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ASIRPA

Comparative Study on the Determination of Counterparty Credit Limit Risk in Indonesian Banks

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A B S T R A C T

A counterparty credit limit is a limit imposed by a financial institution to cap its maximum possible exposure to a specified counterparty. Banks may set different counterparty credit limits depending on credit quality, potential earnings, and growth. They use this criterion to provide a maximum credit limit given to correspondent banks. The counterparty credit limit will be used in various financial instruments other than loans; this includes interbank transactions, foreign exchange transactions, trade financing, acceptances, financial futures, swaps, bonds, equities, options, extension commitments, and guarantees, and the settlement of transactions. Every Bank, regardless of size, is in business to be profitable and, consequently, must determine the acceptable risk/reward trade-off for its activities, factoring in the cost of capital. Therefore, the credit line allocation is unadvised and uncommitted to the corresponding Bank based on the correspondent bank's credit risk assessment.

The purpose of this study is to examine if there are differences among Indonesian banks in measuring the probability and impact dimension of setting the counterparty limit risks. The sample in this research is taken from 59 bank officials' financial institutions in Indonesia. This study hypothesizes that there are no differences assessed between the two dimensions. To test this, the researcher collects experts' opinions using questionnaire forms. Then, the collected data were analyzed and calculated based on the Kruskal Wallis test using SPSS 23 software.

The result shows that the significance (Sig) is less than 0.05; this indicates differences in measuring the probability and impact dimension of setting the counterparty credit limit risk. The risk includes not making visits to counterparties, not responding to counterparty requests for opening a relationship as a customer or correspondent bank, misjudging the counterparty's business potential, mistakes in analysing counterparty management (owner of correspondent bank (UBO), management and organizational structure, KYC/AML needs), mistakes in analysing macroeconomics and the banking industry that have an impact on counterparties (global economy, changes in monetary authority regulations or regulations, changes in government regulations), wrong in analysing counterparty business risk (portfolio composition, customer segment, correspondent bank strategy), wrong in analysing counterparty financial performance (balance sheet analysis, R/L report, financial ratio), wrong in setting counterparty rating, incorrect calculation of counterparty limits (formulation of limits and bank capital), wrong in allocating counterparty limit (transaction risk weight & business target based on projections), mistakes in analysing the projected counterparty capability for a period of more than 1 year, not monitoring counterparty limit utilization, does not monitor counterparty financial performance (review limit in 1 period only), not monitoring and paying attention to sanctions or legal cases that occur to counterparties, not limiting and monitoring all ongoing transactions using counterparty limits, does not limit the tenor/transaction period, provide a limit even though the process of determining the counterparty limit has not been completed, and not doing due diligence on a regular basis. Ideally, all banks in Indonesia ought to have the same perspective in assessing the counterparty credit limit. This study showed that Indonesian banks should be encouraged to develop an effective strategy to improve their counterparty credit risk assessment. To further improve, policymakers can generate appropriate policies to govern the Bank's behavior in mitigating risk.

Keywords: counterparty credit limit, counterparty risk, expert opinion, Indonesian banks, comparative study

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1. Introduction

The global financial crisis in 2008 provided one of the most valuable lessons in which derivative transactions, especially over the counter (OTC) derivatives transactions, became one of the causes of the crisis that had a broad and profound impact on the condition of the world financial system. While financial institutions have faced difficulties over the years for a multitude of reasons, the primary cause of serious banking problems continues to be directly related to lack of credit standards for borrowers and counterparties, poor portfolio risk management, or a lack of attention to changes in economic or other circumstances that can lead to a deterioration in the credit standing of a bank's counterparties (The Basel Committee 2006,)

In response to the global financial crisis, the G20 is committed to improving regulatory and supervisory practices on derivatives, especially OTC Derivatives, as part of efforts to increase the resilience of the global financial system. In June 2006, the Basel II framework document, the standard for setting Counterparty Credit Risk (CCR) for banks, was published by the Basel Committee on Banking Supervision (BCBS). Then in June 2011, BCBS reissued the Basel III framework document, one part of which aims to reform and strengthen the existing CCR regulatory framework in Basel II. The CCR framework aims to improve the ability of banks to face risks in transactions if the counterparty defaults/fails to fulfill its obligations before the final settlement of the cash flows in the transaction. (Departemen Penelitian dan Pengaturan Perbankan 2015).

