

## Research article

# Accessibility of Affordable Funds from Banking Liquidity Creation to Support SDGs in Indonesia

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The COVID-19 pandemic has affected peoples' lives in many ways, including their health, income, and economic condition. One of the most affected sectors is the banking industry, which is facing difficulty in liquidity creation. This research attempts to analyze the ability of Indonesian commercial banks, both conventional and Syariah banks, to create liquidity pre and during the pandemic. The researchers employed a descriptive data analysis to investigate the pattern of liquidity creation in the Indonesian banking sector using monthly data from December 2018 to August 2020. Since these banks operate under different banking principles, they respond to the pandemic differently. The researchers found an interesting fact that the liquidity per rupiah asset created by the Syariah banks outperformed the conventional banks pre- and during the pandemic. This finding implies that the Syariah banks have a considerable potential to expand their operation in the Muslim majority such as Indonesia.

**Keywords:** liquidity creation, Indonesian banks, COVID-19

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## 1. Introduction

The impact of the COVID-19 pandemic not only affects the health sector but also alters all aspects of the economy. The social distancing policies implemented by the Government to control the spread of the pandemic brings consequences in term of economic activities. As the limitation of the mobility due to social distancing during the COVID-19 pandemic, consumption, investment, transportation, production sectors faced a significant decline leading to downturn in economic growth [1]. In the first quarter of 2020, economic growth declined sharply to only 2.97% (YoY) from 4.97% in the previous quarter. The low growth rate was mainly due to lower consumption, as a major contributor to the Indonesian economy. In the first quarter, consumption only

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grew by 46% (2.66% YoY) of consumption growth in the previous quarter (4.93 YoY). To increase public consumption and government spending, the Indonesian government provides several stimuli such as assistance appearing as a social safety net in the form of fiscal stimulus packages I and II. However, lock-down and partial lock-down policies as well as social distancing policy and uncertainty of the future economic conditions have increased the risk of vulnerability in the banking industry, particularly in terms of lending as well as liquidity creation in banking sector [2].

As a bank-based country, banking sector plays a crucial role in the Indonesian economic development. During the COVID-19 pandemic, banking sector faces a challenging circumstance and requires it to be prepared for future difficulties. In the individual bank level, there are still operational impacts need to be fulfilled, such as maintaining cost-efficient operational and meeting capital requirements [3].

Bank as financial intermediary, theoretically plays the central roles in economic development; firstly as creator of liquidity[4] and secondly as the transformer of the risk [5][6][7]. In the seminal paper of [4] discusses that bank creates the liquidity through transforming their relatively short-term maturity liquid liability to financing relatively long-term maturity illiquid assets on the balance sheet. The debtors use the loan facility to make investment and finance their working capital. Additionally, the loan customer uses their transaction deposit account to accommodate disbursement of loan facility as well as facilitate payment services transaction to other parties. Bank also has a capability to create liquidity through its off-balance sheet transaction activities by providing the loan commitment facilities to its debtors as well as other contractual features or financial guarantee offering liquidity to the market [8]and [9]. Thus, liquidity creation through the bank's role as financial intermediaries will strengthen economic growth [10].

The researchers stab to extend the literature on liquidity creation in some respects, thus the purpose of this research is to compare the ability and amount of Commercial Bank (CB) and Islamic Banking (IB) to create the liquidity during and pre the pandemic in Indonesian Banking System. The researchers are motivated by difference in policy and regulation applied to those types of bank. Islamic bank operates under the law of Islam (Syariah) which prohibits the interest payment or interest return (Riba). Thus, Islamic banks will experience limitations in obtaining funding from conventional banks and loan-based capital markets [11]. Thus, in a crisis disrupting bank liquidity, it is estimated that Islamic banks will have difficulty to obtain funding from third parties (debtors) and will cause low profits and increase borrowing cost. The researchers apply descriptive research method to contrast the conventional and Syariah banking in terms of liquidity creation.

Bank creates liquidity to its customers by transforming the risk on the balance sheet and by providing liquidity through loan commitment and other financial guarantees on its off-balance sheet. These two main roles of banking operation; liquidity creation (LC) and risk transformation, as some experts said that these roles may be synchronized, however they do not move perfectly in the same direction [4],[12] [13]. Commercial Bank transfers its liquid liabilities (deposits) into financing relatively illiquid risky assets (loans) to provide liquidity to other non-bank borrowers. On the other side, bank creates liquidity on liability side by converting the illiquid loans (assets) into liquid and safer deposits. Both processes impact positively to economic development [14], on the asset side, banks provide loans to businesses which have limited access to finance their working capital and investment need [15]. Meanwhile, banks deposit products on the liability side offer the liquidity and the payment process for the businesses transactions increasing economics welfare of parties as a whole [9]. Moreover, CB's also provide (provides) liquidity through its off-balance sheet activities which help to increase economic growth by offering the derivative products, loan commitment and financial guarantee to support strong investment plans and support working capital financing such as inventory as well as to hedge the movement of interest rate and exchange rate [16][17][14]

In contrast to the Commercial Banking (CB's), Islamic Banking (IBs) practices is developed based on Islamic Sharia principal, by applying the reward-risk sharing or profit and loss sharing paradigm between parties involved in the transactions with the purpose of promoting the social welfare and equality for the both parties. Sharia law as an ideology in Islam forbids *riba* a type of business transaction involving interest rate. This guideline also prohibits some other type of businesses which have higher level of uncertainty (*gahrar*) such as gambling and speculation, derivative transaction, short selling.

