

**THE DEFAULT STUDY OF CORPORATE AND CORPORATE DEBT
SECURITIES RATED BY PEFINDO**

2007 – 2021

By:

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Executive Summary

At the start of 2021, the fight against the pandemic entered a crucial phase. Countries were launching vaccination campaigns to immunize most of their population at the end of that year. The ongoing vaccination process and successful measures to contain the spreading of Coronavirus prompted some countries to ease rules related to Covid-19. They reopen their economy and it drives the price of the world's main commodities to soar. The soaring price also made concerns about inflation expectations in the future. Further, some central banks around the world still loosen their monetary policy.

On the other side, it has given a positive impact on Indonesia. High demand for Indonesia's main export commodities, such as palm oil and coal, from the country's trading partner, has boosted Indonesia's export value. It also contributed to Indonesia's economic growth. However, surging infection cases of Delta variant of Covid-19 from June 2021 to July 2021 made Indonesia's economic growth to slow down in the third quarter as almost all businesses are affected due to activity restriction measures imposed by Indonesia's government.

From those conditions, it looks that uncertainty is still a challenge for domestic business activities. The challenge also affected to revenue of corporations in domestic, including their financial obligations. As an impact, some corporations in Indonesia failed to meet their financial obligations in 2021, including the debt securities they issued. It led to a surge in the default rate of Indonesian companies in 2021 compared to 2020.

As of 2021, the default rate of debt instruments was 0.95%, while the default rate of issuer companies was 5.91%. The default rate is divided into some sectors, industries, and the initial rating. The default rate of a debt instrument from COR in 2020 and 2021 was 2.20% and 2.38%, respectively while For issuer companies, from 2007 until 2021, the highest default rate occurred in the COR sector, i.e. at 7.63%. PEFINDO noted default occurred in nine industries, both for the debt instrument and issuer company, i.e. Chemical (CHEM), Finance Companies (FINA), food and beverage (FOOD), Manufacturing (MNFG), Property (PROP), Vehicle Rental and Transportation (RENT), Shipping (SHIP), Telecommunications (TLCO), and Trading and Distribution (TRAD). The highest default rate as of 2021 was the shipping industry (SHIP), both for the debt instrument and issuer company. The debt securities instrument of the SHIP industry has the default rate of 97.21%, whereas the issuer companies of the SHIP industry has the default rate of 100.00%. The initial rating BBB has the highest default rate as of 2021, both for the debt instrument and issuer company. The debt instrument with the initial rating BBB has the default rate of 5.14%, while the issuer companies with the initial rating BBB has the default rate of 9.76%.

In the 1-year transition matrix, from 2007 to 2021, the higher rating of the debt instrument and issuer company shows better consistency than a lower rating. Besides having good consistency, the higher rating tends to have a larger percentage to upgrade than the lower rating. While the percentage of the consistency and rating upgrade is greater at a higher rating, the lower ratings tend to have a greater percentage to downgrade to the D rating (default) in the following year compared to higher ratings. Meanwhile, the calculation of Cumulative Average Default Rate during 14 years' time horizon, either debt securities instrument or issuer company, has the same pattern. The longer the time horizon, the higher the default rate of each rating. The lower the rating the greater the default rate.

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1. Introduction

At the start of 2021, the fight against the pandemic entered a crucial phase. Countries were launching vaccination campaigns to immunize most of their population at the end of that year. It prompted World Bank, OECD, and IMF to raise their projection over global economic growth in 2021.

World Bank said that the global economy is expected to expand 4% (YoY) in 2021 and that figure could accelerate near to 5% (YoY) with success pandemic control and a faster vaccination process. OECD predicted that the global economy was going to grow by 5.6% (YoY) in 2021, increasing 1.4 basis points from its forecast in December. Those figures are supported by the gradual deployment of effective vaccines, announcements of additional financial support in some countries, and signs that economies are coping better with measures to suppress the virus. Meanwhile, The International Monetary Fund (IMF) raised its 2021 global growth forecast from 5.5% (YoY) to 6.4% (YoY). Unprecedented public spending to fight the COVID-19 pandemic boosted the IMF's forecast. It showed by the policy of a few countries to funnel fiscal stimulus and the dovish stance of some central banks to maintain the economy running amid the pandemic.

The ongoing vaccination process and successful measures to contain the spreading of Coronavirus prompted some countries to ease rules related to Covid-19. They reopen their economy and trade with their partners. The economic reopening prompted the demand for some commodities to increase. As an impact, the price of the world's main commodities soared after the economic activity had reopened in many countries. The soaring price also made concerns about inflation expectations in the future. Further, some central banks around the world still loosening their monetary policy have created concerns in the market. The U.S. Federal Reserve, in 2021, set the policy rate unchanged at 0.25%. The U.S. central bank's policy to set its policy rate unchanged is also followed by major central banks around the world, such as the European Central Bank, Bank of England, and Bank of Japan. Therefore, high inflation risk as an impact of soaring commodities prices and loose monetary policy were the market's concerns in 2021.

On the other side, the economic reopening and trade among countries after the easing of rules related to Covid-19 has given a positive impact on Indonesia. Indonesia recorded a trade surplus worth USD11.83 billion from January to June 2021. High demand for Indonesia's main export commodities, such as palm oil and coal, from the country's trading partner, has boosted Indonesia's export value. It also contributed to Indonesia's economic growth. The country's growth experienced an acceleration in the first half of 2021 and recorded positive growth for the first time since the pandemic of Covid-19 hit Indonesia's economy to negative territory.

Nevertheless, surging infection cases of Delta variant of Covid-19 from June to July 2021 prompted Indonesia's government to reimpose activity restriction measures. Almost all businesses are affected by these restriction measures. As an impact, Indonesia's economic growth slowed down in the third quarter to 3.51% (YoY). The deceleration is driven by the slowdown in the biggest contributors to Indonesia's GDP, namely manufacturing and trade. The growth of manufacturing slowed down to 3.68% (YoY) in that quarter from 6.58% (YoY) in the previous quarter. Meanwhile, the growth of trade slowed down from 9.45% (YoY) to 5.16% (YoY) in the third quarter.