According to the Circular Letter of the Financial Services Authority Number 34 / SEOJK.03/2016 Credit risk due to counterparty credit risk arises from types of transactions that generally have the following characteristics (Otoritas Jasa Keuangan 2016):

1. Transactions are effected by movements in fair value or market value.
2. Therefore, the fair value of the transaction is affected by the movement of certain market variables.
3. The transaction results in the exchange of cash flows or financial instruments; and
4. The risk characteristics are bilateral, namely: (i) if the fair value of the contract is positive, the Bank is exposed to Credit Risk from the counterparty; while (ii) if the fair value of the contract is negative, the counterparty is exposed to Credit Risk from the Bank.

A counterparty credit limit (CCL) limits a financial institution imposes to cap its maximum possible exposure to a specified counterparty. CCLs help institutions mitigate counterparty credit risk via selective diversification of their exposures (Gould et al. 2020). The credit risk strategy should give recognition to the goals of credit quality, earnings, and growth. Every Bank, regardless of size, is in business to be profitable and, consequently, must determine the acceptable risk/reward trade-off for its activities, factoring in the cost of capital. A bank's board of directors should approve the Bank's strategy for selecting risks and maximizing profits. In addition, the board should periodically review the financial results of the Bank and based on these results, determine if changes need to be made to the strategy. The board must also determine that the Bank's capital level is adequate for the risks assumed throughout the entire organization.

They use this criterion to provide a maximum credit limit given to correspondent banks in various financial instruments other than loans; this includes interbank transactions, foreign exchange transactions, trade financing, acceptances, financial futures, swaps, bonds, equities, options, and in the extension of commitments and guarantees, and the settlement of transactions. Every Bank, regardless of size, is in business to be profitable and, consequently, must determine the acceptable risk/reward trade-off for its activities, factoring in the cost of capital. Accordingly, the credit line allocation is unadvised and uncommitted to the corresponding Bank based on the correspondent bank's credit risk assessment.

Research on risks in setting Counterparty Credit Limits by (Simamora 2021) has identified 18 risks faced by banks in Indonesia in setting counterparty limits; the stages of risk management are risk management planning, risk identification, qualitative analysis, quantitative calculations, risk response planning, and risk control (Pritchard 2016). This study aims to test whether there are differences in expert opinion on the dimensions of probability and impact based on bank core capital.

The hypothesis in this study is:

- H_1: There is no difference in measuring the probability dimension of setting the counterparty limit risks among Indonesian Banks.
- H_2: There is no difference in measuring the impact dimension of setting the counterparty limit risks among Indonesian Banks.

2. Method

The type of research used in this research is quantitative research. The population in this research is all banks in Indonesia. According to the OJK, in January

2020, the total number of banks in Indonesia operating was 110 banks. In the data collection research during January - June 2020 and collected with the questionnaire form. The respondents were 59 experts in their fields (financial institutions) and came from different banks. Expert respondents came from Bank Group Based on Core Capital (KBMI). KBMI 1 (32 people), KBMI 2 (10 people), KBMI 3 (12 people), and KBMI 4 (5 people). So, the total respondents are 59 banks out of 110 banks in Indonesia, both conventional and Islamic.

Based on the Regulation of the Financial Services Authority of the Republic of Indonesia number 12 / POJK.03/2021 concerning commercial banks with core capital owned, banks are grouped into 4 (four) Bank Group Based on Core Capital (Otoritas Jasa Keuangan 2021):

a. KBMI 1 is a bank with a Core Capital of up to Rp6,000,000,000,000.00 (six trillion rupiahs).
b. KBMI 2 is a bank with a Core Capital of more than Rp6,000,000,000,000.00 (six trillion rupiah) up to Rp14,000,000,000,000.00 (fourteen trillion rupiah).
c. KBMI 3 is a bank with a Core Capital of more than Rp. 14,000,000,000,000.00 (fourteen trillion rupiah) up to Rp. 70,000,000,000,000.00 (seventy trillion rupiah); and
d. KBMI 4 is a bank with a Core Capital of more than Rp70,000,000,000,000.00 (seventy trillion rupiahs).

Rating schemes are a standard used to assess risks that occur in an agency. A risk has different impacts and probabilities, and the perception of risk varies from person to person. For example, some say that the risk is 'low' or 'high' or 'moderate.' This technique clarifies the relative magnitudes in impact and probability. There is a patent definition and way of testing risk. So that everyone in the agency can view or assess risk in the same way (Pritchard 2016).