Liquidity creation process in IBs does not differ principally with the Commercial Banks (CB's). Islamic Banking, on the asset side, provides liquidity to the market through its asset financing such as leasing and investment (Ijara and Murabaha) and equity financing. Parties who receive fund from IBs financing for their working capital and the investment plan then enlarge their productive activities. On the right side of the bank's balance sheet, the liability side, IB's creates the liquidity in the same approach with CB's. The saving and demand deposit products (Mudharaba, Musarakha) are customer deposit fund managed by the bank, under the contract of Mudharaba and Musarakha the bank could channel the fund to other parties and is expected to have multiplier effect on social welfare [11][18].

To date, the research of bank ability to create liquidity in Indonesian banking Industry is still rarely found on the current literature, especially those related to the COVID-19

pandemic. Thus, the researchers are motivated to fill the gap in this area by looking at the different ability of banking types (Conventional and Sharia) in creating liquidity. This research aims to evaluate the patterns of liquidity created by the Indonesian banking industry pre- and during COVID-19 pandemic. This paper contributes to the banking literatures in which the researchers explore in more detail the ability Indonesian Banking which has dual banking system namely conventional commercial banking and Islamic banking to create liquidity. As a country with a Muslim majority population, but the market share of IB's is much lower than CB's and it is important to analyze whether Syariah Bank provides significant contribution in providing liquidity to the market.

## 2. Method

This research employs a descriptive analysis to evaluate liquidity creation of the Indonesian banking industry from December 2018 to August 2020. The sample of banks included in this research consists of monthly data of all conventional and Syariah banks in Indonesia operating from December 2018 to August 2020. Credit cooperatives are not included. Some banks have been excluded in the sample when they include too few data points (usually in the onset of a merger or acquisition near the beginning of the period, or before the bank decides to stop operating, or the bank pulls out completely from the Indonesian market altogether). Other traits that will exclude a bank are; a) the bank has zero deposits, b) the bank has no more loans outstanding, c) the data point has negative equity.

The researchers obtained the monthly financial reports provided by the banks to the Indonesian Financial Services Authority (OJK – *Otoritas Jasa Keuangan*) three months after the aforementioned time period. This resulted in 84 – 86 banks per month. To account for the fact that large banks and small banks have very different loan portfolios as well as different loan relationships with their debtors, this is accounted for in the model using the natural logarithm of gross total assets.

The sample is further divided into several categories. First, the State-owned banks (BUMN) are banks in which the state has a controlling interest in, and of which actions generally have slightly more constraints than privately-owned banks. Second, the foreign-investment banks represent banks with a foreign ownership of at least 51%. Third, the privately-owned banks. The banks that are practically private-owned and private-run. Most banks with foreign investment are also included in this category. A bank category excluded from this and is not included in the state-owned banks category either are banks that are subsidiaries of state-owned enterprises by just

one or two degree of ownerships removed. Fourth, the Syariah banks, which are banks operating under Syariah principles are included in this category, regardless of whether they are state-owned, subsidiary of state-owned enterprises, or private-owned. Fifth, Conventional banks covering banks operating under conventional commercial principles, the counterpart to the Syariah banks. This category does not differentiate banks further in terms of ownership structure.

Liquidity creation in the Indonesian banking industry can be calculated using two approaches among the four possible [19]. The first “cat non-fat” takes into account liquidity creation by category, and on the balance sheet only, where only liquidity creation involving liabilities created and assets created and used are recorded. The second approach, “cat fat”, takes into account liquidity creation by category, and also both the balance-sheet-based as well as off-balance-sheet-based liquidity creations. This includes loan commitments and the like. The “mat non-fat” as well as the “mat fat” approach is currently not feasible since the financial reports provided on a timely basis to the Indonesian FSA (OJK) does not cover the degree of details including maturity.

### 3. Results and Discussion

The researchers examine how liquidity creation has developed over time, particularly as the time period enters the pandemic-affected lockdown and social distancing measures. Based on the “cat non-fat” measure of liquidity creation, the banks in the sample created a combined total of 3.65 quadrillion IDR ( $3.65 \times 10^{15}$ ) in December 2018. The amount has increased to 3.83 quadrillion IDR ( $3.83 \times 10^{15}$ ) of liquidity in August 2020. Using the broader “cat fat” measure of liquidity creation, banks in the sample created a combined total of 4.49 quadrillion IDR ( $4.49 \times 10^{15}$ ) in December 2018. This rose to 4.56 quadrillion IDR ( $4.56 \times 10^{15}$ ) in August 2020.

The transition between the pre-pandemic and pandemic period is marked at the end of December 2019. The time period before and up to December 2019 is therefore pre-pandemic, while the time period from January 2020 onwards is during the pandemic. We will also observe how this influence different bank categories.

The three largest banks in the sample in terms of asset created 43.7% of the total liquidity generated by the end of August 2020. This is not an unexpected result, as the three banks collectively control 43.2% of all the assets in the sample. The top 10 banks in term of assets at the same period created 72.62% of the total liquidity. The banks in this set represented only around 12% of the total number of banks, and yet controlled

70.24% of all assets. Total industry liquidity creation equals 56% of total gross asset under “cat fat”.

