Macroprudential Policy and Credit Risk in Dual Banking System

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Abstract

Issues related to financial stability are a very complex problem, especially the global crisis impact in 2008. Based on these conditions, the Basel Committee on Banking Supervision introduced a macroprudential policy to mitigate financial system risk systemically. The study aims to analyze the impact of macroprudential policy on the banks’ risk exposure by adopting credit risk as a risk proxy. By adopting a panel dynamic approach as analytical tool in this study, credit risk is used to be a dependent variable while independent variables consist of the reserve requirement, capital buffer, and a net open position in either conventional and Islamic banks. The observation period starts from 2014 to 2019 with quarterly data, and it involves 22 banks in Indonesia. The study found that macroprudential policy has a long-run relationship to Islamic banks’ credit risk but not to conventional banks. The result from Variance Decompositions (VDs) and Impulse Response Factors (IRFs) also showed that each independent variable have an impact to credit risk value in many different directions. According to that, this study suggests that Indonesian financial authority has to pay attention to the different effectiveness and impact of its macroprudential policy, which has to consider the specific characteristics of either conventional or Islamic banks.
INTRODUCTION

Since 1979, financial stability related problem has been a very complex problem. This further strengthened during the Global Financial Crisis (GFC) in 2008 and was followed by the introduction of a control policy, namely the macroprudential policy by the Basel Committee on Banking Supervision (Clement, 2010).

According to Galati and Richhild (2011), the macroprudential policy aims to limit risks and costs that come from systemic crises. On another side, the macroprudential policy has an objective to maintain financial stability that is oriented towards the financial system as a whole and limits the presence of systematic risk. Moreover, the policy also attempts to apply prudential principles for the financial system to balancing a macroeconomic and microeconomic conditions (Department of Macroprudential Policy, 2016; Bustamante et al., 2012).

Bernanke et al., (1999) stated that the emergence of macroprudential policy regulation is rooted by market system inefficiency associated with the macroprudential intervention, resulting in externalities such as between banks or other financial institutions and also between the financial sector and the real economy. This condition is based on a string of current literatures from banking and financial turmoil.

In Indonesia, implementing macroprudential policies framework has the objective of identifying embodied risk in the financial system that has the potential to lead to a systemic risk, facing spread risk, knowing the spread channels of risk in the financial and banking system, and implementing macroprudential policy instruments at right condition. Moreover, the objective is aimed to reduce potential risks that are scattered in the financial system, macroeconomic, and real sectors (Kremer and Shoemaker, 2011).

At another framework, a model developed by Ascarya et al., (2016), provide a monitoring process to the financial system. The framework adopts a concept of early warning system which will give a risk signals in the first step in carrying out the macroprudential supervision process. At end of 2015, Bank Indonesia has implemented six (6) types of macroprudential policies, that is Loan to Value Ratio (LTV), Reserves Requirement based on Loan to Deposit Ratio (RR-LDR), Net Open Position (NOP), Credit Base Rate Transparency (CBRT), Countercyclical Capital Buffer (CCB) and Capital Surcharges (CS).

The macroprudential policy also tightens capital and liquidity requirements to encourage banks to reduce credit growth when the economy in "boom" conditions and maintenance resilience bank in the future when the economy deteriorates (Gersl and Martina, 2014). This is also part of the prudential policy to always strive to safeguard the resilience and performance of the banking system in order to simultaneously support the objective of monetary policy to stabilize credit supply.

Balogh (2012) argues in his research, if a country is experiencing a crisis condition, the application of prudential regulations will only be oriented to individual banks' health. This was aimed to encourage banks to tighten lending by increasing stricter capital requirements. This mechanism is a Basel II concept that has drawn criticism from economists. Basel II is aimed at strengthening bank risk management, however, it has a similar procyclical effect of change.

Another research explained by Agung (2010), that the implementation of the Basel II framework has indirectly encouraged banks to increase capital when the economy is weakening and reduce capital when the economy is strengthening. This condition is caused by the approach used in the Basel II framework, namely the internal-rating-based (IRB) approach in which the capital requirements are directly proportional to the probability of default and losses due to default.

