., the expected return and risk. If a decision must be made between the two investments that have the same expected return but different standard deviations, then almost everyone would decide to choose the lower standard deviation, which means it has lower risks (B Williams et al.: 2010). Likewise, the choice between two investments with the same risks and different expected returns, investors will prefer to invest in the higher expected returns. Based on that explanation, almost all investors want high returns with low risk. Therefore, the calculation of the coefficient of variation of the investment is required.

The coefficient of variation is a relative measure (risk per unit of return), which allows comparison investment with returns and standard deviations at a very different level. The coefficient of variation of the above formula can be interpreted that the smaller (but is positive), then the CV is better. The smaller the level of the CV shows, the smaller the risk of financing, and the higher the average rate of expected return.

2. METHODS

This research used a quantitative approach. The sample that used is 5 (five) Islamic microfinance, which has the most significant asset in East Java province with year on year data from 2009-2016. There are BMT Unit Gabungan Sidogiri Pasuruan, BMT Maslahah Pasuruan, BMT Mandiri Sejahtera Gresik, BMT Pahlawan Tulungagung, BMT Kanindo Syariah Malang. This research used the coefficient of variation to determine the best IMFI financing portfolio. The best portfolio is the smallest coefficient of variation from the combination and composition of financing contracts, i.e., *murabahah, mudharabah-musyarakah,* and *ijarah*. The coefficient of variation indicates the risk of each returned unit because of the combination and composition of financing contracts. The coefficient of variation was obtained by using the data processing software in Microsoft Excel 2016 Solver.

A solver application is a facility in Microsoft Excel that can be used to find the most efficient combinations of the unknown variable magnitude. This application can find out by setting specific constraints. The constraints were made using the below criteria:

a. Minimize the risk of the portfolio
b. Determine the amount of each financing proportion greater than or equal to zero
c. Specifies that the total number of weighted averages, the proportion of each financing type is 100%
d. Processing with a certain amount of return, starting from the type of investment that produces the smallest return to the largest

MAWARDI et al.
Optimum financing portfolio of islamic …
272

3. RESULTS

As an intermediary institution, IMFI invests funds in the financing form. Generally, that financing can be differentiated into three forms, i.e., *murabahah*, *mudharabah-musyarakah,* and *ijarah* contract. That contracts have different characteristics, so they have their potential returns and risks.

The purpose of IMFI financing as the investment activity is getting a profit (return). However, returns are also followed by a risk that is described as a deviation of the actual return and expected return. The principle of investment is to obtain the highest return at the same risk level and choose the lowest risk on investments at the same rate of return (Tandelilin: 2010).

Nevertheless, various investment options promise different returns and risks. So, IMFI, as an investor, should choose the financing that gives relatively high returns at relatively low risk. One of the ways is to choose the composition and combination of financing that provides the lowest risk per unit of return. The smallest coefficient of variation can indicate it.

The average annual return and risk (deviation standard) of samples are shown in Table 2.

Contract Type	E(r)	Sd
Murabahah	0,313	0,032
Mudharabah-musyarakah	0,271	0,029
Ijarah	0,451	0,181

Table 2. Annual Return and Risk of IMFI

Table 3 shows the correlation coefficient between the type of financing. The correlation between *murabahah* and *mudharabah-musyarakah* is 0.41, while the correlation between *murabahah* and *ijarah* is -0.165. On the other hand, the correlation between *mudharabah-musyarakah* and *ijarah* is -0.446. The correlation between *murabahah* and *mudharabah-musyarakah* has a positive correlation, while the other is negative.

Contract Type	Murabahah	Mudharabah-musyarakah	Ijarah
Murabahah	1	0,41	-0,165
Mudharabah-musyarakah	0,41	1	-0,446
Ijarah	-0,165	-0,446	1

Table 3. The Annual Correlation Coefficient IMFI in East Jawa

Table 4 shows the annual return covariance of IMFI.

Contract Type	Murabahah	Mudharabah-musyarakah	Ijarah
Murabahah	0,000988	0,000362	-0,00145
Mudharabah-musyarakah	0,000962	-0,00214	-0,00341
Ijarah	-0,001445	-0,00341	0,074287

Table 4. Annual Return Covariance IMFI in East Jawa

Utopía y Praxis Latinoamericana; ISSN 1315-5216; ISSN-e 2477-9555
Año 24, n° Extra 5, 2019, pp. 268-274
273

Finally, the result of processing data using Microsoft Excel Solver program are as follows:

Sd	E(r)	Murabahah	Mudharabah-musyarakah	Ijarah	CV
0,0173	0,2234	81,77	12,72	5,51	0,07744
0,0148	0,2955	67,81	22,17	10,02	0,050085
0,0277	0,3455	34,67	51,23	14,1	0,080174
0,0495	0,3976	11,13	71,22	17,65	0,124497
0,1075	0,4544	0	82,33	17,67	0,236576
0,1559	0,4607	0	0	100	0,338398

Table 5. Standard Deviation, Return, Composition Type of Financing and Coefficient of Variation IMFI

From the table above, it is found that each combination and composition of IMFI financing in East Java will produce a different return and risk. The highest return obtains at 0,4607 (46,07%) with 100% of *Ijarah* financing composition. Meanwhile, the smallest risk obtains at 0.0148, with 67,81% of *murabahah* contract, 22,17% of *mudharabah-musyarakah* financing, and 10,02% of *ijarah* financing composition.

However, the best IMFI financing portfolio is not always on that composition because a lower return followed the lower risk, and the higher return was followed by higher risk. It is the best IMFI financing portfolio showed by the smallest coefficient of variation. The smallest coefficient of variation at 0.050085 level is obtained with 67.81% of *murabahah*, 22.17% of *mudharabah-musyarakah*, and 10.02% of *ijarah* composition. This composition has a level of return at 29.55% per year, with a 1.48% level of deviation. That is, there is an opportunity to obtain return 1.48% lower and 1.48% higher of 29.55%. Therefore, the expected return of the composition of financing ranged from 29.11% to 29.98%.

4. CONCLUSION

Different returns and risks will follow the different portfolio combinations and composition IMFI financing. The higher return of financing will be followed by higher risk, and vice versa. Financing portfolios with the highest return is 100% of *ijarah* contract, with 46.07% return per year. While the lowest risk of financing is 67,81% of *murabahah* financing, 22,17% of *mudharabah-musyarakah*, and 10,02% of *ijarah*, with return 29,55% a year. The best portfolio is the smallest coefficient of variation by the composition of portfolio: 67.81% of *murabahah*, 22.17% of *mudharabah-musyarakah*, and 10.02% of *ijarah*. That composition produces a range of expected returns from 29.11% to 29.98%.

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MAWARDI et al.
Optimum financing portfolio of islamic …
274

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