According to (Sugiono 2014), a paired t-test or a score is a z score (z distribution); the t score uses the difference in the mean of two samples. Thus, the sample can be a unit of two samples that can be categorized into two groups or in the form of two samples that are indeed different.

In processing the data, the paired t-test uses the mean (calculated average) to be compared and the standard deviation. The task of the t-test is to test two means, whether the two means have a significant difference. The conclusion of the significance of the test results is the value of t and the level of significance (confidence level).

The value of t will not necessarily reflect the significance level because the more significant the sample, the larger the value of t will be. The conclusion of the two samples has a significant difference is determined from the level of significance or the degree of confidence. Two samples are said to be significantly different (significantly) if they have a degree of confidence more significant than 95%.

The formula for the t-test is:

$$t = \frac{[Mx - My]}{SD_{BM}}$$

t = the price of the t-test to be searched
Mx = Mean value (mean) of sample I
My = Mean value (mean) of sample II
SDBM = standard deviation of the mean difference.

If the research involves two different samples, different mean values will likely be obtained from the two samples. Likewise, a different mean, the standard deviation, will be obtained between the two samples.
The standard formula for mean difference error can be written as.

$$SD_{BM} = \sqrt{(SD_{MX}^2) + (SD_{MY}^2)}$$

SD_{BM} = Standard error of the mean difference.
SD^2_{MX} = The standard square of the mean error of sample 1. Also called the variance of the sample mean I.
SD^2_{MY} = square of the mean, standard error of sample II. I also called sample mean-variance II.

$$SD_{MX} = \frac{SD_x}{\sqrt{(N-1)}}$$

SD_{MX} = Standard error of the sample mean to x
SD_X = Standard deviation of the investigated sample to x
N = Numbernumber of samples investigated

In this study, the data were analyzed using the normality test and one-Sample Kolmogorov-Smirnov Test with the help of Microsoft Excel and SPSS 23 software.

The decision model is determined by looking at the significance value (Sig) with the following criteria:

a. If the significance value (Sig) < probability 0.05, then there is an effect of the independent variable (X) on the dependent variable (Y) or the hypothesis is accepted.
b. On the other hand, if the significance value (Sig) > 0.05 probability, then there is no effect of the independent variable (X) on the dependent variable (Y), or the hypothesis is rejected.

3. Result

Risk management planning is the effort, organizationally, to draw together the organization's risk policies, practices, and procedures into a cohesive whole that will address the nature of risk peculiar to the project. (Simamora 2021) has identified 18 risks for determining counterparty credit limits.

Table 1. Identified Risk Registers

No	Risk Register
1	Not making visits to counterparties
2	Not responding to counterparty requests for opening a relationship as a customer or correspondent bank
3	Misjudging the counterparty's business potential
4	Mistakes in analyzing counterparty management (owner of the correspondent bank (UBO), management and organizational structure, KYC/AML needs)
5	Mistakes in analyzing macroeconomics and the banking industry that have an impact on counterparties (global economy, changes in monetary authority regulations or regulations, changes in government regulations)
6	Wrong in analyzing counterparty business risk (portfolio composition, customer segment, correspondent bank strategy).
7	Wrong in analyzing counterparty financial performance (balance sheet analysis, R/L report, financial ratio)
8	Wrong in setting counterparty rating
9	Wrong in the calculation of counterparty limits (formulation of limits and bank capital).
10	Wrong in allocating counterparty limit (transaction risk weight & business target based on projections).
11	Mistakes in analyzing the projected counterparty capability for more than one year
12	Not monitoring counterparty limit utilization
13	Do not monitor counterparty financial performance (review limit in 1 period only).
14	Not monitoring and paying attention to sanctions or legal cases that occur to counterparties
15	Not limiting and monitoring all ongoing transactions using counterparty limits
16	Not limit the tenor/transaction period
17	Provide a limit even though the process of determining the counterparty limit has not been completed
18	Not doing due diligence regularly

Source: data processed by the author (2020)