The surging cases of the Delta Variant Virus also occurred around the world, and it resurged cases of Covid-19 in global, with no exception in most ASEAN countries. International

Monetary Fund (IMF) cut its economic growth forecast for ASEAN-5 consisting of Indonesia, Malaysia, Philippines, Thailand, and Vietnam, by 0.6 points to 4.3% (YoY). The Southeast Asia region has been the epicenter of the more contagious Delta variant of Coronavirus. This condition forced countries in that region to impose travel bans and lockdown measures that could lower economic growth.

From those conditions in 2021, either abroad or domestic, it looks that uncertainty still shadowed business activities in domestic. The uncertainty also affected to revenue of corporations in domestic, including their financial obligations. These challenges caused some corporations in Indonesia to fail to meet their financial obligations, including the debt securities they issued. It led to a surge in the default rate of Indonesian companies in 2021 compared to 2020.

Against this background, PEFINDO introduced the default study report containing an analysis about the default rate of issuer companies and debt securities instrument rated and published by PEFINDO classified on the basis of total, sector, industry, and initial rating from 2007 to 2021, and an analysis of the 1-year transition matrix and Cumulative Average Default Rate during the period. The report is intended to provide a better understanding of the risk for stakeholders in the Indonesian capital market, especially in the corporate debt securities market. Therefore, the report is expected to serve as a reference for stakeholders to see the development and risk of national corporate debt securities because the instruments are a financial intermediation instrument involving the various backgrounds of stakeholders, from issuers, investment managers, investors, regulator to academics.

2. Research Methodology

2.1. Assumptions

This study used assumptions that are used as a reference in collecting, processing, analyzing, and interpreting the data. The assumptions used in this paper are as follows:

1. The population used as data is if a company issues a debt instrument rated and published by PEFINDO. Therefore, the term "debt instrument" is all types of debt instruments issued by a company. The unit used to measure the instrument is the issuance value. The company issuing the debt instruments is referred to as the "issuer company," and the unit used is the "company unit".
2. The rating of each year during the observation period (2007-2021), either the rating of the debt instrument or the issuer company, is the rating as of December 31 of that year.

Example : If a debt instrument or issuer company is rated AA+ (Double A Plus) in 2012, then it is the rating of debt instrument or issuer company as of December 31, 2012.

3. A rating with the same letter but a different notch, both the rating of the debt instrument or the issuer company, in the data analysis will be considered the same or equivalent.

Example : Rating A+ (Single A Plus), A (Single A), and A- (Single A Minus) will be considered as A.

4. Conditions of default:

- 4.1. Default for the debt instrument is a condition in which it is declared as in default during the period it is held by the investor. The default on the debt instrument occurs if the issuer company is unable to meet part or all of the principal or interest on the debt instrument when (or even before) it is due.
- 4.2. Default for the issuer company is a condition in which the issuer experiences default on the debt instrument it issued.

For the purpose to calculate Transition Matrix and Cumulative Average Default Rate, if the issuer company is declared as default, then the issuer company will be considered as the new entity when the company issues a new debt instrument or if the company has another instrument that still listing (not yet due date). Meanwhile, with the same analogy, if the instrument experiences default and it is restructured, or other things that cause the instrument still active, then the instrument will be considered as a new instrument with the same issuance value until it is mature.

5. Conditions of Not Rated (NR):

- 5.1. NR for the debt instrument is where it is no longer rated by PEFINDO. NR will be given under one of two conditions: one year after the maturity year, or one year after the year of the early repayment.
- 5.2. NR for issuer companies is where the issuer company is no longer rated by PEFINDO. NR will be given to an issuer company one year after its rating expires, and it is not rated again by PEFINDO after the expired year.

In the case of the rating of the debt instrument being withdrawn after experiencing default, it is still categorized as a default debt instrument, or is not included in NR (Not Rated).

2.2. Data and Source of Data

The data used in this study meets the assumptions described in the previous section and it is divided in two groups, namely Debt Instrument Data and Issuer Company Data. The data source used in this study came from Indonesia Rating Highlight (IRH), Rating Announcement (RA), Press Release (PR), Rating Rationale (RR), and other data sources from PEFINDO. The observation period used was from 2007 to 2021. The restriction of the observation period and the total population (data) included in the study were carried out solely so the debt instrument and the issuer company could be more easily monitored and analyzed.

2.3. Default Rate

Referring to data distribution, the default rate is calculated for the debt instrument and the issuer company annually during the observation period. The calculation of the default rate for debt instruments and the issuer company on an annual basis during the observation period is also carried out by division based on sector, industry, and initial rating.

The default rate based on Cutler and Edeler (1958) is the ratio of cumulative values based on discrete time, which is commonly used by the global rating agencies. The default rate at time t will be in the form of a percentage of the ratio between the cumulative value of the default value up to time t , compared to the cumulative value of the total value up to time t . For the debt instrument, the value used for the calculation of the default rate is the "issuance value" of the debt instrument, while for the issuer company, the value used for the calculation of the default rate is the "unit" of the issuer company. The formulation for calculating the default rate for debt instruments and issuer companies is as follows:

1. The debt Instrument

$$DeR_t = \frac{\sum_{k=1}^t DIV_k}{\sum_{k=1}^t IV_k}, k = 1, 2, \dots, t \dots\dots\dots (1)$$

Explanation:

- DeR_t : Default rate at time t .
- DIV_k : The total issuance value of the debt instrument that defaulted at time k .
- IV_k : Total issuance value of debt instruments at time k .

2. Issuer Companies

$$DeR_t = \frac{\sum_{k=1}^t DI_k}{\sum_{k=1}^t I_k}, k = 1, 2, \dots, t \dots\dots\dots (2)$$

Explanation:

- DeR_t : Default rate at time t .
- DI_k : Total issuer companies that have defaulted at time k .
- I_k : Total issuer companies at time k .

2.4. Rating Transition Matrix

The rating transition matrix is used to measure the percentage of ranking transitions in a given time. In the Default Study by the global rating agencies, the matrix is usually used only to measure the percentage of the rating transition of companies rated by the rating agency, and the percentage is calculated based on company/entity units. Because the matrix only views the migration of the rating within a certain time, in the calculation there is the possibility a company/entity will be counted more than once. However, in this paper, in addition to calculating the percentage of rating transition at a certain time for the issuer company, PEFINDO also makes the matrix for the debt instrument. The calculation of the percentage of the rating transitions takes the same analogy with calculations based on company/entity units, but with different units. The unit used to calculate the percentage of ranking transition for the debt instruments is to use the issuance value for each rating. This is because using the same analogy with the calculation based on the company/entity unit, in the calculation there is the possibility the value of the debt instruments will be calculated more than once.