These risk factors will increase reciprocal with the economic downturn. When the economy weakens, its impact on debtor's quality deteriorates, and banks require additional capital. Because increasing capital in the short term is not easy, banks will reduce lending to meet the capital ratio requirements. Then the economic system has more contraction, experiences an adverse impact and bank capital is getting worse because the risk of default is increasing.
This condition in line with the Financial Stability Review Annual Report issued by Bank Indonesia (2016) stated that the role of macroprudential policies which will ensure that credit flows can take place in a sustainable manner by encouraging banks to prepare capital and liquidity when the economy is good and lowering capital requirements in times of crisis and recession. So, that is not to hamper banks in lending.

Table 1. Macroprudential Policy Instrument in Indonesia

| Instrument | Target       | Regulation | Category                |
|------------|--------------|------------|-------------------------|
| LTV        | Credit       | Fixed      | Repeated calibration    |
| RR-LDR     | Credit, Liquidity | Time varying | Mitigate systemic risk |
| CBRT       | Credit, Government | Fixed      | Mitigate systemic risk  |
| NOP        | Liquidity    | Fixed      | Perluanya kalibrasi ulang|
| CCB        | Capital      | Time varying | Repeated calibration    |
| CS         | Capital      | Fixed      | Mitigate systemic risk  |

Source: Ascarya et.al (2016)

Macroprudential policies implementation by Bank Indonesia is based on the financial system condition in Indonesia. This is because the macroprudential policies introduced by the Basel Committee on Banking Supervision have a very broad types and categories so that each country has the application of different macroprudential policy instruments (Tovar et al., 2012). This condition also depends on the level of economic and financial development owned by a country and the application of the exchange rate regime, as well as the condition of the country's resilience to global financial shocks (Zulkhibri and Naiya, 2016).

In Indonesia, a macroprudential policy implementation is as a learning form in anticipation and prevention of the severe crisis conditions in 1997 to 1998 and the global crisis impact in 2008. Hence, in 2011 the Republic of Indonesia Law no. 21 of 2011 dated 22 November 2011 concerning the Financial Services Authority (Otoritas Jasa Keuangan) also emphasized Bank Indonesia to play its role in macroprudential policy while the Financial Services Authority performs its role in the microprudential level (Otoritas Jasa Keuangan Report, 2015).

Aviliani et al., (2015) suggested that Indonesia financial crises experienced in 1997 to 1998 and global financial crisis in 2008 gave an impact of imbalances in the financial system originating from the banking system. In carrying out its function as an intermediary institution, banks have an important role in developing the economy of a country and banks are expected to be able to increase their contribution to the economic sector and the financial system to run effectively and efficiently.

In another research, Festic and Beko (2008) stated that banks play their role as intermediary institutions, namely channeling funds from parties excessively funded to parties who need funds. Banks are also trying to increase as many new customers as possible, increasing capital, and expanding credit and other services.

According Financial Stability Review report 2016 issued by Bank Indonesia, most Indonesia banks rely on credit as the main source of income to finance their operations. This condition because the provision of credit is the most important bank activity in generating a profit, even though on the other hand there is a large risk that comes from the provision of credit by banks.

Based on Statistik Ekonomi dan Keuangan Indonesia issued by the Central Bank of Indonesia (2020), Indonesia's credit conditions were classified as fluctuating from 2010 until 2018. The difference in conditions in 2010 and 2015 amounted to 112.670.450 million rupiahs. This is due to a very reactive global economic condition. The large increase in domestic investment carried out by the United States through the tapering off policy in which investor abroad withdraw all their capital and then reinvest it in their countries. This condition is supported by the decline in interest rates in the
United States. This circumstances was also similar to what happened during the economic crisis in 2008 is bubble property in European countries.

Figure 1. Loan Demand in Indonesia 2010 – 2018

Source: SEKI Bank Indonesia 2020

Previous studies in marcrorpudential policy were also already conducted by several researches. Dutta and Saha (2020) found that macroprudential policy were able to minimize financial risk exposure even though it was more effective during normal condition than financial turmoil. This finding is also in line with Meuleman and Vennet (2020), Esteban et al., (2020), Thi and Anh (2019) and Zhang et al., (2018) who also found that macroprudential policy lessened the bank’s individual risk over the observation period.

