FACTORS AFFECTING COOPERATIVE CAPITAL ADEQUACY (A SURVEY AND EMPIRICAL STUDY OF INDONESIA’S PANCASILA ECONOMIC SYSTEM)

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Abstract

Purpose of the study: Cooperative plays an essential role in the rural community. This research provides a thorough impact analysis of cooperative funding in the community. This research comprehensively assesses the contribution of cooperative funding to the North Sumatra community, Indonesia.

Methodology: Using the Structural Equation Modeling (SEM) and controlled variable regression methods. The independent variables used in this study are Cooperative member main saving, Cooperative member compulsory saving, Cooperative member voluntary saving, and Bank lending. While the dependent variable used in this study is Cooperative capital adequacy.

Main Findings: This research finds that cooperative member savings and bank lending play an essential role in the cooperative capital adequacy.

Applications of this study: Furthermore, the study finding that bank lending is a relatively cheap source of capital to the cooperative.

Novelty/Originality of this study: Also, the study also findings imply that (i) cooperative capital adequacy heavily depends on cooperative member savings, (ii) bank and cooperative are complements rather than competitors and (iii) four dimensions affecting cooperative capital adequacy are stronger in the simultaneous situation. According to findings implied that have three suggestions on the economic policy. First, advise a policy encouraging more participants in the cooperative. Second, advise another policy encouraging banks to do more collaboration with cooperatives. Third, advise that the policy should be integrated rather than stand-alone.

Keywords: Cooperative Capital, Member Compulsory Saving, Voluntary Saving, Integrated Policy, Bank Lending, Comprehensive Rational Theory.

INTRODUCTION

Cooperative is an important element in the rural community. Beaubien (2011) argues that cooperative play important roles in the society through various sectors: healthcare, housing, retail, and production. Zeuli (2002) specifies that there are three strengths of cooperative in the community. Those strengths are: i) cooperative can be owned and controlled by the community residents, ii) cooperative has flexible profits objective (i.e. the objective is not merely high profits), and iii) the cooperative funding is generally supported by loans and grants from federal and state agencies. Schwettmann (2014) further argues that cooperative can contribute significantly to the sustainable development goals in the community. The opening statement is supposed to enumerate the research purpose.

In some countries like Japan and India, the development of cooperatives in rural areas shapes public policy development of both central and local governments (Prakash, 2000 and Nurlina et al., 2019). Although the study is only conducted in the agriculture field, it reflects the common rural areas cooperative in the world. Godo (2014) investigates the relationship between the development of cooperatives in rural areas and the government policy direction. Schwettmann (2014) argues that the development of a cooperative has become an important determinant of government policy. Furthermore, their studies (Prakash, 2000; Godo, 2014; Schwettmann, 2014; Aramburu & Pescador, 2017 and Wedig & Wiegratz, 2018) find that cooperative generates more value-added to the rural development by providing significant benefits to the cooperative members. However, government intervention is still required to ensure and achieve sustainable cooperative growth. On one side, the government should design a policy promoting a competitive market. According to Prakash (2000) and Godo (2014), the government shall enact an anti-monopoly act to increase the cooperative members. However, government intervention is somehow essential to protect certain domestic industries because globalization could hurt (Stiglitz, 2002; Bretos, & Marcuello, 2017; Clark et al., 2018; Wittman et al., 2018; Panichvajsunti et al., 2018). An example of government intervention is applying tariff or non-tariff barriers this statement does not connect with the prior sentence. (see Krugman et al., 1987). Another literature (Case et al., 2003, Castelini, 2018; Hormung, 2018 and Figueiredo and Franco, 2018) suggests different forms of government intervention such as quota, promotion, ceiling price, floor price, tax, and subsidy. These interventions, indeed, are favorable to...
cooperative development. In addition, the study also try to explore and suggest economic policies to promote further cooperative development.

A thoughtful but unmask issue in cooperative is how the funding mechanism helps the community. Recent papers are discussing cooperative and society (Chen et al., 2016; Tregear and Cooper, 2016; Mizuta and Vlachopoulou (2017); Mojo et al., 2017). However, those papers do not elaborate on the cooperative funding dimension. This is understandable since studies examining funding structure tend to cover from the banking sector instead of cooperative (see Jung and Kim, 2015; Ndiege et al., 2014, Schlueter et al., 2015). There are research works discussing cooperative funding analysis (Santamaria et al., 2010; Mathuva, 2016). Unfortunately, those works do not assess the significant contribution to the community. This paper examines the impact of cooperative funding to the community. Using Structural Equation Modelling (SEM) method, how significant the contribution of cooperative funding to the North Sumatra community in North Sumatra population is close to 14 million, a number that places to 11th ranked European country population and 27th ranked Asian country population. Table 1 shows the Number of Cooperative Unit and Village Unit Cooperative 2013-2017 as a following:

| Year | Sergai | Simalungun | Asahan | T.Balai | L. Batu | Labura | Batubara | Total |
|------|--------|------------|--------|---------|---------|--------|----------|-------|
| 2013 | 343    | 466        | 533    | 234     | 297     | 159    | 256      | 2288  |
| 2014 | 338    | 491        | 848    | 310     | 284     | 167    | 275      | 2713  |
| 2015 | 351    | 486        | 597    | 248     | 314     | 189    | 266      | 2451  |
| 2016 | 346    | 486        | 604    | 255     | 320     | 192    | 330      | 2533  |
| 2017 | 354    | 486        | 610    | 265     | 326     | 239    | 340      | 2620  |
|      | 1732   | 2415       | 3192   | 1312    | 1541    | 946    | 1467     | 12605 |