The calculation of the elements in the rating transition matrix in this paper, both for the debt instrument and issuer company, uses the Markov Chain approach. Measurement of the transition with the Markov Chain uses a stochastic approach based on historical data held during the observation period. Mathematically, the stochastic process ($X_t, t = 0, 1, 2, 3, \dots$) is done by

taking a finite number, or it can be counted, and if $X_t = i$ is state i at time t , and the process can move from state i to state j with P_{ij} that equals:

$$P_{ij} = P(X_{t+1} = j | X_t = i, X_{t-1} = i_{t-1}, \dots, X_1 = i_1, X_0 = i_0) \dots\dots\dots (3)$$

where for all conditions of $i_0, i_1, i_2, \dots, i_{n-1}, i_n = i, j$ and all of $t \geq 0$, then the process in equation (3) is called the Markov Chain.

In this equation, it can be said that for the Markov Chain, the conditional distribution for the condition X_{t+1} is independent of the previous state $X_0, X_1, X_2, \dots, X_{t-1}$ and only depends on the present state. The value of P_{ij} represents that the process, when in state i , will make a transition into state j (Ross, 2007).

Based on equation (3), we can write $P_{ij} = P(X_1 = j | X_0 = i)$ as a one step transition from state i to state j on the Markov Chain. Values of P_{ij} can also be expressed in the form of the matrix $N \times N$ expressed as the one-step transition matrix as follows:

$$P = \begin{bmatrix} P_{11} & P_{12} & \dots & P_{1N} \\ P_{21} & P_{22} & \dots & P_{2N} \\ \vdots & \vdots & \ddots & \vdots \\ P_{N1} & P_{N2} & \dots & P_{NN} \end{bmatrix}, \text{ with } P_{ij} \geq 0 ; \sum_{j=1}^N P_{ij} = 1 ; i, j = 1, 2, \dots, N \dots\dots\dots (4)$$

One of estimation methods for calculating the P_{ij} value that will be used to fill the elements contained in the matrix P is the Cohort Method. According to Christensen et al. (2004), the estimator for $p_{ij}(t_k)$ in one time period with $t_0, t_1, t_2, \dots, t_T$ is a discrete time point with time intervals $\Delta t_k = t_{k+1} - t_k$ and can be written as follows:

$$\hat{p}_{ij}(t_k) = \frac{n_{ij}(\Delta t_k)}{n_i(t_k)} \dots\dots\dots (5)$$

Where $n(\Delta t_k)$ is the number of observations that move from condition i to condition j between periods t_k and t_{k+1} and $n_i(t_k)$ is the number of observations in state i at time t_k . If it is assumed that the time period is homogeneous and we have data from time t_0 to time t_T , the most likely predictors for p_{ij} are as follows:

$$\hat{p}_{ij}(t_k) = \frac{\sum_{k=0}^{n-1} n_{ij}(\Delta t_k)}{\sum_{k=0}^{n-1} n_i(t_k)} \dots\dots\dots (6)$$

2.5. Cumulative Average Default Rate

Cumulative average default rate describes the rate of default of the debt instrument or the issuer company in a year within a certain time horizon. In general, to calculate the cumulative average default rate, the first step is to create a static pool. The static pool is a change in a rating of the instrument debt or the issuer company within a certain time period. After creating a static pool, the second step is to calculate the Marginal Default Rate.

If $m_t^Y(R)$ is the amount of issuance value of the debt instrument or number of the issuer company which has rating R (AAA, AA, A, BBB, BB, B, CCC), which is still the amount of issuance value of the debt instrument or number of the issuer company that has rating R (AAA, AA, A, BBB,

BB, B, CCC) until year Y (2007, 2008, ..., 2020) and then defaulted in year t . If $n_t^Y(R)$ is the issuance value of the debt instrument or number of the issuer company rated R (AAA, AA, A, BBB, BB, B, CCC) up to year Y (2007, 2008, ..., 2020) and not defaulted until year t . According to Fons (1994), marginal default rate is calculated with the formulation as follows:

$$d_t(R) = \frac{\sum_{Y=2007}^T m_t^Y(R)}{\sum_{Y=2007}^T n_t^Y(R)} \dots\dots\dots (7)$$

After the marginal default rate is obtained, the cumulative average default rate for year t is obtained by the formula:

$$D_t(R) = D_{t-1}(R) + d_t(R) \dots\dots\dots (8)$$

3. Data Descriptive Analysis

3.1. Overview

In 2021, only seven new issuer companies issued debt instruments. The issuer company will be declared a new issuer company when it issues debt instruments for the first time. Those seven issuer companies consist of six companies from Corporate or Non-Financial Institution and one company from Financial Institution, and the majority have an A (Single-A) rating.

Figure 1. Annual Default Rate

Year	Default Rate (Debt Securities Instrument)	Default Rate (Issuer Company)
2007	0.00%	0.00%
2008	0.00%	0.00%
2009	1.07%	1.92%
2010	1.31%	3.33%
2011	1.01%	2.53%
2012	1.33%	2.97%
2013	1.06%	2.59%
2014	0.94%	2.46%
2015	0.79%	2.27%
2016	0.61%	2.07%
2017	0.51%	2.37%
2018	0.92%	3.87%
2019	0.79%	3.70%
2020	0.85%	5.61%
2021	0.95%	5.91%

Source: PEFINDO Database (2022)

The issuance value of the debt instrument in 2021 was IDR83.29 trillion or lower than the issuance value in 2019. Around 57% of the issuance value in 2021 came from Non-Financial Institution and around 60% of the issuance value in 2021 has A (Single-A) rating. Nevertheless, from 2007 to 2021, the issuance value and issuer companies cumulatively were IDR993.87 trillion and 203 companies, respectively.

In 2021, only one company experienced default whereas the default issuance value was IDR1.73 trillion. From that figure, the worth of IDR300 billion is contributed by the default issuer company in the previous year. Therefore, along the observation period, the default issuance value

was IDR9.46 trillion which came from 12 issuer companies. The default debt instruments and the issuer companies issued that instrument are classified into some sectors and industries and based on the initial rating when the default debt instruments are listed for the first time and the issuer companies when they issued debt instrument for the first time.

