NAVIGATING THE DIGITAL LANDSCAPE SPATIALLY: ASSESSING P2P LENDING INFLUENCE ON BANKING PERFORMANCE AND RISK IN INDONESIA

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Abstract

Research on the influence of digital finance on banking performance and risk is relevant, given the disparity development of the financial sector in Indonesia. The research method used a quantitative approach with data from the Financial Services Authority (OJK). Data processing employed Arellano Bond's two-step dynamic panel regression analysis (GMM), as the available data range was 2020-2022. The research conclusion asserts that banking performance has decreased due to the influence of Peer-to-Peer (P2P) lending. This research has also established that the influence of P2P presence on banking in Java did not differ from that observed outside of Java. The investigation of the influence of P2P lending on banking risk revealed no discernible effect. When researchers attempted to compare the disparities in the influence of P2P lending on risk, they discovered no differences between Java Island and outside Java Island. It implies that government policies encouraging financial institutions' development with digital platforms do not cause banking performance to decline. As such, stricter regulations on P2P lending are necessary to mitigate the risk of bad credit.

Keywords: Performance; Risk; P2P Lending; Spatial

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INTRODUCTION

The swift expansion of information technology has catalyzed transformations in numerous digital-based services (Q. Li & Zhang, 2024). The financial sector, including banks and fin-tech start-ups, is adaptive to digital transformation. According to Bank Indonesia, digital banking transactions in Indonesia reached IDR 4,561.2 trillion in 2022. This value rose by 13.88% relative to the preceding year. The number of electronic money transactions exhibited a notable spike. In that year, the total electronic currency reached IDR 399.6 trillion. This value increased by 30.84% compared to 2021. Nevertheless, amidst the increasingly massive development of digital-based services, the prevalence of unbanked Indonesians remains significant. The number of unbanked individuals totaled 97.74 million adults, or 48% of the adult population (World Bank, 2021). This is a

significant opportunity for fin-tech start-ups to expand their market share, particularly among individuals who have not accessed financial services from traditional banks.

While this is going on, regional financial services continue to exhibit inequity. The amount of credit that commercial banks provided reached 5,086,563 billion rupiahs in Java, while the amount of credit that was distributed outside of Java was only 1,750,733 billion rupiahs. There is still a significant concentration of credit data for micro, small, and medium-sized enterprises (MSMEs) in Java. The total amount of credit that was passed out in Java was 809,459 billion rupiah, while the amount that was provided outside of Java was 614,731 billion rupiah. Regionally, fin-tech companies have the potential to broaden their market reach by capitalizing on the disparity in the distribution of credit by banks. This is because digital-based fin-tech services provide convenience, speed, and wider reach (He et al., 2022).

Among the fin-tech start-ups in Indonesia, one that is experiencing remarkable dynamism is Peer to Peer Lending (P2P Lending). The Financial Services Authority (OJK) reported that in 2022, there were 102 licensed P2P Lending organizers, with total assets reaching IDR 5,512.58 billion. The amount of credit allocated through P2P Lending exhibits a notable increase annually. As of September 2023, the total credit disbursed amounted to IDR 696,867.26 billion. Moreover, P2P Lending plays a significant role in advancing financial inclusion within the Micro, Small, and Medium Enterprises (MSMEs) sector. So far, MSMEs have experienced constrained access to financial services. According to the Ministry of Industry (2019), a significant 85% of funding sources for MSMEs continue to rely on their own capital. The OJK observed that the volume of credit allocated by P2P Lending to MSMEs reached 20,349.62 billion rupiah, accounting for 37% of the total. As such, enhancing credit distribution through P2P Lending for MSMEs has the potential to elevate the productivity of these enterprises (Jiang et al., 2021; Chengfu Wang et al., 2022; Lu *et al*., 2020). In addition, P2P Lending distributes credit not solely to MSMEs but also to the productive sector. P2P Lending has effectively allocated credit to the productive sector, reaching 7,830.70 billion rupiah which constitutes 37.66% of the overall credit distribution (OJK, 2023).