Table 1: Number of Cooperative Unit and Village Unit Cooperative 2013-2017

| Year | Sergai | Simalungun | Asahan | T.Balai | L. Batu | Labura | Batubara | Total |
|------|--------|------------|--------|---------|---------|--------|----------|-------|
| 2013 | 30     | 28         | 60     | 7       | 34      | 43     | 20       | 222   |
| 2014 | 37     | 48         | 60     | 7       | 39      | 43     | 43       | 277   |
| 2015 | 25     | 49         | 22     | 7       | 19      | 29     | 17       | 168   |
| 2016 | 25     | 50         | 50     | 4       | 19      | 29     | 17       | 194   |
| 2017 | 24     | 50         | 50     | 4       | 20      | 28     | 16       | 192   |
|      | 141    | 225        | 242    | 29      | 131     | 172    | 113      | 1053  |

Source: Small Medium Scale Business and Cooperative Office of North Sumatera Province, 2018

In 2017 the number of Cooperatives was recorded at 2620 units, which means an increase of 14.52 percent from 2013 which amounted to 2288 units. This is illustrated in the following Figure 1:

Figure 1: Number of Cooperative Unit in 2013-2017

Source: Small Medium Scale Business and Cooperative Office of North Sumatera Province, 2018

Based on Figure 1 above, there is an increase in the number of Cooperative Units from the period 2013-2017. Whereas in Table 1 in 2017 the number of Cooperative Village Units was recorded as 192 units, which meant a decrease of 13.51 percent from 2013 which amounted to 222 units. The thorough impact analysis addresses not only the effectiveness but also the volatility of cooperative capital sources. Indeed, the volatility of cooperative capital funding is also an essential concern of cooperative funds schemes (see Zhang et al., 2010). The importance and the role of each cooperative funding source (the importance of roles are also discussed by Santamaria et al., 2010). The study also addresses whether bank lending is sufficient, easily obtained, and cheap as those are concerns by Huppi and Feder (1990) and Degl’Innocenti et
Furthermore, the first who conduct an integrated test comparing the significance of the cooperative capital adequacy determinants. Overall, the demonstrate check grammar for this sentence empirically the importance of integrated policy. Therefore, this analysis contributes significantly to the cooperative literature because the analysis covers important and integrated dimensions of the cooperative funding analysis. Based on the phenomenon and background, the question of this study is whether the factors that affect Cooperative capital adequacy in the form of Cooperative member main saving, Cooperative member compulsory saving, Cooperative member voluntary saving, and Bank lending affect the Cooperative capital adequacy? The purpose of this study was to determine the effect of Cooperative member main saving, Cooperative member compulsory saving, Cooperative member voluntary saving, and Bank lending on Cooperative capital adequacy in the Pancasila Economic system in Indonesia.

LITERATURE REVIEW

Comprehensive rational theory

The rational-comprehensive (synoptic) model holds that the good and bad results to be achieved from the formulation of public policies must be based on rational thinking or in accordance with the conditions faced (Hoogerwerf, 1992). The capabilities possessed, the analysis carried out must have complete data or information, so that in the analysis has no defects or reaches perfection without error. Hope to get a good policy formulation by using rational thinking that is good, but certainly not all problems and reality in the field can be rationally accepted and even the data obtained by policymakers is very different from reality (MacLachlan et al., 2018 and George, 2019). In the opinion of rational model writers comprehensive (synoptic) is an analytical model that fights for perfection in policy formulation using complete and expected valid data, so that in its formulation it gives the results of ideal public policy. The decision-making theory commonly used and accepted by many circles is a comprehensive rational theory which has several elements, including (Gong et al., 2018):

a. Decision making is faced with a particular problem that can be distinguished from other problems or at least assessed as problems that can be compared with each other (can be sorted according to priority problems)

b. The goals, values , or targets that guide the decision-maker are very clear and can be sorted by their priorities/interests.

c. Various alternatives for solving problems are examined carefully.

d. The principle of cost-benefit or causation is used to determine priorities.

e. Each alternative and the accompanying implications are used to compare with other alternatives.

Rational-comprehensive policy analysis (synoptic) is one analysis of the results or impact angle which has the intention that the process of public policy formulation will produce good results or impacts if it is based on a rational thought process supported by comprehensive information. Analyzing is done carefully, carefully, and in detail by utilizing large amounts of information that must be collected to produce results in the form of policies that have a positive impact. Recent papers discussing cooperative and society tend to cover the behavioral perspective rather than a funding perspective. Chen et al. (2016) examine whether an action of publishing the list of cooperators affects the behavior of cooperation. They use numerical simulation and find that the situation plays a significant role in cooperative behavior. Tregear and Cooper (2016) investigate the evolving cooperating through a case analysis of a producer in Scotland. They reveal that sectoral norms and habits form the social capital of cooperation and social relations are not the barrier of cooperation. Their finding of the existing preposition about social capital formation in rural areas. A recent work by Mizuta and Vlachopoulou (2017) studies the importance of environmental, commercial, and research activities related to a seascape human-ecosystem interaction in Japan. Using case studies, they find that bottom-up initiatives constitute effective cooperatives towards sustainable and competitive management. Thus, they implicitly conclude that effective cooperation leads to sustainable and better management. Mojo et al. (2017) use Propensity Score Matching (PSM) and Endogenous Switching Regression (ESR) methods to estimate the treatment effects of cooperatives in developing countries. They report that cooperation is positively associated with household income and assets. Therefore, they conclude that poor farm households should be encouraged to form cooperative. Hasan et al (2020) state that there are several roles and functions of Cooperatives in the Economy including:

1. Trying to realize and develop the national economy which is a joint effort based on the principles of family and economic democracy.