The default rate of the debt instrument in 2021 was 0.95% whereas the default rate of the issuer company in the same year was 5.91%. The 0.95% is obtained by dividing the cumulative default issuance value as of 2021 by the cumulative issuance value as of 2021 based on the formulation in Equation 1. This method is also applied to calculate the default rate for the issuer company and to calculate the default rate for other years in the observation period.

3.2. Default Rate Per Sector

The classification of sectors in debt instruments is divided into three: the Corporate (COR), Financial Institution (FIN) and Other sectors (OTH). The COR sector consists of debt instruments from companies issuing debt instruments in addition to financial institutions such as banks, insurance and securities. The FIN sector consists of debt instruments from companies issuing debt instruments which are financial institutions. Other sectors (OTH) consist of debt instruments that are not from the corporate and financial institutions sectors. Debt instruments in the OTH category include asset-backed securities (ABS), infrastructure funds (DINFRA), and debt instruments issued by municipal governments. Because no municipal governments issued debt instruments during the observation period, the debt instruments included in OTH were only ABS and DINFRA.

The sector classification of the issuer companies is divided into two sectors, namely the corporate sector (COR) and the financial institution sector (FIN). This refers to the same meaning as the classification of the debt instrument. The FIN sector consists of issuer companies classified as financial institutions, while COR is non-financial issuer companies.

Figure 2. Default Rate Per Sector



Source: PEFINDO Database (2022)

The default rate of debt instruments from the COR sector recorded an increase during two consecutive years. The default rate of a debt instrument from COR in 2020 and 2021 was 2.20% and 2.38%, respectively. The default rate of FIN experienced a decline since 2019 and it was relatively stable two years after that with the default rate being 0.10% as of 2021. Meanwhile, OTH was no default during the observation period.

For issuer companies, from 2007 until 2021, the highest default rate occurred in the COR sector, i.e. at 7.63%. The Coronavirus outbreak that disrupted the economy has caused a low increase in new companies issuing debt instruments in 2021 and the default company in 2021 came from COR sector. As an effect, the default rate of COR sector jumped as of 2021. Meanwhile, from 2007 until 2021, the default rate of FIN sector was at 2.78%.

3.3. Default Rate per Industry

The number of debt instrument industries in this paper is divided into 42 industries, while the number of issuer company industries is 40. This difference is because the ABS instrument and the DINFRA instrument do not have issuers in the form of a corporate entity. Therefore, they are not included in the industry classification of the issuer company. The following is a list of industries for debt instruments and issuer companies used in this default study:

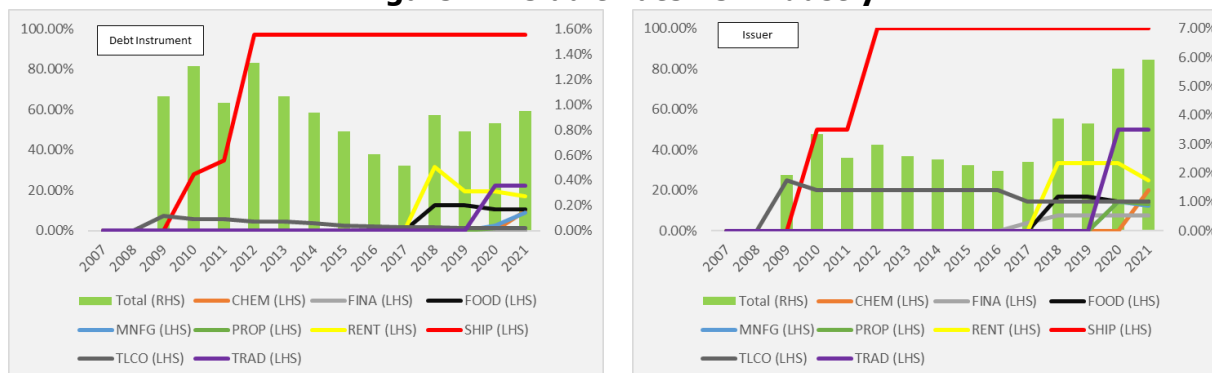
Figure 3. List of Industrial Classifications

No.	Code	Industry Name	No.	Code	Industry Name
1	ABSE	Asset Backed Securitiesi **	22	MINC	Mining Contractor
2	ANHS	Animal Feed and Animal Husbandry	23	MINE	Mining
3	ARPT	Airport	24	MNFG	Manufacture
4	AUTO	Automotive	25	PHAM	Pharmacy
5	BANK	Banking	26	PLAN	Plantation
6	CEME	Cement	27	POWR	Electricity & Energy
7	CHEM	Chemical	28	PROP	Property
8	CONS	Construction	29	PULP	Pulp & Paper
9	COUR	Courier and Logistics Services	30	RENT	Vehicle Rental & Transportation
10	DINF	DINFRA **	31	REST	Restaurant
11	EPCC	Procurement & Construction Engineering	32	RETL	Retail
12	FERT	Fertilizer	33	SCRT	Security
13	FINA	Finance Company	34	SHIP	Shipping
14	FINN	Finance Industry	35	SPFI	Special Financial Institutions
15	FISH	Fisheries	36	SPRT	Seaports
16	FOOD	Food and Beverage	37	SUGA	Sugar Processing
17	HEAL	Healthcare	38	TIMB	Woodbase & Agro
18	HLDI	Holding Investment Company	39	TLCO	Telecommunication
19	ITEQ	Information Technology & Information Services	40	TOBA	Tobacco
20	LESR	Tourism & Recreation Objects	41	TOLL	Toll Road
21	MEDA	Media	42	TRAD	Trading & Distribution

Explanation: **Industries not included in the Issuer Company Industry classification.
Source: PEFINDO Database (2022)

Because the default assumption is based on the debt instrument issued by the issuer company, industries that have defaulted in this paper will be the same, both for the debt instrument and the issuer company. The difference between the two lies only in the industry's default rate for the debt instrument and issuer company. From 2007 until 2021, PEFINDO noted default occurred in nine industries, both for the debt instrument and issuer company. Industries other than the nine did not experience a default during the observation period, so the default rate is 0.00%. The nine industries were Chemical (CHEM), Finance Companies (FINA), food and beverage (FOOD), Manufacturing (MNFG), Property (PROP), Vehicle Rental and Transportation (RENT), Shipping (SHIP), Telecommunications (TLCO), and Trading and Distribution (TRAD).