The different bank categories have their own patterns of liquidity creation. In “cat non-fat”, the Syariah category generally has the highest liquidity creation throughout all periods, whether pre- entering the pandemic or during the pandemic period. In “cat fat”, their rate of liquidity creation compared to their total assets barely changed, which is in line with the Syariah business model of mostly operating on the balance sheet and rarely venturing into off-balance sheet commitments. This finding is in line with [13] who studied the banking data for fifteen years since year 2000-2014 from 24 countries that have dual banking system IBs and CBs. Generally, per unit asset, IBs, are able to create more liquidity from the asset side, especially they provide more loan to businesses than to off balance sheet product or commitment to other parties. Their findings are consistent to all the country whether the bank located in Muslim majority or non-Muslim and applies during the crisis and normal time. The same results in MENA countries found by [20] where IB’s were able to create more liquidity per asset rival than CBs’.

This is in contrast with the conventional banks, whether it is state-owned, with foreign-investment or simply general privately-owned banks. Their rate of liquidity creation as a percentage of asset (Figure 1) markedly improves once off-balance liquidity creation were included.

The percentage of increase in liquidity creation between the “non-fat” and “fat” approach is not uniform among all banks, and this is also reflected in the improvement faced by each bank category. The bank category improved the most is the banks with foreign investment; the increase in liquidity creation in the “cat fat” liquidity ranges between 41% to 49.2% larger than the “cat non-fat” one. In a way, this is not surprising, as compared to Indonesian-based banks, they have a wider range of institutional knowledge and experience in effectively utilising off-balance sheet commitments. In terms of additional liquidity as a portion of assets, the off-balance sheet liquidity of these banks contributed only between an additional 1% to 19.2%. The bank category with the least change is as mentioned before, the Syariah banks. The difference between the two types of liquidities hovers only in the 1.6% to 2.1% range.

The other three bank categories will be listed in descending order of difference. The category with the second highest increase in “cat fat” liquidity compared to “cat non-fat” is in privately owned banks, with the rise in liquidity at the 16.1% - 34.9% range. The next one after that is conventional banks at the 15.4% - 25.9% range. The second-to-last bank category is the state-owned (BUMN) banks at a sedate range between 14.2% - 16.5%.

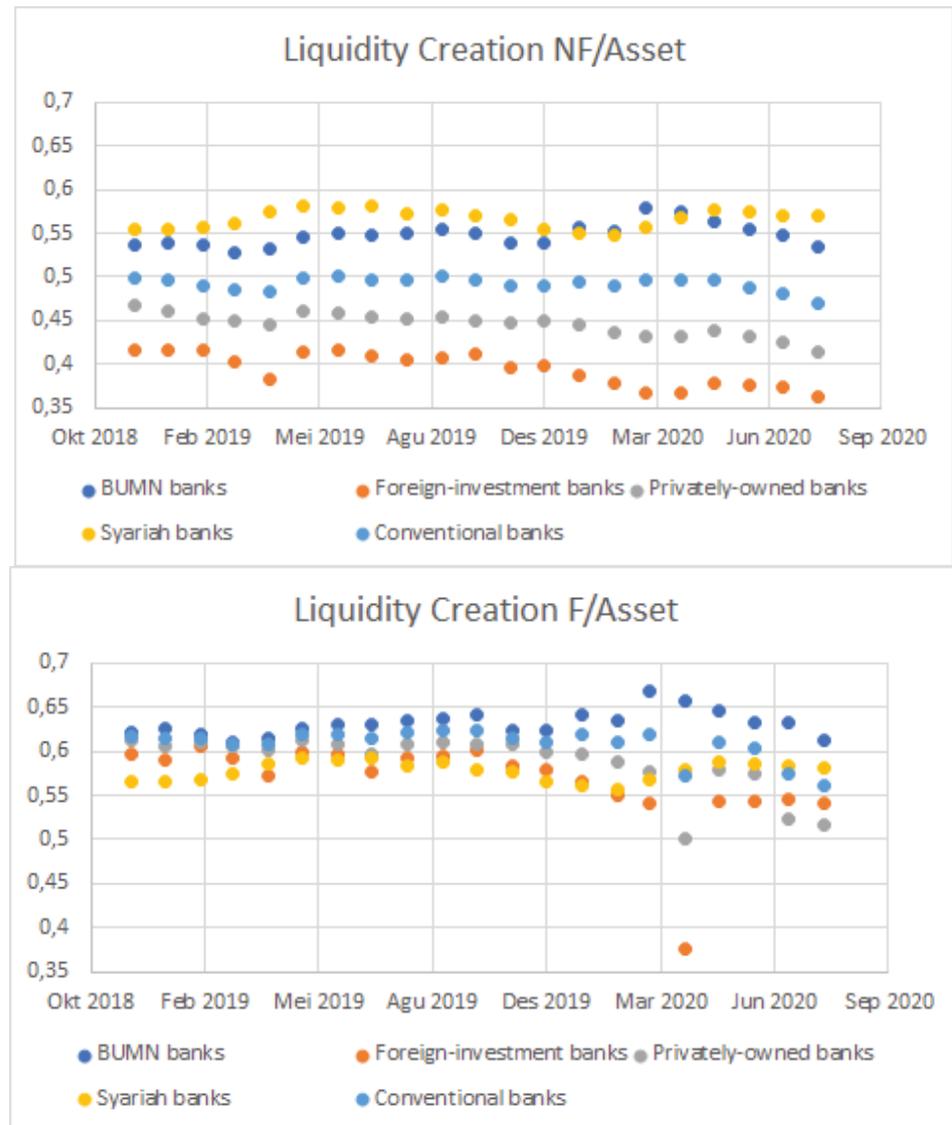


Figure 1: Type of liquidity creation per asset.