2. Participating actively in efforts to enhance the quality of human and community life.

3. Build and develop the potential and economic capacity and capital of members in particular and society in general to improve their economic and social welfare

4. Strengthening the people's economy as the basis for the strength and resilience of the national economy with cooperatives as the driving force.
With the existence of cooperatives, both members and the wider community can develop businesses that are traditional or non-traditional in various fields. To develop the business with initial capital obtained from cooperatives. The capital is then used to buy equipment needed to start a business without the need to go to a bank or to a lending institution that asks for high-interest rates (Wuryani, 2020). The implementation of cooperative activities can increase the income of its members and can improve the standard of living of the community. With increased income, it will be easier for people to make ends meet. Recent works discussing cooperative funding analysis still do not explain the significant and specific contribution to the community. For instance, Santamaria et al. (2010) analyze the selection process for research and development cooperative projects in Spain. They find that public agency prefers partnerships with universities and technology institutes through the award of subsidies for encouraging cooperation. This implies that cooperation assists in research and development projects in obtaining funding. Mathuva (2016) investigates managerial perspectives regarding the reasons for cooperatives funding disclosures in Kenya. He concludes that cooperatives' funding disclosures are positively influenced by governance. Therefore, professional accounting body disclosure guidelines have a low impact on the cooperative's funding disclosures. Overall, this research document that research investigating the contribution of cooperative funding to the community is still limited. Therefore, the design conceptual framework regarding cooperative capital adequacy in Figure 2 as a following:

![Cooperative Capital Conceptual Framework](https://giapjournals.com/hssr/index)

**Figure 2:** Cooperative Capital Conceptual Framework

Based on Figure 2, it shows that Cooperative member main saving, Cooperative member compulsory saving, Cooperative member voluntary saving, and Bank lending affect to Cooperative capital adequacy. In principle, the cooperative provides a return of profits to members who have invested their capital in the cooperative. Capital in a cooperative is used to improve the welfare of the members, not merely to make a profit, therefore compensation for capital is limited, in the sense of being fair and following applicable regulations. This is supported by several studies including Bachtai (2015), Padmakusumah et al. (2018), Agusalim et al. (2019), Kusmiati et al. (2019), Ningsih et al. (2019), Harisudin et al. (2020), Kalangi et al. (2020), Arifin et al. (2020), Hasan & Ardi (2020), Kartika (2020), Pratiwi (2020), Pratiwi & Rahmah (2020), Thoharudin et al. (2020), and Wuryani (2020).

### METHODOLOGY

The operational definition and measurement of variables are in the following Table 2 as follows:

| Variable | Definition | Indicator | Scale |
|----------|------------|-----------|-------|
| Cooperative member main saving/Principal Deposits (X₁) | The amount of money required to the member to be submitted to the Cooperative when a person enters the Cooperative and the amount is the same for all members | 1. The effectiveness of payment at registration | Interval |
| | | 2. The volatility retrieval when exiting | |
| | | 3. The role of each member | |
| | | (Huppi and Feder, 1990; Zhang et al. 2010; Kimanthi, 2014; Colvin et al. 2018; Chan, 2018; Duguma & Han, 2018) | |
| Cooperative member compulsory saving (X₂) | Certain deposits that are required for members who pay them to the Cooperative at certain times | 1. The difference in number for each member | Interval |
| | | 2. The effectiveness of Payment schedule | |
| | | 3. The volatility of retrieval flexibility | (Huppi and Feder, 1990; Zhang et al. 2010; Kimanthi, 2014) | |
| Cooperative Member Voluntary Saving (X₃) | | 1. The frequency savings intensity | Interval |

Table 2: Operational Definition and Variable Measurement
2. The sufficiency of amount savings when depositing
3. The volatility of returns on voluntary savings services

(Huppi and Feder, 1990; Republic of Indonesia, 1992; Zhang et al., 2010; Kimanthi, 2014)

Bank lending

Provision of money or equivalent bills, based on an agreement or agreement between the Bank and another party that requires the financed party to return the money or bill after a certain period of time with compensation or profit-sharing

1. The sufficiency of Time period level
2. The easily sourced and fee charged
3. The cheapness interest and profit-sharing level

(Huppi and Feder, 1990; Zhang et al., 2010; Kimanthi, 2014; Castellani, 2018; Groeneveld et al., 2018 and Wu et al., 2018)

Cooperative capital adequacy (Y)

Cooperative capital adequacy indicators based on the Regulation of the Minister of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia Number: 14/PER/M.KUKM/XII/2009. These Ministerial Regulations include Capital Adequacy, Assets Quality Aspects, Fund Management aspect levels.