Figure 4. Default Rate Per Industry



Source: PEFINDO Database (2022)

For debt instruments, the highest default rate from 2007 until 2021 was the shipping industry (SHIP) at 97.21%. Its default rate was the same from 2012 to 2021, because there were no debt instruments issued in the industry. Meanwhile, FINA had the lowest default rate until 2021. The default rate of FINA as of 2021 was down to 0.31%. The low default rate is likely due to the issuance of debt instruments rated and published by PEFINDO which are still dominated by the finance and banking industries. For the other seven industries, the default rate until 2021 was 22.44% (TRAD), 17.04% (RENT), 10.52% (FOOD), 9.77% (CHEM), 9.09% (MNFG), 1.34% (TLCO), dan 1.16% (PROP).

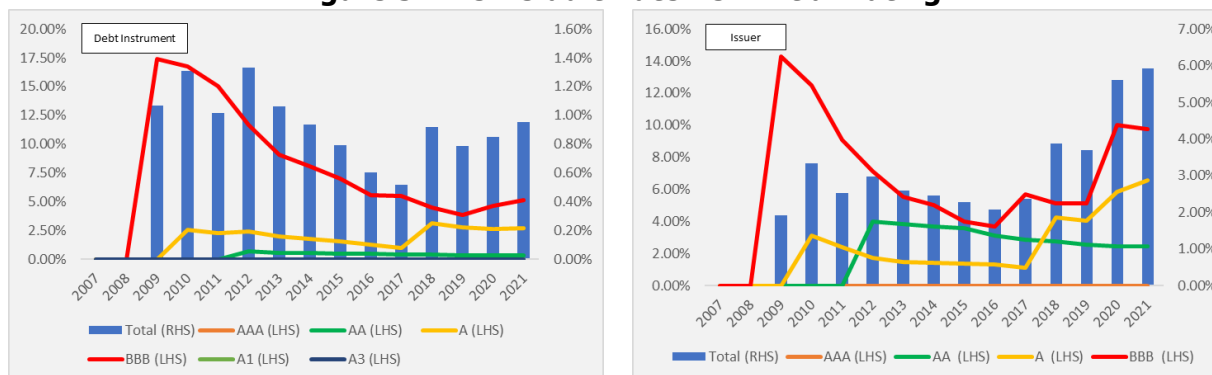
For issuer companies, the highest and the lowest default rate from 2007 until 2021 came from the same industries as the debt instrument described in the previous section – finance and shipping. Even with the same industries, the issue company default rate is different from the debt instrument default rate. From 2007 until 2021, the issuer company default rate for SHIP is 100%, and for FINA 7.41%. SHIP has had the same default rate since 2012 because of no new companies issuing debt instruments from this industry. The other seven industries, the default rate from 2007 until 2021 is 50.00% (TRAD), 25.00% (RENT), 20.00% (CHEM), 14.29% (FOOD, TLCO), 13.33% (PROP), dan 12.50% (MNFG).

3.4. Default Rate per Initial Rating

The initial rating is the rating first received by the issuer company or debt instrument. For the issuer company, the initial rating is the rating received when issuing the debt instrument for the first time - when the company becomes a new issuer for the first time. The initial debt instrument rating is the rating received by the instrument when listed or emitted in the capital market for the first time. During the observation period, the initial rating recorded for the debt instrument is AAA, AA, A, BBB, A1, and A3. The A1 and the A3 are a rating for short-term debt instruments. Meanwhile, the initial rating for the issuer company is AAA, AA, A, and BBB.

In this section, the calculation of the default rate based on the initial rating is performed to provide information on how much the default rate is based on the initial rating. This is made to provide information to investors who invest in corporate debt securities by buying the instruments and holding them to maturity (hold to maturity). With the default rate at the initial rating, it is hoped corporate debt investors will know how much the risk of the default of the corporate bond on a specified rating when an instrument is issued, or the risk of the issuer company that will issue debt instruments.

Figure 5. The Default Rate Per Initial Rating



Explanation: Issuance Value of Debt Securities Instrument (Left), Number of Issuer Companies (Right)
Source: PEFINDO Database (2022)

For debt instruments, the default rate as of 2021 decreased from the previous year for the initial rating AA. The default rate for the initial rating AA was 0.34%. But the default rate for the initial rating A and BBB rose to 2.67% and 5.14%, respectively, as of 2021. For the initial rating AAA, A1, and A3, the default rate during the observation period was 0%. In other words, no debt instrument with the AAA, A1 and A3 rating experienced default during the observation period. The default rate until 2021 for each initial rating also shows the higher rating relatively has a lower default rate than the lower rating.

Meanwhile, for the issuer company, the default rate of the initial rating BBB rating as of 2021 was 9.76%. The default rate of the initial rating AA and A as of 2021 was 2.44% and 6.54%, respectively. The initial rating AAA has had a default rate of 0% since 2007. In other words, no issuer companies with an initial rating of AAA defaulted on debt instruments they issued from 2007 to 2021.

3.5. One-Year Rating Transition Matrix

The rating transition matrix shows the percentage of the rating transition over time. The rows in the matrix state the initial rating, while the columns state the change in the rating at a later time. The elements in the matrix are the proportion of the change in rating in the rows to the rating in the columns. In this paper, the matrix used is the 1-year transition matrix. This means that a change in the rating in the matrix is a change in the rating within one year between 2007 and 2021.