Table 2. Statistic Descriptive summaries on the probability dimension

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Prob1	59	1.00	3.00	1.6102	.69523
Prob2	59	1.00	3.00	1.8814	.64553
Prob3	59	1.00	3.00	2.1525	.80545
Prob4	59	1.00	3.00	2.1356	.73008
Prob5	59	1.00	3.00	2.2034	.63733
Prob6	59	1.00	3.00	2.0508	.68036
Prob7	59	1.00	3.00	2.2881	.83151
Prob8	59	1.00	3.00	2.0339	.78710
Prob9	59	1.00	3.00	2.1525	.82657
Prob10	59	1.00	3.00	2.1356	.70607
Prob11	59	1.00	3.00	2.1864	.73048
Prob12	59	1.00	3.00	2.0000	.80943
Prob13	59	1.00	3.00	2.0169	.79852
Prob14	59	1.00	3.00	2.2881	.72041
Prob15	59	1.00	3.00	2.1695	.74631
Prob16	59	1.00	3.00	2.1525	.78375
Prob17	59	1.00	3.00	2.1356	.88000
Prob18	59	1.00	3.00	2.1356	.70607
Valid N (listwise)	59				

Source: data processed by the author (2021)

Based on table 2 above, the probability dimension has the highest standard deviation at risk no 17, while the lowest standard deviation at risk no 5.

Table 3. Statistic Descriptive summaries on the impact dimension

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Impact1	59	1.00	3.00	1.8136	.68165
Impact2	59	1.00	3.00	2.1864	.73048
Impact3	59	1.00	3.00	2.5763	.62155
Impact4	59	1.00	3.00	2.6102	.55761
Impact5	59	1.00	3.00	2.5593	.56542
Impact6	59	.00	3.00	2.3220	.68079
Impact7	59	1.00	3.00	2.7797	.49368
Impact8	59	.00	3.00	2.4237	.74749
Impact9	59	1.00	3.00	2.5932	.61919
Impact10	59	1.00	3.00	2.3898	.66997
Impact11	59	1.00	3.00	2.5085	.62623
Impact12	59	1.00	3.00	2.2881	.69607
Impact13	59	1.00	3.00	2.4576	.65184
Impact14	59	1.00	3.00	2.6949	.53351
Impact15	59	1.00	3.00	2.6780	.50653
Impact16	59	1.00	3.00	2.5763	.59316
Impact17	59	.00	3.00	2.6271	.66691
Impact18	59	1.00	3.00	2.4576	.67778
Valid N (listwise)	59				

Source: data processed by the author (2021)

Based on table 3 above, the impact dimension has the highest standard deviation at risk no 8, while for the lowest standard deviation at risk no 7.

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The results of the different probability dimensions of the banks KBMI1, KBMI2, KBMI3, and KBMI4

One-Sample Kolmogorov-Smirnov Test

		Prob1	Prob2	Prob3	Prob4	Prob5	Prob6	Prob7	Prob8	Prob9
N		59	59	59	59	59	59	59	59	59
Normal Parameters[a,b]	Mean	1.6102	1.8814	2.1525	2.1356	2.2034	2.0508	2.2881	2.0339	2.1525
	Std. Deviation	.69523	.64553	.80545	.73008	.63733	.68036	.83151	.78710	.82657
Most Extreme Differences	Absolute	.318	.302	.260	.235	.303	.276	.329	.212	.271
	Positive	.318	.275	.178	.235	.303	.276	.196	.195	.190
	Negative	-.204	-.302	-.260	-.223	-.256	-.267	-.329	-.212	-.271
Kolmogorov-Smirnov Z		2.446	2.318	2.000	1.803	2.329	2.117	2.531	1.630	2.082
Asymp. Sig. (2-tailed)		.000	.000	.001	.003	.000	.000	.000	.010	.000

		Prob10	Prob11	Prob12	Prob13	Prob14	Prob15	Prob16	Prob17	Prob18
N		59	59	59	59	59	59	59	59	59
Normal Parameters[a,b]	Mean	2.1356	2.1864	2.0000	2.0169	2.2881	2.1695	2.1525	2.1356	2.1356
	Std. Deviation	.70607	.73048	.80943	.79852	.72041	.74631	.78375	.88000	.70607
Most Extreme Differences	Absolute	.254	.240	.214	.213	.279	.240	.250	.295	.254
	Positive	.254	.228	.214	.204	.215	.217	.187	.224	.254
	Negative	-.237	-.240	-.214	-.213	-.279	-.240	-.250	-.295	-.237
Kolmogorov-Smirnov Z		1.952	1.845	1.641	1.635	2.144	1.843	1.921	2.263	1.952
Asymp. Sig. (2-tailed)		.001	.002	.009	.010	.000	.002	.001	.000	.001

a. Test distribution is Normal.
b. Calculated from data.