In contrast, Duan and Zhu (2020) who stated that macroprudential policy did not effective to lessen credit risk. For the big size banks, loan-to-value (LTV), as a macroprudential policy instrument is less effective to decrease banks’ risk exposure. In addition, Davis, Karim and Noel (2020) explained that macroprudential policy had negative impact to banks' profitability. It meant that the banks tended to be less profitable when macroprudential policy is applied.

Specifically for dual banking system, consist of Islamic and conventional banks, Sakti et al., (2018) found that reserve requirement policy had positive impact to credit growth of Islamic and conventional banks while it occurred inversely for capital buffer which impact negatively to financing growth of Islamic bank. The different impact of macroprudential policy for Islamic and conventional banks also appeared in this study.

According to the previous studies, there have different results in terms of how macropudential policy influence banks performance especially in their risk exposure. Therefore, this study attempts to reassess and analyze the impact of macroprudential policy to provide clearer findings compared to previous studies.

RESEARCH METHODS

Panel data is used in this study starting from first quarter of 2014 to fourth quarter of 2019 in which the data were retrieved from banks’ financial report, Central Bank of Indonesia and Otoritas Jasa Keuangan (OJK). Totally there have 11 conventional banks in this sample that consist of Bank Mandiri, Bank Negara Indonesia, Bank Rakyat Indonesia, Bank Mega, Bank Central Asia, Bank Bukopin, Bank Panin Indonesia, Bank Victoria International, Bank Maybank Indonesia, Bank BJB and Bank BTPN. On the other hands, 11 Islamic banks were also utilized to be a sample of the study which are Bank Syariah Mandiri, Bank Negara Indonesia Syariah, Bank Rakyat Indonesia Syariah, Bank Mega Syariah, Bank Central Asia Syariah, Bank Bukopin Syariah, Bank Panin Dubai Syariah, Bank Victoria Syariah, Bank
Maybank Syariah, Bank BJB Syariah and Bank BTPN Syariah.

Table 2. The Definition of The Variables

| Variable                          | Description                                                                 |
|-----------------------------------|-----------------------------------------------------------------------------|
| Non-Performing Loan/Financing     | The percentage of bad loan lending/financing to total lending/financing (Festic and Beko, 2008). |
| Capital Buffer                    | A regulatory capital ratio minus the minimum required capital ratio of 8 percent (Stolz and Wedow, 2005). |
| Reserve Requirement               | The amount of money required to be deposited in central bank.                |
| Net Open Position                 | the net difference in assets and liabilities in the balance sheet for each foreign currency plus the net difference in receivables and liabilities (Peraturan Bank Indonesia Nomor 20 / 5 / PBI / 2018) |

In addition, all variables used in the study is describes in the Table 2. The general model of the study is explained in the formula as a follow:

\[ NPF = f(RINF, REG, LN_SIZE) \] ....(1) or

According the following formula by using panel analysis approach, the model above explained can be developed as below:

\[ \frac{NPL}{F_{it}} = \beta_0 + \beta_1 CB_{it} + \beta_2 RR_{it} + \beta_3 NOP_{it} + \epsilon_{it} \] .................(2)

Where NPLit is the percentage of the number of bad loans compared to total financing in conventional and Islamic bank for bank i in year t; CBt is the number of capital buffer of conventional and Islamic bank for bank i in year t; RR is the number of reserve requirement of conventional and Islamic bank for bank i in year t; and NOP is the number of net open position for bank i in year t.