Regionally, P2P Lending has emerged as an alternative financing source across 34 provinces in Indonesia. The distribution of credit in each province has predominantly undergone periodic positive increases. This indicates that regionally, P2P Lending can penetrate new market niches that banks have not adequately served. By the conclusion of 2022, the total accrued money by lenders amounted to IDR 362,394.03 billion for Java and IDR 13,906.47 billion for regions beyond Java. The accumulated value allocated to credit recipients reached IDR 432,316.05 billion for Java and IDR 95,690.28 billion for regions outside Java. The data suggests that the amount of accumulated funds distributed to P2P Lending loan recipients surpasses the funds supplied by lenders. This data demonstrates that P2P Lending offers a diverse array of financial services to the community.

As P2P Lending expands its loan distribution network on a national and regional scale, it may pose the potential to increase competition with the banking industry. The market power of banks is being eroded by rising levels of competition. The diminished market power of banks has an impact on decreasing banking profits. According to the competition fragility view (Berger et al., 2009) and (Beck et al., 2013), banks can consolidate their market position through increased risk-taking. Even in high-risk markets, banks can expand the reach of their financial services. By expanding

credit distribution in riskier markets, banking fragility can be exacerbated. This is due to the fact that a decline in the bank's capacity to satisfy its obligations may result from the possibility of substantial bad debts.

Empirically, the influence of the presence of P2P Lending on banking credit distribution services remains inconsistent. According to several research results, P2P Lending is a substitute (Phan et al., 2020) and (Thakor, 2020). The second result indicates that P2P Lending is complementary (Y. Li et al., 2017) and (Hodula, 2021). The third result indicates that P2P lending and banks do not compete but collaborate (Hornuf et al., 2020) and (Brandl & Hornuf, 2020). Moreover, as indicated by Phan et al., (2020) and Thakor (2020a), the emergence of P2P Lending enhances competition in credit distribution. Increased competition may reduce market power within the banking sector. The expansion of credit distribution facilitated by P2P Lending may adversely affect banking performance. The perspectives of Phan et al., (2020) and Thakor, (2020a) align with the competitive fragility view as articulated by (Beck et al., 2013), (Gao & Reed, 2021), and (Shen et al., 2023). The competitive fragility perspective posits that banks seek to enhance their market power by broadening their service offerings, particularly to vulnerable populations. Conversely, Y. Li et al., (2017) and Hodula, (2021) argue that P2P Lending serves as a complement to traditional bank credit distribution. P2P Lending addresses a specific market segment that remains under-served by traditional banks. P2P Lending enhances financial inclusion, particularly among demographics that traditional banking institutions have under-served. Hornuf et al., (2020) and Brandl & Hornuf, (2020) expressed differing opinions from the two groups. Hornuf et al., (2020) and Brandl & Hornuf, (2020) assert that banking and P2P lending do not compete; rather, they collaborate to enhance performance. The established collaboration facilitates resource sharing and the creation of new market opportunities. Such opportunities may enhance profit margins and competitive advantages for both entities.

Based on the background that has been described, this study aims to assess the impact of P2P Lending on the performance and risk of regional banking in Indonesia. This is significant as each region possesses distinct characteristics, serving as the foundation for developing policies for banking and P2P Lending to enhance regional financial inclusion in Indonesia. Enhancing regional financial inclusion is vital as it might augment productivity, thus influencing economic growth and equitable development (Xia et al., 2023; Wu et al., 2023; Younas et al., 2022). Studies conducted have shown that financial inclusion is proven to reduce gaps in financial sector development (L. Ma & Ouyang, 2023; Sun & Tang, 2022; Daud & Ahmad, 2023). According to L. Ma & Ouyang, (2023) conducted a test of the development of digital financial inclusion on the economic growth of the tourism sector from 2011 to 2019. The test results showed that increasing the ease of digital payment channels increased financial inclusion, which drove economic growth. Furthermore, Sun & Tang, (2022) tested the effect of digital financial inclusion on economic growth in China. The test results with a sample of 270 observations in 2011-2019 showed that digital financial inclusion positively contributed to increasing sustainable economic growth. Daud & Ahmad, (2023) pressed the same opinion: financial inclusion and digital technology have a positive and significant influence on economic development in 84 countries