1. Capital Adequacy
2. Earning Assets Quality Aspects
3. Fund Management aspect level

(Huppi and Feder, 1990; Zhang et al., 2010; Kimanthi, 2014 and Hafez, 2018)

The survey respondents selected by a purposive random sampling approach. The use of a purposive random sampling approach is to achieve representativeness of the North Sumatra population as closely as possible and compare different types of cases (further explanations of the purposive random approach can be found in Teddlie and Yu, 2007). During the survey, the period supplied respondents to a questionnaire. The respondents provide answers from 1 to 5 scale with 1: strongly disagree or very low, 2: disagree or low, 3: neutral or average, 4: agree or high, 5: strongly agree or very high. The sub-questions for each variable (X1, X2, X3, X4 and Y) represent the dimensions of each variable. For X1 and X2 variables, elaborate the effectiveness, volatility and role. For X3 variable, elaborate the frequency, sufficiency and volatility. For X4 variable, elaborate the sufficiency, easily sourced and cheapness. For Y variable elaborate the adequacy, time period and easily sourced. Some of those dimensions are listed and cited from a research work by Kimanthi (2014) discussing the impact of financing strategies on the liquidity of savings and credit cooperative society. Furthermore, the volatility dimension is inspired from Zhang et al. (2010), the importance and role dimensions are followed by Santamaria et al. (2010), the easily sourced and cheapness dimensions are based on research by Huppi and Feder (1990). The remaining dimensions are extensions to this study. The Structural Equation Modelling (SEM) analysis to discover a comprehensive and simultaneous relationship among variables. SEM method has been used for research in rural areas (see for instance, Russel et al., 1998; Yoon et al., 2001; Maddigan et al., 2005; King et al., 2006; Wang et al., 2012). SEM represents the variations on the general linear model and can explain the causal relationship among variables. The Analysis of Moment Statistical (AMOS) software used to perform SEM analysis. The SEM output in the analysis consists of path diagram, unstandardized and standardized coefficients estimates.

Controlled Variable Regression Analysis

The performed further analysis to explore the determinants of each cooperative capital adequacy variable. The controlled variable used regression analysis to test whether those determinants become more significant in the simultaneous condition. This method is similar to Dahlen and Dione (2010). For regressed all below fifteen equations:

\[ k_{m1} = \alpha + \beta_1 \text{sp}_1 + \beta_2 \text{sp}_2 + \beta_3 \text{sp}_3 + \epsilon \]  
\[ k_{m2} = \alpha + \beta_1 \text{sw}_1 + \beta_2 \text{sw}_2 + \beta_3 \text{sw}_3 + \epsilon \]  
\[ k_{m3} = \alpha + \beta_1 \text{ss}_1 + \beta_2 \text{ss}_2 + \beta_3 \text{ss}_3 + \epsilon \]  
\[ k_{m4} = \alpha + \beta_1 \text{spp}_1 + \beta_2 \text{spp}_2 + \beta_3 \text{spp}_3 + \epsilon \]  
\[ k_{m5} = \alpha + \beta_1 \text{sp}_1 + \beta_2 \text{sp}_2 + \beta_3 \text{sp}_3 + \beta_4 \text{sw}_1 + \beta_5 \text{sw}_2 + \beta_6 \text{sw}_3 + \beta_7 \text{ss}_1 + \beta_8 \text{ss}_2 + \beta_9 \text{ss}_3 + \beta_{10} \text{spp}_1 + \beta_{11} \text{spp}_2 + \beta_{12} \text{spp}_3 + \epsilon \]  
\[ k_{m6} = \alpha + \beta_1 \text{sp}_1 + \beta_2 \text{sp}_2 + \beta_3 \text{sp}_3 + \epsilon \]  
\[ k_{m7} = \alpha + \beta_1 \text{sw}_1 + \beta_2 \text{sw}_2 + \beta_3 \text{sw}_3 + \epsilon \]  
\[ k_{m8} = \alpha + \beta_1 \text{ss}_1 + \beta_2 \text{ss}_2 + \beta_3 \text{ss}_3 + \epsilon \]  
\[ k_{m9} = \alpha + \beta_1 \text{spp}_1 + \beta_2 \text{spp}_2 + \beta_3 \text{spp}_3 + \epsilon \]  

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Note that Y refers to the cooperative capital adequacy, X1 is the cooperative member’s main saving, X2 denotes the cooperative member compulsory saving, X3 refers to the cooperative member’s voluntary saving and X4 is the bank lending. The sp1, sp2, and sp3 variables represent the respondents’ answer whether the compulsory saving is volatile, the compulsory saving is effective and the role of compulsory saving to the cooperative capital adequacy, respectively. The sw1, sw2, and sw3 variables denote to the respondents’ answer whether the compulsory saving is volatile, the compulsory saving is effective and the role of compulsory saving to the cooperative capital adequacy, respectively. The ss1, ss2, and ss3 variables are the respondents’ answer whether voluntary saving is frequently received, the voluntary saving is sufficient, and the voluntary saving is volatile.

However, have to provide some remarks on this analysis because of the limitations of the SEM and controlled variable regression methods. SEM method requires higher knowledge about the conditions and assumptions for appropriate usage (Chin, 1998 and Russell et al., 1998). Therefore, a further study might design a model relaxing those strict SEM conditions and assumptions. Furthermore, a lack of explanation of inclusion in the controlled regression variable may arise (Becker, 2005). Therefore, an extended method of dealing with this issue could be developed for future research. The purposive random sampling to obtain 226 respondents who perform a managerial role in the cooperatives in North Sumatra, Indonesia. The respondents are so diverse in various sub-urban, gender, age, education levels, and experience that they represent a diverse background of the North Sumatra area. Table 3 describes the respondents as follows:

Table 3: Detailed demography distribution of the respondents

| Demography | Sub Region | Sergai | Simalungun | Asahan | T.Balai | L. Batu | Labura | Batubara | Total | % |
|------------|------------|--------|------------|--------|---------|---------|--------|----------|-------|---|
| Male       |            | 6      | 18         | 18     | 21      | 9       | 9      | 22       | 103   | 46%|
| Female     |            | 32     | 12         | 12     | 8       | 19      | 18     | 22       | 123   | 54%|
| Total      |            | 38     | 30         | 30     | 29      | 28      | 27     | 44       | 226   | 100%|
| Ages       |            |        |            |        |         |         |        |          |       |   |
| 20 - 30 Years |        | 21     | 5          | 13     | 9       | 24      | 21     | 9        | 102   | 45%|
| 31 - 40 Years |        | 5      | 11         | 10     | 9       | 3       | 4      | 11       | 53    | 23%|
| 41 - 50 Years |        | 4      | 8          | 3      | 6       | 1       | 1      | 20       | 43    | 19%|
| 51 - 55 Years |        | 8      | 6          | 4      | 5       | 0       | 1      | 4        | 28    | 12%|
| Total      |            | 38     | 30         | 30     | 29      | 28      | 27     | 44       | 226   | 100%|
| Education  |            |        |            |        |         |         |        |          |       |   |
| High School |        | 31     | 28         | 19     | 24      | 24      | 13     | 13       | 152   | 67%|
| Diploma    |        | 2      | 0          | 1      | 1       | 1       | 3      | 17       | 25    | 11%|
| Bachelor   |        | 5      | 1          | 10     | 4       | 3       | 11     | 13       | 47    | 21%|
| Master     |        | 0      | 1          | 0      | 0       | 0       | 0      | 1        | 2     | 1% |
| Total      |            | 38     | 30         | 30     | 29      | 28      | 27     | 44       | 226   | 100%|
| Working Experience |        |        |            |        |         |         |        |          |       |   |
| < 5 Years  |        | 13     | 20         | 23     | 12      | 25      | 25     | 16       | 134   | 59%|
| 5 - 10 Years |        | 10     | 9          | 4      | 13      | 3       | 2      | 11       | 52    | 23%|
| 10 - 20 Years |        | 8      | 1          | 3      | 4       | 0       | 0      | 2        | 4     | 9% |
| > 20 Years |        | 7      | 0          | 0      | 0       | 0       | 0      | 13       | 20    | 9% |
| Total      |            | 38     | 30         | 30     | 29      | 28      | 27     | 44       | 226   | 100%|

Source: Data Tabulation, 2018

Table 3 shows that the number of respondents in this study was 226 respondents spread across 7 districts/cities in North Sumatra, Indonesia.

RESULTS/FINDINGS

Result

Figure 3 depicts the measurement model among variables mentioned in Figure 2. The test result present in Figure 3 below:
Based on Figure 3 show that the spp1, spp2, and spp3 variables represent the respondents’ answer whether the bank lending is sufficient, the bank lending is easily obtained, and the bank lending is relatively cheap, respectively. Finally, the km1, km2, and km3 variables denote to the respondents’ answer whether the cooperative capital is adequate, the cooperative revenues can be reserved as capital, and the cooperative capital from borrowings is difficult to obtain, respectively. The output of the equation is in the following Table 4 as follows:

**Table 4: The output of Regression Weights**

| Label | Estimate | SE  | CR    | P-value | Source |
|-------|----------|-----|-------|---------|--------|
| Y     | -0.061   | 0.020 | -3.080 | 0.002   | AMOS Result, 2018 |
| Y     | 0.202    | 0.049 | 4.086  | ***     | AMOS Result, 2018 |
| Y     | 0.051    | 0.028 | 1.846  | 0.065   | AMOS Result, 2018 |
| Y     | 0.073    | 0.022 | 3.277  | 0.001   | AMOS Result, 2018 |
| sp3   | 1.000    |      |       |         | AMOS Result, 2018 |
| sp2   | 0.965    | 0.041 | 23.801 | ***     | AMOS Result, 2018 |
| sp1   | 0.772    | 0.053 | 14.525 | ***     | AMOS Result, 2018 |
| sw3   | 1.000    |      |       |         | AMOS Result, 2018 |
| sw2   | 0.896    | 0.046 | 19.512 | ***     | AMOS Result, 2018 |
| sw1   | 0.919    | 0.049 | 18.684 | ***     | AMOS Result, 2018 |
| ss3   | 1.000    |      |       |         | AMOS Result, 2018 |
| ss2   | 1.155    | 0.090 | 12.781 | ***     | AMOS Result, 2018 |
| ss1   | 1.040    | 0.084 | 12.320 | ***     | AMOS Result, 2018 |
| spp3  | 1.000    |      |       |         | AMOS Result, 2018 |
| spp2  | 0.809    | 0.058 | 13.875 | ***     | AMOS Result, 2018 |
| spp1  | 1.067    | 0.046 | 23.032 | ***     | AMOS Result, 2018 |
| km1   | 1.000    |      |       |         | AMOS Result, 2018 |
| km2   | 4.209    | 0.979 | 4.300  | ***     | AMOS Result, 2018 |
| km3   | 5.103    | 1.187 | 4.298  | ***     | AMOS Result, 2018 |

**Source:** AMOS Result, 2018

As per your table given above some variables are highly significant such as 99% whereas three of them are not significant so write about them clearly as your finding. Table 4 reports the regression weight of the model. According to Table 4, we can construct an equation as follows:

\[ Y = -0.061X_1 + 0.202X_2 + 0.051X_3 + 0.073X_4 + e \]

Where \( Y \) is the cooperative capital adequacy, \( X_1 \) denotes the cooperative member's main saving, \( X_2 \) refers to the cooperative member's compulsory saving, \( X_3 \) is the cooperative member's voluntary saving, and \( X_4 \) denotes the bank lending. Overall, find that all variables are statistically significantly different from zero. Furthermore, all CR ratios are higher than 2. From Figure 3 and Table 4, can also see that all sub-question dimensions are substantial and significant. This indicates the dimension (in theoretical framework) explains well the \( X_1, X_2, X_3, X_4, \) and \( Y \) variables. For further
analysis reveals that both main saving and compulsory saving are volatile, effective and essential to the cooperative capital adequacy. The study also finds that voluntary saving is volatile, often received and sufficient while bank lending is sufficient, easily obtained, and relatively cheap to the cooperative capital adequacy. Finally, the study documented that the cooperative capital is adequate, likely to be reserved as capital and difficult to obtain from borrowing.