As a percentage of total assets, the state-owned (BUMN) banks did exceed the Syariah banks' liquidity creation by far on March 2020, and narrowly in the few months around it as they increased their liabilities noticeably—their proportion of liabilities increased the most compared to any other bank categories. Pre-pandemic, the range of their liabilities were between 84,4% - 85,4% of total assets, while during the pandemic, their liabilities ranged to 85,6% - 87% of total assets. Compared to other bank categories as shown in Figure 2, the Syariah banks experience the least fluctuation in the proportion of their liabilities, though considering their high level of liabilities even from the beginning, it might serve as a constrain to further movements.

In terms of “cat fat” liquidity, the best performing category is the state-owned banks. Before off-balance sheet items are considered, the Syariah banks perform the best, but

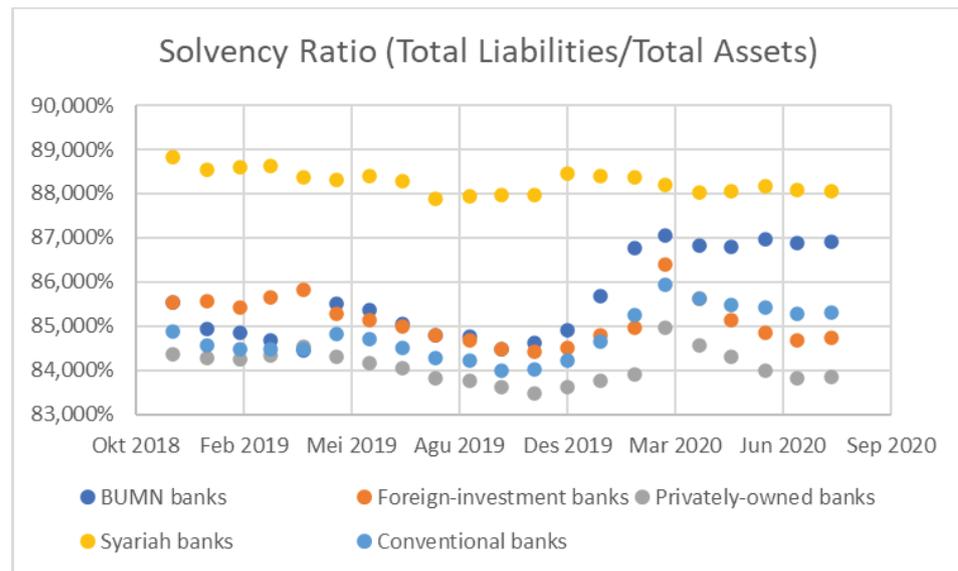


Figure 2: Solvency Ratio to Total Asset.

even under that approach, the state-owned banks came second for around half the time, with the banks with foreign investment coming second during the other half. Whether this capability to efficiently generate liquidity per unit of asset owned is something that is a function of their size and the economies of scale it allows (all state-owned banks are in the top ten largest banks by asset), or other reasons is something to be investigated further (the higher degree of scrutiny meant they are more disciplined than smaller banks that are non-credit unions, etc).

In December 2018, Figure 3 shows that every rupiah of bank equity in the sample generated over four times of liquidity (liquidity is 411,8% of equity). Even under more challenging economic conditions at the end of 2020, on August 2020, equity still generated more than three and a half times liquidity—at that time, liquidity is 386.22% of equity.

The bank category with the highest ratio of liquidity created to equity is the Syariah banks. This may not be too surprising, as it has been seen earlier that the Syariah bank category is the one with the highest proportion of liabilities out of total assets. The relatively smaller equity size compared to the others enables it to have a high liquidity creation to equity ratio. When liquidity is measured as a proportion of credit and credit-equivalent extended, the Syariah bank category generates the highest amount of liquidity under the “cat non-fat” approach, with the state-owned (BUMN) banks coming second after them and banks with foreign-investment coming last. Yet using the “cat fat” approach to include off-balance sheet commitments, the situation reverses.