Furthermore, according to data from the OJK, the volume of loans disbursed via P2P Lending in Java surpasses that of regions outside Java. Will the substantial credit distribution by P2P Lending in Java enhance competition with banks? Is the competitive intensity between P2P

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Lending and banking in Java greater than that outside of Java? Numerous prior researchers (Phan et al., 2020; Thakor, 2020; Beck *et al*., 2013; and Kabir & Worthington, 2017) have examined the impact of P2P Lending on bank performance and risk; however, these studies were limited to one or multiple countries. Additionally, Berger et al., (2009) performed an analysis of bank competitiveness levels across 23 developed countries. The study encompassed 8,235 banks from 1999 to 2005, gathered from Bank scope. The rising number of banks in 23 developed countries has intensified competition, resulting in a reduction of market share and an escalation of bank risk. The findings of this study align with the perspective of competitive fragility. Meanwhile, Beck et al., (2013) utilized a research sample of banks from 79 nations classified as either developed or developing countries. The research sample consisted of 17,055 banks from 1994 to 2000. The study's results revealed that heightened competition has exacerbated bank fragility, particularly in nations with stringent rules. Moreover, Phan et al., (2020) performed a study examining the impact of fin-tech presence on bank performance in Indonesia. The analysis utilized yearly reports from 41 banks spanning the years 1998 to 2017. The number of fin-tech companies in Indonesia served as a proxy for fin-tech during that period. The study's results demonstrated that the swift expansion of fin-tech adversely affects bank performance in Indonesia. The influence of fin-tech diminishes performance, specifically in banks with a greater market capitalization. Small banks respond to innovation more rapidly than large banks. In comparison, Kabir & Worthington, (2017) did a comparative analysis of conventional banks and Islamic banks in 16 developing nations from 2000 to 2012. The study's results revealed that market dominance had a more significant impact on stability for conventional banks compared to Islamic banks. Prior scholars have similarly neglected to concentrate on a single nation by taking into account the attributes of several locations, such as Indonesia, which has six major islands. This study classify the regional characteristics test into two groups: Java Island and beyond Java. In addition, as most academics primarily examine developed nations, this study concentrates on developing countries with distinct banking or digital financial systems whose regulations have not yet developed. Based on that, this study will offer a novel viewpoint on the evolution of P2P Lending and banking in developing markets during the digital era.

The researchers additionally sought to examine the impact of P2P lending on the credit allocated to MSMEs by banks. The test is founded on POJK No. 77/2016 and the OJK financial literacy policy for 2021-2025. P2P Lending services primarily target MSMEs and individuals. These two additional tests will determine if P2P Lending is more competitive in regions with MSME credit services.

LITERATURE REVIEW

The presence of P2P Lending in Indonesia has contributed to boosting financial inclusion (OJK, 2023). P2P Lending services are primarily intended for community groups that have not received financial services from banks (Jiang et al., 2021) and (Chengfu Wang et al., 2022). As (Jiang et al., 2021) asserted, P2P Lending is expanding swiftly in China due to its significant role in delivering credit services, especially to SMEs and individuals lacking access to financial institutions. Meanwhile, (Chengfu Wang et al., 2022) stated that P2P Lending has facilitated financing for SMEs with constrained cash, insufficient collateral, and no credit history. P2P lending facilitates the exchange of information between borrowers and investors while also offering default risk assurance services through the accumulation of reserve capital.