Table 5 reports the regression results of equation (1), equation (2), equation (3), equation (4), and equation (5). According to Table 3, the effectiveness of compulsory saving (sw2) and the role of compulsory saving (sw3) are significant determinants of the adequacy of cooperative capital (km1) in separate regression while the volatility of main saving (sp1), the volatility of compulsory saving (sw1), the role of compulsory saving (sw3) and the frequency of receiving voluntary saving (ss1) are significant determinants of the adequacy of cooperative capital (km1) in simultaneous regression (equation 5). Note that all of the intercepts are statistically significant when the dependent variable is regressed alone with only at a group of the sub-X variable (equation 1 to equation 4) but are not statistically significant when the dependent variable is regressed simultaneously with all sub-X variables. This indicates that the four dimensions (see Figure 2) tend to affect the adequacy of a cooperative capital variable simultaneously rather than separately.

Table 5: The output of regression equations (1), (2), (3), (4), and (5)

| Dependent Variable | Equation (1) | Equation (2) | Equation (3) | Equation (4) | Equation (5) |
|--------------------|--------------|--------------|--------------|--------------|--------------|
| km1 (Intercept)    | 1.98 ***     | 1.26 ***     | 1.61 ***     | 2.02 ***     | 0.53         |
|                    | (14.09)      | (5.83)       | (7.63)       | (14.82)      | (1.33)       |
| sp1                | -0.03        | -0.12 **     |
|                    | ( -0.58 )    | (-2.04 )     |
| sp2                | -0.06        | -0.09        |
|                    | ( -0.75 )    | (-1.03 )     |
| sp3                | 0.07         | 0.08         |
|                    | ( 0.94 )     | ( 1.01 )     |
| sw1                | 0.16         | 0.18 *)      |
|                    | ( 1.64 )     | ( 1.78 )     |
| sw2                | -0.18 *)     | -0.13        |
|                    | ( -1.70 )    | (-1.22 )     |
| sw3                | 0.20 **)     | 0.21 **)     |
|                    | ( 2.45 )     | ( 2.47 )     |
| ss1                | 0.12         | 0.16 *)      |
|                    | ( 1.42 )     | ( 1.78 )     |
| ss2                | -0.06        | -0.01        |
|                    | ( -0.69 )    | (-0.12 )     |
| ss3                | 0.04         | 0.03         |
|                    | ( 0.50 )     | ( 0.37 )     |
| spp1               | 0.07         | 0.11         |
|                    | ( 0.91 )     | ( 1.49 )     |
| spp2               | 0.00         | -0.02        |
|                    | ( -0.05 )    | (-0.40 )     |
| spp3               | -0.10        | 0.01         |
|                    | ( -1.20 )    | ( 0.15 )     |

Adj-R-squared: -0.0080  0.0702  0.0029  -0.0060  0.0835

*** refers to significance at 10 percent level, **) refers to significance at 5 percent level and ***) refers to significance at 1 percent level.

Source: AMOS Result, 2018
Based on Table 5 reports the regression results of equation (6), equation (7), equation (8), equation (9), and equation (10). According to Table 5, the volatility of main saving (sp1) is a statistically significant determinant of the cooperative revenues as capital (km2) and the significance increases in the simultaneous regression (equation 10). Moreover, the effectiveness of compulsory saving (sw2) and the role of compulsory saving (sw3) are the significant determinants of the reserved ability of the cooperative revenues as capital (km2) and their significances increase in the simultaneous regression. It can also see that the volatility of compulsory saving (sw1) and the role of compulsory saving (sw3) variables are significant determinants of the reserved ability of the cooperative revenues as capital (km2).