The results of the different impact dimension tests of banks from KBMI1, KBMI2, KBMI3, and KBMI4

One-Sample Kolmogorov-Smirnov Test

		Impact1	Impact 2	Impact 3	Impact 4	Impact 5	Impact 6	Impact 7	Impact 8	Impact 9	Impact 10
N		59	59	59	59	59	59	59	59	59	59
Normal Parameters[b]	Mean	1.8136	2.1864	2.5763	2.6102	2.5593	2.3220	2.7797	2.4237	2.5932	2.3898
	Std. Deviation	.68165	.73048	.62155	.55761	.56542	.68079	.49368	.74749	.61919	.66997
Most Extreme Differences	Absolute	.269	.240	.396	.402	.375	.264	.486	.339	.405	.310
	Positive	.240	.228	.248	.242	.246	.258	.328	.220	.256	.228
	Negative	-.269	-.240	-.396	-.402	-.375	-.264	-.486	-.339	-.405	-.310
Kolmogorov-Smirnov Z		2.065	1.845	3.045	3.086	2.883	2.028	3.732	2.604	3.114	2.384
Asymp. Sig. (2-tailed)		.000	.002	.000	.000	.000	.001	.000	.000	.000	.000

		Impact10	Impact 11	Impact 12	Impact 13	Impact 14	Impact 15	Impact 16	Impact 17	Impact 18
N		59	59	59	59	59	59	59	59	59
Normal Parameters[b]	Mean	2.3898	2.5085	2.2881	2.4576	2.6949	2.6780	2.5763	2.6271	2.4576
	Std. Deviation	.66997	.62623	.69607	.65184	.53351	.50653	.59316	.66691	.67778
Most Extreme Differences	Absolute	.310	.360	.271	.340	.445	.432	.390	.424	.348
	Positive	.228	.216	.237	.216	.284	.262	.238	.288	.212
	Negative	-.310	-.360	-.271	-.340	-.445	-.432	-.390	-.424	-.348
Kolmogorov-Smirnov Z		2.384	2.765	2.078	2.609	3.419	3.322	2.993	3.255	2.669
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000

a. Test distribution is Normal.
b. Calculated from data.

4. Discussion

The aim of this study was twofold. Firstly, it sought to investigate whether a difference in measuring the probability dimension of setting the counterparty limit. The results of the independent samples t-test indicated that there is a difference among all banks in Indonesia. All risks registered are significant value (Sig) < 0.05. Second, to investigate whether a difference in measuring the impact dimension of setting the counterparty limit. The results of the independent samples t-test indicated that there is a difference among all banks in Indonesia. All risks registered are significant value (Sig) < 0.05. This study shows that every financial institution officer in Indonesia has a different understanding of assessing risk in setting a counterparty credit limit

Previous research on setting counterparty credit limits from both the probability and impact dimensions shows that the highest risk is when the bank employee is wrong in analyzing counterparty financial performance (balance sheet analysis, P/L statement, financial ratio) (Simamora 2021). Research from (Maya Damayanti and Wicaksana 2021) also revealed a strong correlation between financial literacy and the risk profile of the bank employee. The study found that individuals with higher levels of financial literacy tend to have a higher risk profile than individuals with lower levels of financial literacy.

The present study's findings are in line with (Rad 2017) that different bank employees perceive the practical challenges associated with risk management standards in different ways. Ideally, all banks in Indonesia ought to have the same perspective in assessing the counterparty credit limit. Nevertheless, it became clear that risk management should be improved. Risk management is closely linked to governance structures and business models. Influential risk culture contributes to the Bank's ability to act with changing risks (Schmitt 2019).

The novelty of this study showed that Indonesian banks should be encouraged to develop an effective strategy to improve their counterparty credit risk assessment. To further improve, policymakers can generate appropriate policies to govern the Bank's behavior in mitigating risk.

5. Conclusion

The result shows that there.

1. Reject hypothesis 1 (H_1) that there is a difference in measuring the probability dimension of setting the counterparty limit risks among Indonesian Banks.
2. Reject hypothesis 2 (H_2) that there is a difference in measuring the impact dimension of setting the counterparty limit risks among Indonesian Banks.

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