To estimate the model, we follow Fakhrunnas (2020) and Pedroni (2000) who adopted panel dynamic which assumed that inside panel analysis, the effect of time-series is exist that is also able to examine short-run and long-run analysis. To conduct panel dynamic approach, several steps are conducted in this study. Firstly, unit roots test must be conducted as suggested by Levin, Lin and Chiu (2002) with the formula as a follow:

\[ y_{it} = \rho_1 y_{i,t-1} + \epsilon_{it} + \mu_{it} \] ........................(3)

Where, \( \epsilon_{it} = \frac{-1}{2}b^{2} \cdot 4ac \)

The symbol of \( z_{it} \) presents deterministic variables, \( \mu_{it} \) is iid \( \left( 0, \sigma^2 \right) \) and \( \rho = \rho_1. \) T-statistic on \( \rho \) explain the value of panel unit roots’ statistic test. According to Zulkhibri, Naiya, & Ghazal, (2015), the nol hypothesis of the test are not stationary to all kinds of unit types of unit roots.

Secondly, Pedroni (2000,2004) explained that several kinds of panel co-integration test can be held with data panel with using the following general formula as a follow:

Panel rho-statistic:

\[ Z_{\rho} = \left( \sum_{i=1}^{N} \sum_{t=1}^{T} \sum_{t=1}^{T} \frac{\epsilon_{i,t-1} \epsilon_{i,t}}{\sigma_{\epsilon}^2} \right)^{-1} \sum_{i=1}^{N} \sum_{t=1}^{T} \epsilon_{i,t} \] ......(4)

Panel PP-statistic:

\[ Z_{PP} = \left( \sum_{i=1}^{N} \sum_{t=1}^{T} \epsilon_{i,t}^2 \right)^{1/2} \sum_{i=1}^{N} \sum_{t=1}^{T} \epsilon_{i,t} \] ......(5)

Panel ADF-statistic:

\[ Z_{t} = \left( \sum_{i=1}^{N} \sum_{t=1}^{T} \epsilon_{i,t}^2 \right)^{1/2} \sum_{i=1}^{N} \sum_{t=1}^{T} \epsilon_{i,t} \] ......(6)

Group rho-statistic:

\[ Z_{\rho} = \sum_{i=1}^{N} \sum_{t=1}^{T} \epsilon_{i,t-1} \sum_{i=1}^{N} \epsilon_{i,t} \] ......(7)

Group PP-statistic:

\[ Z_{t} = \left( \sum_{i=1}^{N} \sum_{t=1}^{T} \epsilon_{i,t}^2 \right)^{1/2} \sum_{i=1}^{N} \epsilon_{i,t} \] ......(8)
According to Rosylin & Bahlous (2013), Fakhrunnas et al., (2018) and Fakhrunnas (2020), the existence of cointegration relationship appears when the majority of the test results are significant in 1% to 10% level of significance.

Thirdly, Variance Decomposition (VDs) and Impulse Response Factors (IRFs) are then applied to examine the relative strength and its multivariate causalities among the observed variables (Rosylin and Bahlous, 2013). Moreover, the use of VDs gives a light to explain the variation of the impact of independent variables to dependent variable while IFRs capture shock effect and provide a current and future direction of the observed variables (Pesaran and Shin, 1999).

RESULTS AND DISCUSSION

Appendix 1 describes the results of the unit roots test to determine whether the variables in the research carried out had a stationarity level at the at level or first difference. Based on these results, it is known that based on the unit roots test using individual intercept and individual intercept and trend, variables in conventional banking such as NPL and CRR do not have a stationarity level at the level when referring to the results of IPS and ADF. Meanwhile, other variables have a stationarity level at the level. After testing the stationarity level at the first difference, NPL, CCB, CRR and INOP all have a stationarity level.

In testing the unit roots results using Islamic banking as the object of research, NPF and CRR did not have a stationary level at the level by referring to the results of the IPS and ADF using both individual intercept and individual intercept and trend. Meanwhile, CCB, IRR and INOP have at-level stationarity. In unit roots testing at the first difference level, all variables are stationary at that level. Based on this test, it is possible to test short-term and long-term relationships.

| Cointegration Test | Conventional Bank | Islamic Bank |
|-------------------|-------------------|--------------|
| **Within Dimension** |
| Panel \(v\)-stat | -0.913114 | -1.51 |
| Panel \(rho\)-stat | 0.049268 | -2.31*** |
| Panel PP-stat | -3.54*** | -7.03*** |
| Panel ADF-stat | -1.33* | -1.78** |
| **Between Dimension** |
| Group \(rho\)-stat | 1.281982 | 0.598 |
| Group PP-stat | -2.47*** | -3.606 *** |
| Group ADF-stat | 1.309073 | 0.452 |

Note: ***, ** and * represent the level of significance for each.