Figure 6. One-Year Transition Matrix of the Debt Instrument

From/to	Σ Issuance Value (IDR billion)	AAA	AA	A	BBB	BB	B	CCC	D	NR
AAA	1,541,308.92	83.79%	0.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	15.43%
AA	1,083,075.73	5.54%	80.32%	1.38%	0.00%	0.17%	0.00%	0.00%	0.00%	12.59%
A	650,014.88	0.21%	4.48%	76.86%	4.34%	0.39%	0.02%	0.00%	0.46%	13.24%
BBB	137,755.97	0.00%	0.42%	5.59%	73.93%	3.09%	0.20%	0.56%	2.59%	13.60%
BB	9,440.50	0.00%	0.00%	0.00%	0.00%	15.17%	0.00%	1.59%	20.13%	63.12%
B	400.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	70.00%	0.00%	30.00%
CCC	1,355.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.07%	60.89%	28.04%

Source: PEFINDO Database (2022)

Figure 7. One-Year Transition Matrix of the Issuer Company

From/To	Σ Issuer (Unit)	AAA	AA	A	BBB	BB	B	CCC	D	NR
AAA	172	95.35%	1.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.91%
AA	347	4.32%	87.32%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	5.48%
A	522	0.00%	4.98%	83.91%	5.36%	0.57%	0.00%	0.00%	0.77%	4.41%
BBB	207	0.00%	0.48%	3.86%	75.85%	3.86%	0.48%	0.97%	2.42%	12.08%
BB	15	0.00%	0.00%	0.00%	0.00%	40.00%	0.00%	0.00%	20.00%	40.00%
B	1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
CCC	3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	66.67%

Source: PEFINDO Database (2022)

The higher rating of the debt instrument and issuer company shows better consistency than a lower rating. This consistency can be seen from the percentage of a rating that remains at the same level for the following year. For the debt instrument, the best consistency is showed by the AAA rating. The AAA rating remains in the same rating in the following year with a percentage of 83.79%. This means that from IDR1,541,308.92 billion issuance value which has the AAA rating, IDR1,291,412 billion (85.19%) will stay at AAA in the following year. For the issuer company, the AAA rating also shows the best consistency compared to the lower ratings. The AAA rating has a percentage of 95.35% to stay at AAA in the following year. This means that out of the 172 issuer companies with the AAA rating, 164 will stay at AAA in the following year.

Besides having good consistency, the higher rating tends to have a larger enough percentage to upgrade than the lower rating. In the debt instrument transition matrix, the percentage of AA ratings upgraded to AAA in the following year is 5.54%, while the percentage downgraded to A is 1.38%. This means that from the issuance value of debt instruments worth IDR1,083,075.73 billion for the AA rating, IDR59,984.5 billion (5.54%) is upgraded to AAA in the following year, while IDR14,964.19 billion (1.38%) is downgraded to A. For the issuer company transition matrix, AA ratings upgraded to AAA were 4.40%, and 3.14% downgraded to A. Meanwhile, in the transition matrix for issuer company, the AA rating upgraded to AAA rating is 4.32% and the percentage downgraded to A is 2.88%. This shows that of 347 issuer companies with the AA rating issuing a debt instrument, there was a rating upgrade from AA to AAA by 15 companies and a rating downgrade from AA to A by 10 companies in the following year.

If the percentage of the consistency and rating upgrade is greater at a higher rating, then different conditions are shown by lower ratings. Lower ratings tend to have a greater percentage to migrate to the D rating (default) in the following year compared to higher ratings. The rating with the largest percentage to migrate to D in the following year, either for the debt instrument or issuer company, is CCC. The percentage change of CCC to migrate to D in the following year for the debt instrument is 60.89%, while for the issuer company it is 33.33%. B rated debt instruments and issuer companies stand at 0.00% to migrate to D because, during the observation period, PEFINDO has a limited history to monitor debt instruments and issuer companies rated B.

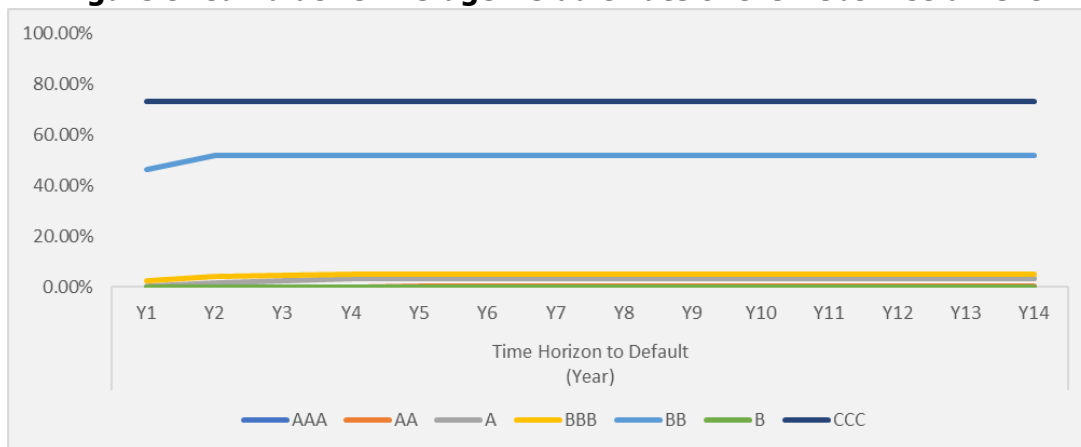
3.6. Cumulative Average Default Rate

The cumulative average default rate in this paper is calculated for ratings AAA, AA, A, BBB, BB, B, CCC for the time horizon from the first year to the fourteenth year. The default rate in the 14-year time horizon is the default rate based on historical data in the time horizon. Overall, the cumulative average default rate between the debt instrument rating and the issuer company

rating has the same pattern. The longer the time horizon, the higher the default rate of each rating. The lower the rating the greater the default rate.

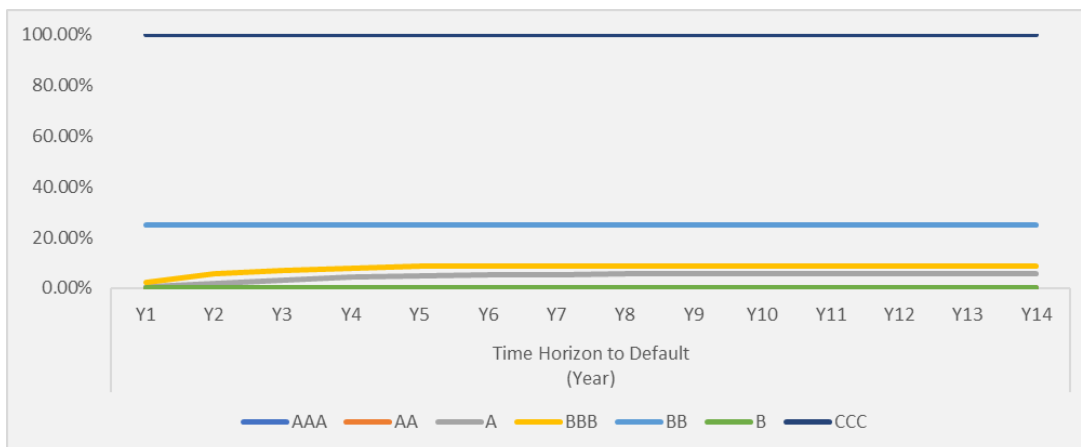
Debt instruments with AAA, B, and CCC ratings have a constant default rate throughout the 14-year time horizon. The AAA and B ratings have a default rate of 0.00%, while CCC is 73.33%. Debt instruments rated AA have a default rate of 0.00%, but not because no instrument with that rating has defaulted within the 14-year time horizon. This is because, during the observation period, PEFINDO has a limited history to monitor debt instruments rated AA. Debt instruments rated AA were in default for the first time in the fifth year at 0.16%, and the default rate was constant with that value until the fourteenth year. The default of debt instruments rated A in the first to fourth years was 0.44%, 1.41%, 2.37%, and 3.16%, respectively, while the default rate rose again to 3.44% in the fifth year and remained at that value until the fourteenth year. Meanwhile, debt instruments rated BBB have the default rate at 2.34% in the first year and then it increased to 4.86% in the fourth year, and remained at that value until the fourteenth year. As for the BB rating, the default rate was 46.55% in the first year, rising to 51.78% in the second year, and that value lasted until the fourteenth year.