| Table 6: Output of regression equations (6), (7), (8), (9) and (10) |
|---------------------------------------------------------------|
| **Dependent Variable** | **Equation (6)** | **Equation (7)** | **Equation (8)** | **Equation (9)** | **Equation (10)** |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| km2                    | 3.63 (***      | 1.01 (***      | 3.60 (***      | 3.15 (***      | -0.31           |
| (Intercept)            | (17.43)        | (3.44)          | (11.47)         | (16.07)         | (-0.67)         |
| sp1                    | -0.16 (**)     | -0.31 (***     | (2.06)          | (4.44)          |
|                        | (3.44)          | (11.47)         | (16.07)         | (-0.67)         |
| sp2                    | -0.01          | -0.06           | (0.05)          | (-0.58)         |
|                        | (2.63)          | (4.44)          |
| sp3                    | 0.03           | -0.04           | (0.25)          | (-0.44)         |
|                        | (2.68)          | (4.44)          |
| sw1                    | 0.35 (***      | 0.28 (**)      | (2.63)          | (4.44)          |
|                        | (0.06)         | (1.87)          |
| sw2                    | -0.06          | 0.10            | (0.40)          | (0.79)          |
|                        | (2.68)         | (4.35)          |
| sw3                    | 0.30 (***      | 0.43 (***      | (2.68)          | (4.35)          |
|                        | (0.06)         | (1.87)          |
| ss1                    | 0.01           | 0.19 (*)        | (0.06)          | (1.87)          |
|                        | (0.06)         | (1.87)          |
| ss2                    | -0.28 (**)     | -0.23 (**)     | (2.09)          | (2.16)          |
|                        | (-2.09)        | (-2.16)         |
| ss3                    | 0.15           | 0.17 (*)        | (1.35)          | (1.93)          |
|                        | (1.35)         | (1.93)          |
| spp1                   | 0.27 (**)      | 0.34 (***      | (2.45)          | (3.91)          |
|                        | (2.45)         | (3.91)          |
| spp2                   | 0.21 (***      | 0.21 (***      | (3.07)          | (3.23)          |
|                        | (3.07)         | (3.23)          |
| spp3                   | -0.46 (***     | -0.12           | (4.01)          | (-1.23)         |
|                        | (-4.01)        | (-1.23)         |
| Adj-R-squared          | 0.0172         | 0.2335          | 0.0150          | 0.0761          | 0.4451          |

***) refers to significance at 10 percent level, **) refers to significance at 5 percent level and ***) refers to significance at 1 percent level.

Source: AMOS Result, 2018

Based on Table 6, however, the significance of sw1 decreases while the significance of sw3 remains constant in the simultaneous regression. Furthermore, the frequency of receiving voluntary saving (ss1) and the volatility of voluntary saving (ss3) variables become statistically significant determinants of the reserved ability of the cooperative revenues as capital (km2) variable while the sufficiently of voluntary saving (ss2) variable remains a statistically significant determinant of km2 variable in the simultaneous regression. The sufficiency of bank lending (spp1) variable becomes more statistically significant, the easiness of obtaining bank lending (spp2) variable remains statistically significant and the cheapness of bank lending (spp3) variable becomes not statistically significant determinants of the reserved ability of the cooperative revenues as capital (km2) variable. It should also note, again, that all of the intercepts are statistically significant.
significant when the dependent variable is regressed alone with only at a group of the sub-X variable (equation 6 to equation 9) but are not statistically significant when the dependent variable is regressed simultaneously with all sub-X variables (equation 10). This indicates that the four dimensions tend to affect the reserved ability of the cooperative revenues as capital variables simultaneously rather than separately.

Table 7: Output of regression equations (11), (12), (13), (14) and (15)

| Dependent Variable | Equation (11) | Equation (12) | Equation (13) | Equation (14) | Equation (15) |
|--------------------|---------------|---------------|---------------|---------------|---------------|
| km3                | (Intercept)   | -0.21 **      | -0.06         | 0.21          | -0.10         |
|                    | 4.03 ***      | 0.84 **       | 3.18 ***      | 4.05 ***      | -1.39 **      |
|                    | (15.48)       | (2.32)        | (8.07)        | (16.39)       | (-2.22)       |
| sp1                | -0.21 **      | -0.06         | 0.21          | 0.02          | -0.10         |
|                    | (1.42)        | (1.31)        | (1.31)        | (0.12)        | (1.73)        |
| sp2                | -0.06         | 0.35 *)       | 0.23 *)       | 0.27 *)       | 0.28 **)      |
|                    | (0.57)        | (1.95)        | (1.67)        | (1.92)        | (2.35)        |
| sp3                | 0.21          | 0.51 ***      | 0.30 **)      | 0.24 *)       | 0.22 **)      |
|                    | (1.31)        | (2.94)        | (2.23)        | (1.73)        | (2.35)        |
| Adj-R-squared      | 0.0142        | 0.2423        | 0.0089        | 0.0589        | 0.3547        |

(***) refers to significance at 10 percent level, **)** refers to significance at 5 percent level and ***) refers to significance at 1 percent level.

Source: AMOS Result, 2018

Table 7 reports the regression results of equation (11), equation (12), equation (13), equation (14) and equation (15). According to Table 7, the volatility of main saving (sp1) is a statistically significant determinant of the difficulty of cooperative capital borrowings (km3) and the significance increases in the simultaneous regression (equation 15). Moreover, the significances of the effectiveness of compulsory save (sw2) and the role of compulsory saving (sw3) variables, as the determinants of the difficulty of cooperative capital borrowings (km3), increase in the simultaneous regression. In addition, the study also that the frequency of receiving voluntary saving (ss1) and the volatility of voluntary saving (ss3) variables become statistically significant determinants of the difficulty of cooperative capital borrowings (km3) variable in the simultaneous regression. The sufficiency of bank lending (spp1) variable becomes more statistically significant, the easiness of obtaining bank lending (spp2) variable becomes less statistically significant and the cheapness of bank lending (spp3) variable becomes not statistically significant determinants of the difficulty of cooperative capital borrowings (km3) variable.
**Overall Analysis**

Overall, the conclusion that i) the cooperative member savings (all main saving, compulsory saving and voluntary saving) play an important role to the cooperative capital adequacy, ii) the bank lending is also essential for cooperative capital adequacy, iii) the bank lending is relatively cheap cooperative capital. For further analysis reveals that most of the explanatory variables tend to be more statistically significant determinants of cooperative capital adequacy when the equation is regressed simultaneously rather than stand-alone (i.e. single). On the other hand, intercepts tend to be not statistically significant in the simultaneous regression. Table 8 summarizes and compares the significance level for all explanatory variables between single and simultaneous equations. This indicates that the four dimensions, as depicted in Figure 7, tend to affect the cooperative capital adequacy simultaneously rather than separately. Therefore, the appropriate economic policy should promote the integrative growth of all dimensions rather than stand-alone growth. The findings have at least three implications for the relationship between cooperative funding and community. First, the community has integral and essential roles in cooperative funding since this document that cooperative member savings are effective and efficient to the cooperative. However, the study also documented that savings tend to be volatile. Therefore, an appropriate economic policy promoting community and cooperative growth should encourage community participation in the cooperative. This will also lead to stability in the cooperative member savings (i.e. reducing volatility problem).