Source: Data Processing, 2020

Table 3 describes the results of the pedroni cointegration test using panel data. In conventional banks, three of the seven test indicators used show significant results, namely Panel PP-stat which is significant at the 1% level, ADF-stat Panel significant at 10% and Group PP-stat which has a significance level at the 1% level. Based on the results of the pedroni cointegration test, it can be concluded that there is no long-term relationship between the variables used in the research model in conventional banks. This is because only three of the seven indicators are significant.

Meanwhile, in Islamic banking, four of the seven test indicators showed significant results, namely the \(rho\)-stat Panel, the PP-stat Panel and the PP-stat Group each at the 1% level and the ADF-stat Panel significant at the 5% level. It can be concluded that the variables used in the research model in Islamic banks have a long-term relationship with one another. This is because the majority or four out of seven, indicators have a significant value.

The result is also supported by Dutta and Saha (2020) Meuleman and Vennet (2020), Esteban et al., (2020), Thi and Anh (2019) and Zhang et al., (2018) who also found that macroprudential policies impact the bank’s
performance significantly. The different impact of macroprudential policy for Islamic and conventional bank is supported by Sakti et al., (2018). In the long-run, the co-integration finding also emphasizes that the effectiveness of macroprudential policy in dual banking system may vary depending on the characteristic of each bank in the system. In case of Indonesian dual banking system, the result from table 3 delineates that macroprudential policy is able to stabilize Islamic bank’s risk exposure in the long-run but it is not for conventional bank.

Moreover, to determine the level of influence of the macroprudential variables on non-performing loan or financing, the analysis using the variance decompositions method can be performed. Based on appendix 2., there is not even one macroprudential variable that has an effect on the decline in non-performing loans in the first period in conventional banking. In general, reserve requirements are macroprudential variables that have the most significant effect in the long run, namely 0.42%. Not only that, in the short term, the reserve requirement variable affects the 0.36% reduction in non-performing loans in the 3rd period.

Furthermore, the capital buffer affects the decline in the value of non-performing loans by 0.18% in the 2nd period and 0.17% in the 11th period. In the long term, namely in the 24th period, the effect of capital buffer reaches 0.169%, which means that it has an influence with a downward trend on non-performing loans. Meanwhile, the net open position has an effect of 0.02% in the second period and experiences fluctuations in the effect of the next period on non-performing loans. In the long term, the net open position has an effect of 0.119% on the decline in the value of non performing financing.

In Islamic banking for 24 observation periods (2014Q1-2019Q4), the value of non-performing financing has decreased from the 1st to the 24th period. This decrease in value shows the effect of capital buffers, reserve requirements and net open positions. In general, capital buffers, both in the long and short-run, have the highest level of influence on the decline in the value of non-performing loans. For example, in the short-run period, namely the 2nd period, the capital buffer affects 0.42% of the decline in the value of non-performing financing. Meanwhile, in the 5th period the capital buffer had an effect of 0.84%. In the long run, namely in the 24th period, the capital buffer has an effect of up to 0.96% on the decline in the value of non-performing financing.

Moreover, the effect of reserve requirements, in the first period does not have influence on non-performing financing in Islamic banks. The contribution of reserve requirements to the decline in the value of non-performing financing is only obtained in the second period, reaching 0.026%. In the long-run, reserve requirements have an effect of 0.14% on the decline in the value of non-performing Islamic banking financing. Meanwhile, the effect of net open position is higher than the reserve requirement, even though in the short terms period, namely the second period, it only affects 0.02% of the decline in the value of non-performing financing. However, in the long run, the net open position has an effect of 0.25% on the decline in the value of non performing financing.
To determine the trend of the influence of macroprudential variables on non-performing loans / financing can be seen in Figure 1. In this figure, generally it can be seen that in the short term, the macroprudential variable tends to have a greater influence on Islamic banking compared to conventional banking. However, there are similarities between the two banks, namely that the macroprudential variable tends to fluctuate in the short term but is more stable in the long term. In addition, the influence of macroprudential variables on conventional and Islamic banking tends to be small.