The regulation of P2P Lending in Indonesia is encapsulated in POJK No.77/2016 and further refined in POJK No.10/2022. As delineated in both POJKs, P2P Lending represents a digital-centric financial service that facilitates a direct connection between lenders and borrowers through the utilization of information technology. P2P Lending demonstrates a profound understanding of creating technology that evolves in response to technological advancements and market needs (OJK, 2021). P2P Lending services exhibit enhanced ease, speed, and efficiency, as the selection process for potential borrowers is conducted wholly through digital means utilizing big data. This approach effectively mitigates information asymmetry and lowers transaction costs (OJK, 2022). In comparison, the bureaucratic procedures involved in securing bank credit have become increasingly intricate, and the prerequisites for credit applications have grown more challenging. The stipulations governing bank credit requirements are delineated in POJK No.42/2017, which mandates that applicants fulfill numerous criteria, including the provision of credit history and a comprehensive credit analysis encompassing the 5C framework: Character, Capability, Capital, Collateral, and Condition of Economy.

Empirically speaking, the impact of P2P Lending on the banking industry can be divided into three categories. The first group claims that P2P Lending is a substitute for bank credit services (Phan et al., 2020); (Thakor, 2020a). P2P Lending, according to the second group, will supplement the credit services offered by banks. Banking can benefit from the collaboration of P2P Lending, which can positively affect bank performance (Hornuf *et al*., 2020); (Brandl & Hornuf, 2020). The third group, meanwhile, asserts that P2P Lending does not affect the performance of banks. This is because the market characteristics of P2P Lending differ from those of institutions (Y. Li *et al*., 2017); (Hodula, 2021).

Additionally, the first group, Phan et al., (2020; J. Li et al., (2020); W. Chen et al., (2023) indicated that P2P Lending enhances competition in credit services relative to banks. The heightened competition fosters a more competitive environment between banks and P2P Lending in their pursuit of market share. The expansion of credit distribution through P2P Lending enhances its capacity to undermine the banking sector. The erosion of banks' market share results in a decline in their market power. According to Phan et al., (2020) conducted a study on the influence of fin-tech on 41 banks in Indonesia. The test results from 1998 to 2017 indicated that fintech adversely impacted bank performance. Fin-tech exerts a more pronounced negative impact on large banks. Small banks exhibit greater adaptability to change, whereas large banks incur higher costs and encounter challenges in modifying the stringent regulations of the banking sector. Meanwhile, J. Li et al., (2020) conducted a test of risk spillovers between fin-tech and traditional financial institutions in the United States. The findings from the GARCH model indicate a positive correlation between fin-tech spillover risk and the systematic risk of traditional financial institutions. According to Chen et al., (2023) tested the impact of fin-tech companies on the performance of banks in China during the period from 2011 to 2018. The study's results demonstrated that fin-tech effectively decreased the volume of credit allocated by commercial banks, particularly for small and medium-sized loans. The influence was more pronounced in banks situated in regions with a limited number of banking institutions. The presence of fintech companies serves as a competitive force to traditional banking institutions.

Furthermore, multiple research findings from L. Li et al., (2023); A. Basha et al., (2021); Kabir & Worthington,

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(2017); Roure, (2022) corroborate the results of Phan et al., (2020); J. Li et al., (2020); W. Chen et al., (2023). The research findings by L. Li et al., (2023) examined the impact of fintech companies on the profitability of 131 banks in China.