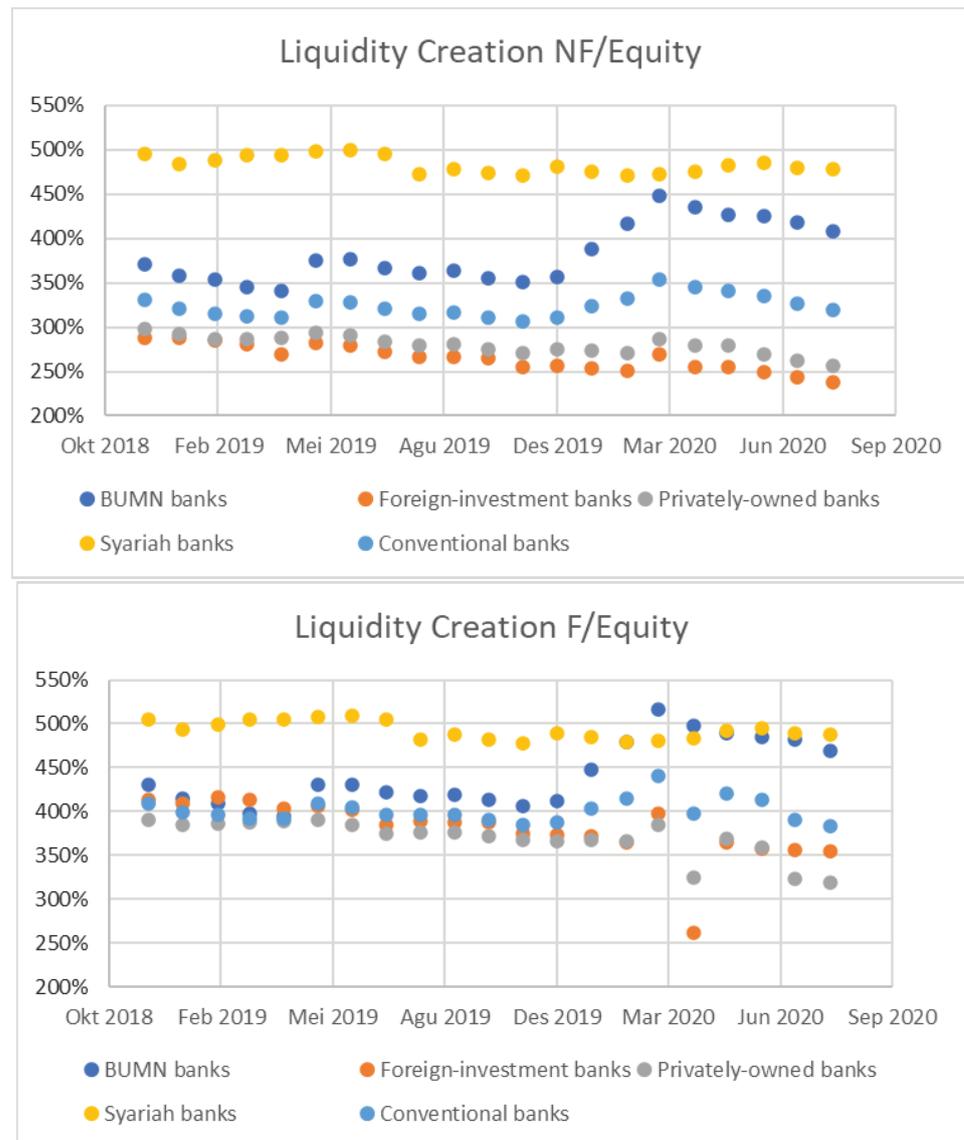
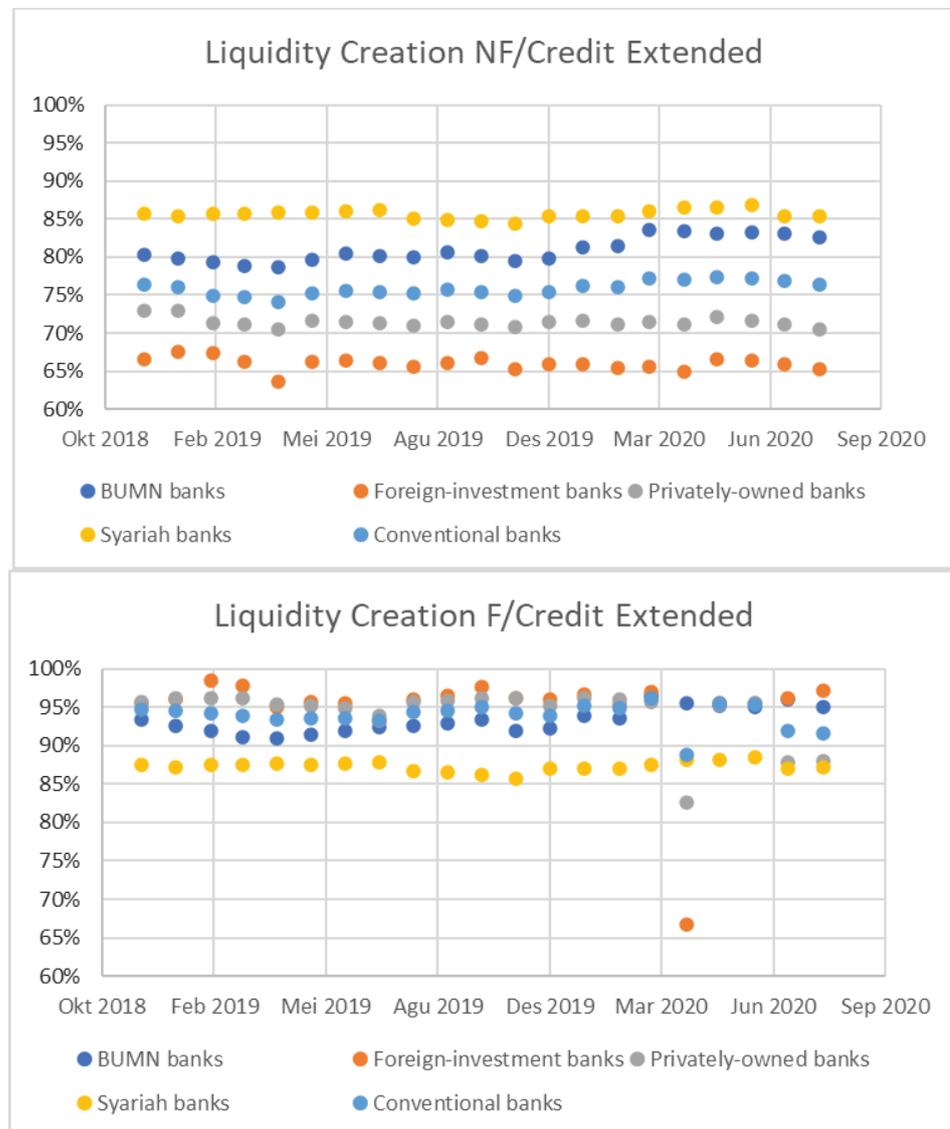