CONCLUSION

Macroprudential instruments are implemented to tackle systemic risk issue in the financial system. The instruments become one of the effort from financial authority institution to maintain the soundness of financial system. According to the findings, macroprudential policies consisting of reserve requirement, capital buffer and net open position has a long-run impact to credit risk in Islamic banks. However, a long-run relationship to credit risk in conventional banks does not appear due to there is no co-integration among the observed variables.

Based on this situation, it can be concluded that macroprudential policy seems to be more effective to Islamic bank than its counterparty in the long-run. As a bank that promotes profit and loss sharing paradigm, Islamic bank tend to be more responsive to the policy. In addition, the degree of influence for each independent variable to dependent variables either in conventional or Islamic banks also varies to credit risk.

The implication of the finding must become a concern to the financial authorities in Indonesia, such as ministry of finance, central bank of Indonesia and financial service authority, while performing macroprudential policy to reponse certain circumstances in the banking industry. Due to the different characteristic of conventional and Islamic bank, the authorities must precisely measure the impact of the issuance for each macroprudential policy’s instrument. To pave the way forward, the future study needs to observe macroprudential policies with cross-country level to examine the practice of the policy in dual banking system worldwide especially its impact to conventional and Islamic banks respectively.

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### Appendix 1. Unit Roots Test Result

| Variables | Individual Intercept | Individual Intercept and Trend |
|-----------|----------------------|--------------------------------|
|           | At Level | first Difference | At Level | first Difference |
| NPL       | IPS      | ADF    | PP   | IPS | ADF | PP | IPS | ADF | PP |
| NPF       | -1.11    | 27.18  | 34.07** | -6.84*** | 89.92*** | 213.02*** | 0.50  | 20.65 | 28.47 | -5.02*** | 64.57*** | 202.37*** |
| CCB       | -1.97*** | 33.20* | 43.04*** | -8.54*** | 110.35*** | 524.66*** | -2.02** | 39.17** | 43.13*** | -6.68*** | 82.47*** | 757.90*** |
| ICB       | -0.73    | 29.19  | 31.76*  | -8.46*** | 109.05*** | 204.52*** | 0.26   | 17.73  | 21.73  | -7.13*** | 87.49*** | 408.42*** |
| CRR       | -0.31    | 18.56  | 62.25*** | -8.82*** | 115.48*** | 1067.49*** | -0.91  | 30.30  | 94.39*** | -6.58*** | 82.22*** | 1135.43*** |
| IRR       | -8.55*** | 120.14*** | 104.57*** | -14.84*** | 376.35*** | 595.91*** | -8.11*** | 256.96*** | 91.37*** | -12.18*** | 345.41*** | 758.02*** |
| CNOP      | -4.52*** | 60.65*** | 94.37*** | -13.70*** | 182.11*** | 783.34*** | -4.62*** | 61.72*** | 112.67*** | -12.31*** | 150.78*** | 1339.65*** |
| INOP      | -5.19*** | 69.78*** | 81.73*** | -11.16*** | 146.47*** | 511.29*** | -5.56*** | 74.46*** | 91.92*** | -9.22*** | 112.45*** | 484.63*** |