The test results indicate that fin-tech rivals banks in regions characterized by high concentration levels. Fintech can alter the market share of the banking sector. Simultaneously, Kabir & Worthington, (2017) conducted examination on Islamic banks and conventional bank in sixteen developing nations from 2000 to 2012. The analysis used vector autoregression, revealing that heightened competition within the financial sector elevates the fragility of conventional institutions.This viewpoint is consistent with Cuadros-solas et al., (2023) and Grennan (2020), who have observed that the rise in P2P lending as an alternative to digital credit leads to a decrease in return on assets (ROA) and net interest margin (NIM). The increase in bank profits and margins will be lower in countries with high levels of digital credit growth. The negative influence of P2P Lending encourages banks to determine the right digital business strategy and model immediately. In the opinion of Q. Ma et al., (2023), intense competition between banks and P2P Lending also has an impact on credit distribution. The phenomenon of borrowers migrating from banks to P2P Lending is greater in areas with a high level of bank concentration. P2P Lending increases the financial inclusion of individuals and households with looser credit requirements. According to Hodula, (2021), banks responded to the presence of P2P Lending by providing several concessions to customers, such as reducing credit interest rates and increasing deposit interest rates. Policies set by banks have an impact on reducing bank profit margins. The same opinion is expressed by Tang, (2019) that P2P Lending is a substitute for banks, especially for borrowers who have low credit quality. This is due to the fact that P2P Lending offers credit services in a convenient and unrestrictive manner. In addition, P2P Lending as an internet-based fin-tech allows the fixed costs borne by borrowers to be lower than those of bank customers. Several reasons encourage the migration of customers to P2P Lending services.

In comparison, the second group, supported by Hornuf et al., (2020) and Brandl & Hornuf, (2020), affirms that banks can collaborate with P2P Lending. This collaboration is predicated on the fact that P2P Lending can facilitate credit expansion, especially for groups that have not previously utilized bank services. As declared by (Junarsin et al., 2023), the presence of P2P Lending encourages banks to diversify risks. The use of technology will reduce information asymmetry in the credit market (Yudaruddin et al., 2023). This can help banks determine appropriate policies to lower risk taking and increase the bank's resilience to systematic threats.

Furthermore, Yudaruddin et al., (2023) underscores the significance of collaboration between banks and P2P Lending, particularly for small banks and banks that have not been listed, as an effort to mitigate risk. For collaboration to grow between banks and P2P Lending, clear policies are indispensable. This policy is to ensure that the growth of P2P Lending does not increase unhealthy competition. Intense competition can trigger greater risk-taking behavior in banks to increase their market share. According to (Murinde et al., 2022; Abbasi et al., 2021; H. Liu et al., 2019; Maskara et al., 2021) all held the same opinion. Also, (Abbasi et al., 2021) stated that P2P Lending could be a collaborator for banking, specifically in MSME credit. The institutional quality of banking will improve the relationship between P2P Lending and MSME bank credit access.

On the other hand, in harmony with the third group, some empirical evidence such as Maskara et al., (2021); Z. Liu et al., (2019); Hodula, (2021) reveals that the presence of P2P Lending will not affect

bank performance. This is because P2P Lending has a different market segment from banks. The characteristics of P2P Lending customers are predominantly vulnerable groups who experience difficulties with banking accessibility. This difficulty is caused by bank credit regulations being stricter compared to P2P Lending. Maskara et al.,(2021) asserts that the P2P Lending platform serves as an alternate funding solution for individuals with restricted access to banking services. P2P Lending enhances financial inclusion, particularly for individuals residing in rural regions. Z. Liu et al., (2019) stated that P2P Lending is an appealing financing option, particularly for small-scale borrowers with constrained assets. (Hodula, 2021) suggests that P2P Lending can serve as a complement in less concentrated regions. Concurrently, P2P Lending may provide an alternative when the banking sector is significantly concentrated.

P2P Lending serves as an alternative loan source for individuals with constrained assets, as noted by Z. Liu et al., (2019); and Chao Wang et al., (2023). P2P Lending caters to high-risk borrowers with limited assets whom traditional banking institutions have underserved. Z. Liu et al., (2019) asserted that P2P Lending does not rival traditional banks. P2P Lending supplements credit services, particularly for individuals lacking access to the banking sector. P2P Lending facilitates ease by offering lending collateral through social capital to individuals with restricted access to the banking sector. Furthermore, according to Chao Wang et al., (2023), in order to decrease the likelihood of default, voluntary disclosure of information from borrowers is needed. P2P Lending allows for unsecured microloans, which are inherently risky. Onorato et al., (2024) argue that P2P Lending is a product that simplifies financial constraints, particularly for SMEs, and has an effect on the efficiency of the business system.