Figure 8. Cumulative Average Default Rate of the Debt Instrument



Source: PEFINDO Database (2022)

Figure 9. Cumulative Average Default Rate of the Issuer Company



Source: PEFINDO Database (2022)

Issuer companies rated AAA, BB, B, and CCC have a constant default rate throughout the 14-year time horizon. AAA and B have a default rate of 0.00%, with BB and CCC at 25.00% and 100.00%, respectively. B rated issuer companies have a default rate of 0.00%, but not because none defaulted within the 14-year time horizon. This was because, during the observation period, PEFINDO had a limited history to monitor B rated issuer companies. AA rated issuer companies experienced default for the first time in the fifth year at 0.35%, and the rate remained constant until the fourteenth year. Before the default rate is stable at 5.76% since the eighth year, the default rate of issuer company with A rating continues to increase from the first year (0.74%) to the seventh year (5.50%). BBB rated issuer companies had a default rate of 2.45% in the first year, rising to 8.69% in the fifth year, and staying at that value to the fourteenth year.

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Appendix: 1. Survival Pool Cumulative Average Default Rate (Based on Issuance Value)

1.a. Peringkat-AAA (*triple-A*)

AAA		Time Horizon to Default													
Year Pool	Issuance Value (Rp Billion)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	1,000.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	1,000.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	5,310.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	11,348.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	15,034.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	22,809.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	42,771.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	89,832.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	114,055.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	164,474.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	237,813.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	257,608.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	294,347.90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	283,903.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	246,486.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuance Value	237,814	227,872	135,488	116,126	37,695	32,636	12,699	11,125	1,995	1,995	1,995	0	0	0	0
Defaultable Issuance Value	1,549,982	1,322,109	1,186,622	1,070,496	1,032,801	1,000,166	987,467	976,342	974,347	972,352	970,357	970,357	970,357	970,357	970,357
Default Issuance Value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

1.b. Peringkat-AA (*double-A*)

AA		Time Horizon to Default													
Year Pool	Issuance Value (Rp Billion)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	10,500.00	0	0	0	0	900	0	0	0	0	0	0	0	0	0
2008	16,600.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	36,511.74	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	65,009.76	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	89,995.96	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	126,754.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	130,128.51	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	87,716.78	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	72,900.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	83,133.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	84,791.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	93,004.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	94,864.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	91,166.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	108,725.91	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuance Value		136,404	145,925	131,674	127,844	81,824	79,478	33,974	33,538	9,120	8,470	6,970	0	0	0
Defaultable Issuance Value		1,055,398	909,473	777,799	649,956	568,132	487,753	453,779	420,241	411,121	402,651	395,681	395,681	395,681	395,681
Default Issuance Value		0	0	0	0	900	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%

1.c. Peringkat-A (*single-A*)

A		Time Horizon to Default													
Year Pool	Issuance Value (Rp Billion)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	11,525.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	15,000.00	0	600	150	900	0	0	0	0	0	0	0	0	0	0
2009	16,817.00	0	0	1340	0	0	0	0	0	0	0	0	0	0	0
2010	14,469.00	0	1340	0	0	0	0	0	0	0	0	0	0	0	0
2011	20,834.00	1340	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	33,432.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	38,278.00	0	0	0	0	900	0	0	0	0	0	0	0	0	0
2014	43,754.00	0	0	0	1900	0	0	0	0	0	0	0	0	0	0
2015	52,608.78	0	0	1900	0	150	0	0	0	0	0	0	0	0	0
2016	62,798.47	0	2100	0	260	0	0	0	0	0	0	0	0	0	0
2017	80,931.39	50	0	491	266.12	0	0	0	0	0	0	0	0	0	0
2018	78,319.96	0	150	926.12	0	0	0	0	0	0	0	0	0	0	0
2019	86,619.46	150	1426.12	0	0	0	0	0	0	0	0	0	0	0	0
2020	94,627.82	1426.12	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	108,105.38	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuance Value		86,079	89,092	82,131	78,094	44,311	39,270	3,916	4,352	0	0	1,500	0	0	0
Defaultable Issuance Value		672,041	579,983	492,236	409,336	361,699	321,379	317,463	313,111	313,111	313,111	311,611	311,611	311,611	311,611
Default Issuance Value		2,966	5,616	4,807	3,326	1,050	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		0.44%	0.97%	0.98%	0.81%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		0.44%	1.41%	2.37%	3.16%	3.44%	3.44%	3.44%	3.44%	3.44%	3.44%	3.44%	3.44%	3.44%	3.44%

1.d. Peringkat-BBB (*triple-B*)