Note: ***, ** and * represent the level of significance for each

Source: Data Processing, 2020
## Appendix 2. Variance Decompositions Result

| Period | S.E. | NPL   | CCB   | CRR   | CNOP | S.E. | NPF   | ICB   | IRR   | INOP |
|--------|------|-------|-------|-------|------|------|-------|-------|-------|------|
| 1      | 0.671879 | 100   | 0     | 0     | 0    | 6.464533 | 100   | 0     | 0     | 0    |
| 2      | 0.803452 | 99.59436 | 0.181123 | 0.180072 | 0.044445 | 7.336315 | 99.5317 | 0.422358 | 0.025574 | 0.020367 |
| 3      | 0.928267 | 99.39014 | 0.212952 | 0.36355 | 0.033361 | 8.107089 | 99.06407 | 0.859076 | 0.050222 | 0.02663 |
| 4      | 1.004078 | 99.45851 | 0.177635 | 0.336845 | 0.027014 | 9.084237 | 99.12407 | 0.750605 | 0.061494 | 0.063836 |
| 5      | 1.141469 | 99.4271 | 0.182167 | 0.368097 | 0.022637 | 9.850154 | 98.9728 | 0.848229 | 0.075127 | 0.103844 |
| 6      | 1.234627 | 99.41143 | 0.180048 | 0.380164 | 0.019354 | 10.552 | 98.92578 | 0.864594 | 0.087211 | 0.122414 |
| 7      | 1.320427 | 99.41414 | 0.181036 | 0.387598 | 0.017224 | 11.2372 | 98.88486 | 0.878581 | 0.095564 | 0.140997 |
| 8      | 1.401314 | 99.41098 | 0.179663 | 0.39377 | 0.015651 | 11.8184 | 98.84762 | 0.89053 | 0.102806 | 0.159042 |
| 9      | 1.477986 | 99.4066 | 0.179827 | 0.399138 | 0.014434 | 12.47392 | 98.81566 | 0.902319 | 0.109087 | 0.172934 |
| 10     | 1.550632 | 99.4057 | 0.177685 | 0.403016 | 0.013596 | 13.05048 | 98.79228 | 0.909131 | 0.114158 | 0.184436 |
| 11     | 1.620089 | 99.40424 | 0.176501 | 0.406226 | 0.013036 | 13.60173 | 98.77057 | 0.916388 | 0.118487 | 0.194553 |
| 12     | 1.686748 | 99.40248 | 0.1759 | 0.408997 | 0.012624 | 14.13137 | 98.75254 | 0.922041 | 0.122232 | 0.203191 |
| 13     | 1.750825 | 99.40145 | 0.174948 | 0.411272 | 0.012327 | 14.64214 | 98.7369 | 0.926993 | 0.125457 | 0.210647 |
| 14     | 1.812647 | 99.40048 | 0.174174 | 0.413212 | 0.012133 | 15.13556 | 98.72327 | 0.931276 | 0.128275 | 0.217179 |
| 15     | 1.872444 | 99.39948 | 0.173598 | 0.414915 | 0.012008 | 15.6134 | 98.71123 | 0.935077 | 0.130759 | 0.222934 |
| 16     | 1.930383 | 99.39868 | 0.173004 | 0.416388 | 0.011926 | 16.07706 | 98.70059 | 0.938441 | 0.132961 | 0.228038 |
| 17     | 1.986634 | 99.39797 | 0.172471 | 0.417682 | 0.011881 | 16.52772 | 98.69108 | 0.941402 | 0.134927 | 0.232597 |
| 18     | 2.041339 | 99.39729 | 0.172016 | 0.418837 | 0.011862 | 16.9664 | 98.68254 | 0.94408 | 0.136693 | 0.236691 |
| 19     | 2.094616 | 99.39668 | 0.17159 | 0.419866 | 0.011861 | 17.39403 | 98.67482 | 0.946501 | 0.138287 | 0.240388 |
| 20     | 2.146571 | 99.39614 | 0.171199 | 0.42079 | 0.011872 | 17.8114 | 98.66783 | 0.948696 | 0.139734 | 0.243743 |
| 21     | 2.197299 | 99.39563 | 0.170848 | 0.421628 | 0.011893 | 18.2192 | 98.66145 | 0.950697 | 0.141053 | 0.246802 |
| 22     | 2.246882 | 99.39517 | 0.170524 | 0.422388 | 0.011919 | 18.61808 | 98.65561 | 0.952528 | 0.142226 | 0.249601 |
| 23     | 2.295395 | 99.39474 | 0.170224 | 0.423082 | 0.01195 | 19.00858 | 98.65025 | 0.954211 | 0.143369 | 0.252173 |
| 24     | 2.342903 | 99.39435 | 0.169948 | 0.423719 | 0.011983 | 19.39123 | 98.6453 | 0.955761 | 0.144391 | 0.254543 |

Source: Data Processing, 2020