Figure 3: Liquidity Creation to Equity.

Figure 4 shows proportion of liquidity creation out of credit extended. Under “cat fat”, banks with foreign-investment and privately-owned banks are the two categories taking turns in being the one with the highest liquidity generated as a proportion of credit extended (66.8% - 97.2% and 82.6% - 96.2%). Conventional banks hewed very closely to both categories (88.9% - 96.2%) and the Syariah bank category came last. The ratio of liquidity creation relative to credit extended did not noticeably differ between the time period pre- the pandemic and during the pandemic itself, showing that at the very least, the efficiency of liquidity creation per rupiah of credit extended remained unchanged. There was a marked drop in liquidity for foreign-owned banks on March 2020, owing to the fact that a few banks in the sample became net liquidity absorber/destroyer to a marked degree in that small window of time instead of liquidity creator. It is possible that

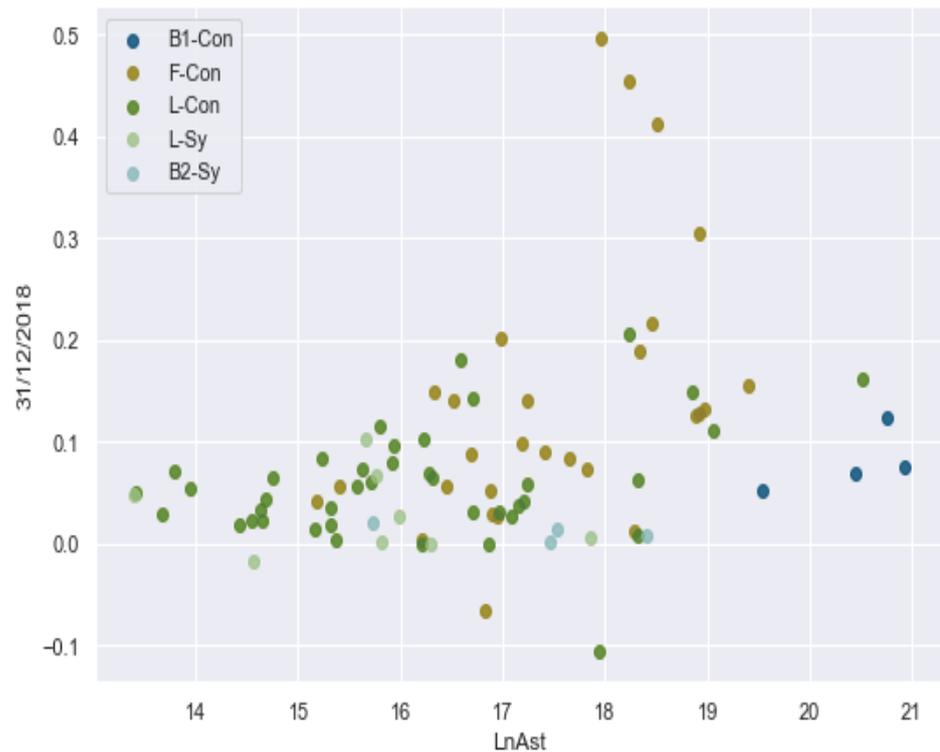
some subsidiaries of international banks are seeking liquidity in Indonesia to cushion a liquidity crunch experienced elsewhere worldwide, but it is impossible to know the exact reason without a more detailed dissection of their balance sheets and off-balance sheet reports.



**Figure 4:** Liquidity Creation to Credit Extended.

The last three Figures (Figure 5,6, and 7) show a glimpse into liquidity that is strictly contributed by off-balance sheet commitment form three different point of time, i.e. December 2018, December 2018, December 2019, and August 2020. The figures show the distant approach that most Indonesian banks take towards it. The size of the bank (represented here by ln asset) does not seem to noticeably correlate with the proportion of required off-balance sheet commitments. The banks at ease in holding sizeable amounts of off-balance sheet commitments are the conventional foreign-investment

banks (F-Con). Banks from other categories have their off-balance sheet liquidity mostly from almost none (some Syariah banks) to a little over twenty percent of their assets.