BBB		Time Horizon to Default													
Year Pool	Issuance Value (Rp Billion)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	2,275.00	0	675	0	0	0	0	0	0	0	0	0	0	0	0
2008	2,625.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	2,450.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	1,610.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	2,410.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	2,310.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	3,970.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	5,183.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	5,967.88	0	42	0	0	0	0	0	0	0	0	0	0	0	0
2016	11,462.88	332	1000	0	0	0	0	0	0	0	0	0	0	0	0
2017	17,962.88	2100	0	200	200	0	0	0	0	0	0	0	0	0	0
2018	21,845.26	0	541	300	0	0	0	0	0	0	0	0	0	0	0
2019	23,679.26	1141	300	0	0	0	0	0	0	0	0	0	0	0	0
2020	34,004.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	33,568.19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuance Value		18,736	18,916	13,432	9,780	4,485	4,340	1,500	1,500	0	0	0	0	0	0
Defaultable Issuance Value		152,588	130,098	114,108	103,828	99,143	94,803	93,303	91,803	91,803	91,803	91,803	91,803	91,803	91,803
Default Issuance Value		3,573	2,558	500	200	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		2.34%	1.97%	0.44%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		2.34%	4.26%	4.68%	4.86%	4.86%	4.86%	4.86%	4.86%	4.86%	4.86%	4.86%	4.86%	4.86%	4.86%

1.e. Peringkat-BB (*double-B*)

BB		Time Horizon to Default													
Year Pool	Issuance Value (Rp Billion)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	750.00	600	150	0	0	0	0	0	0	0	0	0	0	0	0
2010	200.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	740.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	328.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	181.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	1,962.00	1000	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	1,014.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	570.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	3,695.00	300	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	600.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuance Value		5,959	651	181	0	0	0	0	0	0	0	0	0	0	0
Defaultable Issuance Value		4,082	1,531	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Default Issuance Value		1,900	150	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		46.55%	9.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		46.55%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%	51.78%

1.f. Peringkat-B (*single-B*)

B		Time Horizon to Default													
Year Pool	Issuance Value (Rp Billion)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	280.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	120.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuance Value		120	280	0	0	0	0	0	0	0	0	0	0	0	0
Defaultable Issuance Value		280	0	0	0	0	0	0	0	0	0	0	0	0	0
Default Issuance Value		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

1.g. Peringkat-CCC (triple-C)

CCC		Time Horizon to Default													
Year Pool	Issuance Value (Rp Billion)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	675.00	675	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	150.00	150	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	280.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	100.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	150.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	150.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuance Value		380	0	0	0	0	0	0	0	0	0	0	0	0	0
Defaultable Issuance Value		1,125	300	300	300	300	300	300	300	300	300	300	300	300	300
Default Issuance Value		825	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		73.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%	73.33%

Appendix: 2. Survival Pool Cumulative Average Default Rate (Based on Issuer Companies)

2.a. Peringkat-AAA (*triple-A*)

AAA		Time Horizon to Default													
Year Pool	Total Issuer (Unit)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuer		5	3	1	1	1	1	0	0	0	0	0	0	0	0
Defaultable Issuer		191	188	187	186	185	184	184	184	184	184	184	184	184	184
Default Issuer		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

2.b. Peringkat-AA (*double-A*)

AA		Time Horizon to Default													
Year Pool	Total Issuer (Unit)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2008	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuer		19	17	18	17	16	9	5	4	2	1	0	0	0	0
Defaultable Issuer		357	340	322	305	289	279	274	270	268	267	267	267	267	267
Default Issuer		0	0	0	0	1	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%

2.c. Peringkat-A (*single-A*)

A		Time Horizon to Default													
Year Pool	Total Issuer (Unit)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	20	0	1	0	1	0	0	0	0	0	0	0	0	0	0
2009	22	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2010	24	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2011	32	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	41	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2013	46	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2014	45	0	0	0	2	0	1	0	0	0	0	0	0	0	0
2015	47	0	0	2	0	2	0	0	0	0	0	0	0	0	0
2016	46	0	1	0	2	0	0	0	0	0	0	0	0	0	0
2017	47	1	0	2	1	0	0	0	0	0	0	0	0	0	0
2018	45	0	1	1	0	0	0	0	0	0	0	0	0	0	0
2019	46	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2020	44	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuer		23	30	30	26	21	19	8	8	5	2	2	0	0	0
Defaultable Issuer		539	505	470	438	411	389	380	371	365	363	361	361	361	361
Default Issuer		4	5	6	6	3	1	1	1	0	0	0	0	0	0
Marginal Default Probabilities		0.74%	0.99%	1.28%	1.37%	0.73%	0.26%	0.26%	0.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		0.74%	1.72%	2.98%	4.31%	5.01%	5.25%	5.50%	5.76%	5.76%	5.76%	5.76%	5.76%	5.76%	5.76%

2.d. Peringkat-BBB (*triple-B*)

BBB		Time Horizon to Default													
Year Pool	Total Issuer (Unit)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2008	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	17	0	1	0	0	1	0	0	0	0	0	0	0	0	0
2016	19	1	1	0	1	0	0	0	0	0	0	0	0	0	0
2017	25	1	0	2	0	0	0	0	0	0	0	0	0	0	0
2018	28	0	3	0	0	0	0	0	0	0	0	0	0	0	0
2019	26	3	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuer		25	26	22	20	7	7	3	1	2	2	2	1	0	0
Defaultable Issuer		204	173	145	123	115	107	104	103	101	99	97	96	96	96
Default Issuer		5	6	2	1	1	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		2.45%	3.47%	1.38%	0.81%	0.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		2.45%	5.83%	7.13%	7.89%	8.69%	8.69%	8.69%	8.69%	8.69%	8.69%	8.69%	8.69%	8.69%	8.69%

2.e. Peringkat-BB (*double-B*)

BB		Time Horizon to Default													
Year Pool	Total Issuer (Unit)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuer		6	2	1	0	0	0	0	0	0	0	0	0	0	0
Defaultable Issuer		12	7	6	6	6	6	6	6	6	6	6	6	6	6
Default Issuer		3	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%

2.f. Peringkat-B (*single-B*)

B		Time Horizon to Default													
Year Pool	Total Issuer (Unit)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuer		0	1	0	0	0	0	0	0	0	0	0	0	0	0
Defaultable Issuer		1	0	0	0	0	0	0	0	0	0	0	0	0	0
Default Issuer		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

2.g. Peringkat-CCC (triple-C)

CCC		Time Horizon to Default													
Year Pool	Total Issuer (Unit)	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary Statistic															
Withdrawn Issuer		2	0	0	0	0	0	0	0	0	0	0	0	0	0
Defaultable Issuer		1	0	0	0	0	0	0	0	0	0	0	0	0	0
Default Issuer		1	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Default Probabilities		100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Default Probabilities		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

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