**DISCUSSION**

This implies that the proper economic policy is to encourage the bank to have more collaboration (rather than competition) with the cooperative. Indeed, the collaboration between the bank and cooperative benefits to rural communities. An example of the benefits is promoting better management practices in rural cooperatives through regular financial audit (see Benson, 2014). The bank also benefits from the collaboration because less formal financial institutions, like a cooperative, improve financial sustainability (see Khafagy, 2017; Hasan et al. 2017 and Nidege et al. 2014). Third, cooperative funding and community development should be promoted through integrative, rather than separate, policy. For instance, a government policy promoting active participation from local residents (in the form of

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**Table 8: Significance Level Comparisons between Single and Simultaneous Regression Equations for Each Determinant Variable**

| Independent Variable | km1 | km2 | km3 |
|-----------------------|-----|-----|-----|
| (Intercept)           | *** | *** | *** |
| sp1                   | **  | **  | *** |
| sp2                   |     |     |     |
| sp3                   |     |     |     |
| sw1                   | *   | *** | **  |
| sw2                   |     |     | *** |
| sw3                   | **  | **  | *** |
| ss1                   |     | *   |     |
| ss2                   | **  | **  |     |
| ss3                   |     | *   |     |
| spp1                  | **  | *** |     |
| spp2                  | *** | *** | *** |
| spp3                  | *** | *** | *** |

*** refers to significance at 10 percent level? **) refers to significance at 5 percent level and ***) refers to significance at 1 percent level.

**Source:** AMOS Result, 2018

Based on Table 8 as the number of participants become higher, the volatility is likely to be reduced due to individual idiosyncratic factor (Mathuva, 2016; Homung et al. 2018; Long et al. 2018) or due to higher interaction among participants (Borda-Rodriguez and Vicari, 2014). In the term of social capital, this stability might also lead to achieve more social goals (Cheung and Chan, 2008). Second, the document that bank lending is essential and relatively cheap to the cooperative funding.
main, compulsory and voluntary savings) and local banks (in the form of cooperative funding access) is preferable rather than a policy promoting active participation from banks only (Barra & Zotti, 2017; Behr et al. 2017; D'Amato & Gallo, 2017; Ghio et al. 2017; Jovanovici et al. 2017; Scott et al. 2017 and Yamori et al. 2017). Therefore, a collaborative policy between the Ministry of Cooperatives and SMEs and the Financial Service Authority is advisable rather than a separate policy from each regulator. If both regulators do not jointly formulate policy, the impact will likely be less significant. This is a classical problem when economic policy is designed from stand-alone rather than an integrative perspective. Our analysis reveals that an integrative approach is essential and promotes more significant determinants.

CONCLUSION AND FUTURE WORK

This paper examines the impact of cooperative funding to the community. The assessment by the contribution of cooperative funding to the North Sumatra community, Indonesia. Using SEM and Controlled Variable Regression methods find that the cooperative member savings play essential roles to the cooperative capital adequacy. Further, the document that an integrative approach is preferable than the stand-alone approach. These findings implied that the local community has a significant impact on the cooperative funding. Specifically, when the locals are more active through various savings, the cooperative capital tends to be more adequate. This suggests that a plan to strengthen cooperative should empower and prioritize locals’ participation. The document further that bank involvement is also required to strengthen cooperation. Therefore, community participation and banks should collaborate, rather than compete, to develop cooperation. An example of the successful collaboration is Waste Bank (Bachtiar, 2015; Dutta et al. 2017; Singhirunnusorn et al. 2017; Satori et al. 2018 and Wang et al. 2018). In this collaboration, a cooperative obtain both financial and operational supports from Malang residents. Further supports from Malang local government and state banks were obtained. Another question may arise regarding what should do when an economy is weak. During a weak economy, the local government could expand its spending to avoid significant recession. Thus, strong collaboration among community, banks, and cooperative will make assist the government to spend resources (i.e. spending accountability factor). Based on the findings, three economic policies are suggested. First, for advise an economic policy encouraging more participants in the cooperative. This policy promotes stability in cooperative funding and indirectly triggers more social achievements. Second, to advise another economic policy encouraging banks to collaborate, rather than to compete, with the cooperative. The document that collaboration tends to benefit both banks and cooperative in the long run. Third, for strongly recommend integrative approach rather than a stand-alone approach of the economic policy.

LIMITATION AND STUDY FORWARD

This research is only conducted in countries that implement the Pancasila economic system. The results will be different if applied to countries with a capitalist economic system and a socialist economic system.

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AUTHORS CONTRIBUTION

Iskandar Muda develops the theoretical framework and performs the structural equation modeling analysis. Oskar Vitriano conducts economic policy literature review, analyzes the determinants of cooperative capital adequacy, and suggests economic policies. Rangga Handika performed the controlled variable regression analysis. All authors are contributed to this study.

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