**Figure 5:** Off-Balance Sheet Liquidity/Asset to Ln Asset, Dec 2018.

The Figures show that Syariah banks' relative detachment from off-balance sheet activities is noticeable but not very unique in the Indonesian banking industry. Considering that even the largest banks have not been very active in it yet, this is not just a matter of scale economies or having the capital and expertise enough to do so. The market is still underdeveloped, and banks perform their intermediation function in Indonesia mainly through their balance sheet accounts.

## 4. Conclusion

Some lessons can be learned from the liquidity creation of the Indonesian banks in general, during the pre-pandemic, and in the pandemic period. First, large banks (representing only 12% of the total number of banks), play a vital role in creating liquidity (43.7% created by three large banks), since they collectively controlled 70.24% of the total asset of the banking industry. However, the size of the bank does not seem to noticeably correlate with the proportion of required off-balance sheet commitments.

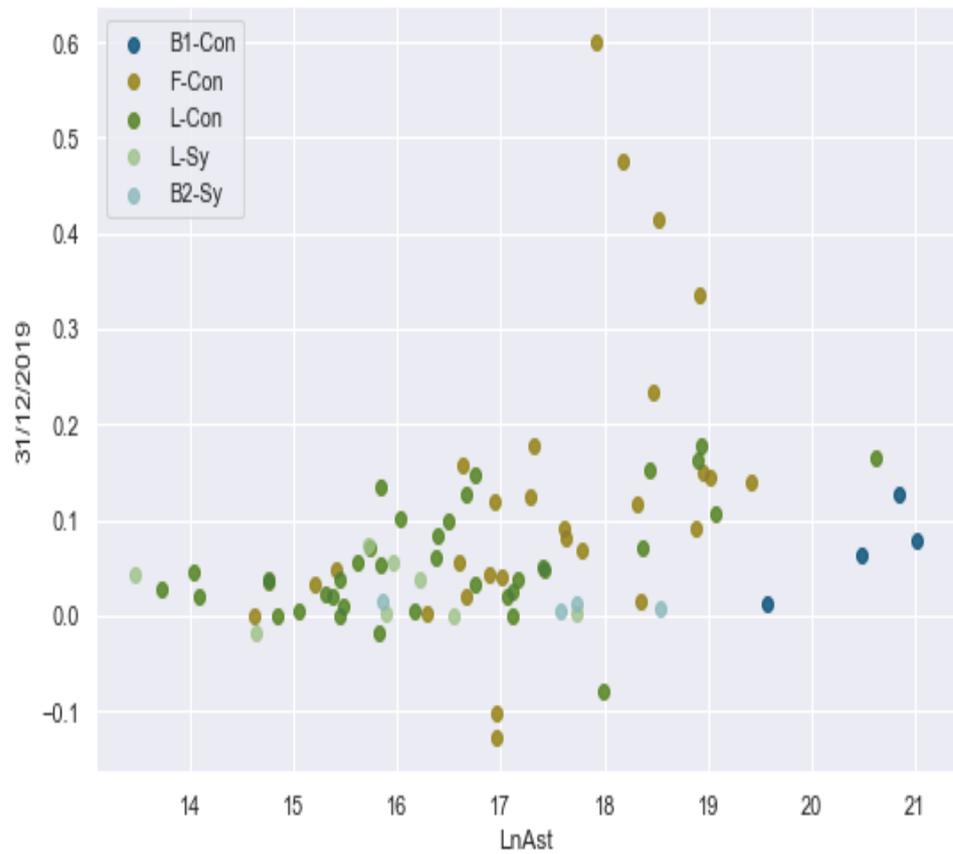


Figure 6: Off-Balance Sheet Liquidity/Asset to Ln Asset, Dec 2019.

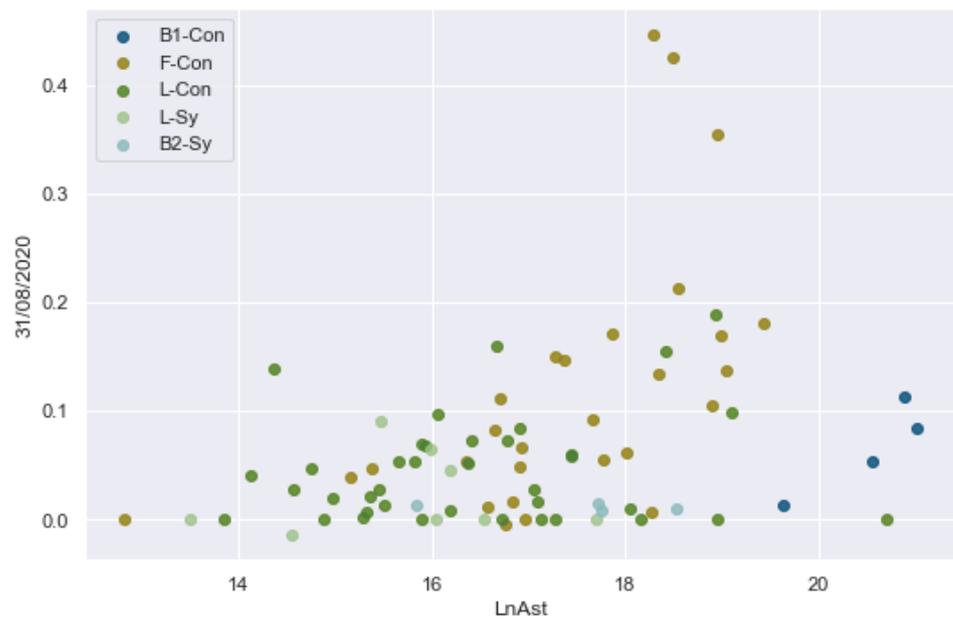


Figure 7: Off-Balance Sheet Liquidity/Asset to Ln Asset, Aug 2020.

Second, the increase in liquidity creation between the "cat fat" approach is larger than the "cat non-fat" one. This condition indicates that off-balance sheet items still

plays an important role in creating bank liquidity. Third, we found that Syariah banks created the highest liquidity per unit asset under the cat non-fat approach throughout all periods. These findings are consistent with Syariah bank's characteristics with the Syariah business model of primarily operating on the balance sheet and rarely venturing into off-balance sheet commitments. In contrast, the conventional banks' rate of liquidity creation as a percentage of asset markedly improves once off-balance liquidity creation were included. These findings imply that liquidity support from the government to the society in the form of a social safety net and fiscal stimulus packages I and II help public consumption and increase liquidity creation by banks. As a result, it will help improving economic growth.

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## References

- [1] M. Koren and R. Petó, "Business disruptions from social distancing.," *PLoS ONE*. vol. 15, no. 9 September, pp. 1–14, 2020.
- [2] Statistics Indonesia, "Statistik Pertumbuhan Ekonomi Indonesia Triwulan IV-2020.," *Www.Bps.Go.Id*. no. 36, pp. 1–12, 2021.
- [3] M. Elnahass, V.Q. Trinh, and T. Li, "Global banking stability in the shadow of Covid-19 outbreak.," *Journal of International Financial Markets, Institutions and Money*. vol. 72, p. 101322, 2021.
- [4] D.W. Diamond and P.H. Dybvig, "Bank runs, deposit insurance, and liquidity.," *Journal of Political Economy*. vol. 91, no. 3, pp. 401–419, 1983.
- [5] D.W. Diamond, "Financial intermediation and delegated monitoring.," *Review of Economic Studies*. vol. 51, no. 3, pp. 393–414, 1984.
- [6] J.H. Boyd and E.C. Prescott, "Financial.," pp. 211–232, 1986.
- [7] R.T.S. Ramakrishnan and A. V. Thakor, "Information Reliability and a Theory of Financial Intermediation.," *The Review of Economic Studies*. vol. 51, no. 3, p. 415, 1984.
- [8] B. Holmström, "Private and Public Supply of Liquidity Jean Tirole.," *Journal of Political Economy*. vol. 106, no. 1, pp. 1–40, 2009.

- [9] A.K. Kashyap, R. Rajan, and J.C. Stein, “Banks as liquidity providers: An explanation for the coexistence of lending and deposit-taking.,” *Journal of Finance*. vol. 57, no. 1, pp. 33–73, 2002.
- [10] J. Fidrmuc, Z. Fungáčová, and L. Weill, “Does Bank Liquidity Creation Contribute to Economic Growth? Evidence from Russia.,” *Open Economies Review*. vol. 26, no. 3, pp. 479–496, 2015.
- [11] F. Khan, “How ‘Islamic’ is Islamic Banking?,” *Journal of Economic Behavior and Organization*. vol. 76, no. 3, pp. 805–820, 2010.
- [12] A.N. Berger, C.H.S. Bouwman, and A.N. Berger, “The Society for Financial Studies Bank Liquidity Creation Published by: Oxford University Press . Sponsor: The Society for Financial Studies . Stable URL : <http://www.jstor.org/stable/40247676> Bank Liquidity Creation.,” vol. 22, no. 9, pp. 3779–3837, 2016.
- [13] A.N. Berger, N. Boubakri, O. Guedhami, and X. Li, “Liquidity creation performance and financial stability consequences of Islamic banking: Evidence from a multinational study.,” *Journal of Financial Stability*. vol. 44, p. 100692, 2019.
- [14] A.N. Berger and J. Sedunov, “Bank liquidity creation and real economic output.,” *Journal of Banking and Finance*. vol. 81, pp. 1–19, 2017.
- [15] R. Levine and S. Zervos, “Stock Markets, Banks, and Economic Growth.,” *American Economic Review*. vol. 88, no. 3, pp. 537–558, 1998.
- [16] A. Boot and S. Greenbaum, “Reputation and discretion in financial contracting.,” *American economic review*. vol. 83, no. 5, pp. 1165–1183, 1993.
- [17] R.M. Stulz, “Should We Fear Derivatives? chemistry , derivative is defined by the Merriam-Webster dictionary as a.,” *Journal of Economic Perspectives*. vol. 18, no. 3, pp. 173–192, 2004.
- [18] M.K. Hassan, S. Aliyu, M. Huda, and M. Rashid, “A survey on Islamic Finance and accounting standards.,” *Borsa Istanbul Review*. vol. 19, pp. S1–S13, 2019.
- [19] A.N. Berger, C.H.S. Bouwman, T. Kick, and K. Schaeck, “Bank liquidity creation following regulatory interventions and capital support.,” *Journal of Financial Intermediation*. vol. 26, pp. 115–141, 2016.
- [20] A. Sahyouni and M. Wang, “Liquidity creation and bank performance: evidence from MENA.,” *ISRA International Journal of Islamic Finance*. vol. 11, no. 1, pp. 27–45, 2019.