Based on the three groups of research results above, the majority of data analysis was conducted in developed countries. Research using data from developing countries still needs to be completed. Several researchers use developed country data (Thakor, 2020b) using data from the United States and the United Kingdom; (Hornuf et al., 2020) using data from Canada and Germany; (Brandl & Hornuf, 2020) using German data; (J. Li et al., 2020) and (Maskara et al., 2021) using data from the United States, (Hodula, 2021) using data from 78 countries; (Cuadros-solas et al., 2023) 67 developed and developing countries. While there are still a few researchers who focus on developing country data, such as Phan et al., (2020) and Yudaruddin et al., (2023) using Indonesian data; L. Li et al., (2023) and (Q. Ma et al., (2023) use Chinese data.

Indonesia, as a developing country, has several characteristics that are different from developed countries. Some of these differences include per capita income level, poverty level, education level, progress and utilization of technology. Some of these differences will affect people's ability to access financial services. This will affect banking regulations and systems as well as the development of digital-based fintech. Regulation of fintech development in Indonesia has yet to develop as in developed countries. This study will provide a new perspective on the development of banking and fintech, especially P2P Lending, amidst very rapid technological advances.

Meanwhile, this study differs from the research Phan et al., (2020) and Yudaruddin et al. (2023), which conducted research in Indonesia. The difference lies in the data and proxies of the main variables. Phan et al., (2020) and Yudaruddin et al., (2023) use national-level bank data and only use one dependent variable. Phan et al., (2020) uses bank performance (ROA, ROE and NIM) as the dependent variable. Meanwhile Yudaruddin et al., (2023) used bank risk as

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the dependent variable. An analysis of 141 commercial banks in Indonesia and Singapore during 2004 - 2018 was used. The proxy for the fin-tech variable uses the number of fin-tech companies and online payment companies. Meanwhile, this study focuses on using P2P Lending and bank data in thirty-three provinces in Indonesia during 2020-2022. Researchers who focus on regional data in Indonesia still need to be expanded. There are two dependent variables in this study, namely bank performance and bank risk. The proxy for P2P lending uses the amount of credit disbursed, bank performance uses the amount of credit disbursed, and risk uses non-performing loans (NPL).

RESEARCH METHODS

Data and Sample

This research used an aggregate banking sample in 33 provinces in Indonesia. The research period began in 2020-2022 based on the availability of regional credit distribution data by banks and P2P Lending published by the OJK. Performance and risk data from banking and P2P Lending used monthly data. The number of observations in this research was 825 data. While banking and P2P Lending specification data were obtained from Banking Statistics and Fintech Statistics published on the OJK website, Information and Telecommunication Technology Index (ICT Index) data came from BPS. Descriptive statistics of the variables used in the research are displayed in Table 1.

Estimation Method

The estimation method employed to answer the research objectives was a two-step GMM Arellano-Bond dynamic panel analysis. In this research, the proxy for bank performance was the growth in the aggregate number of credits and NPLs in banks in 33 provinces. P2P Lending performance was proxied by aggregate outstanding credit growth in 33 provinces. In addition, several control variables used in this research encompassed credit disbursed by banks on a large scale to MSMEs to the total credit disbursed and non-MSME credit to the total credit disbursed, logarithm of the number of banks in each province, Loan to Deposit Ratio (LDR), and ICT Index. Meanwhile, to see the influence of the regional presence of P2P Lending on bank performance and risk, provincial grouping was carried out. In this research, provinces were grouped into two Java Island and Outer Islands. After that, spatial analysis utilized data outside Java Island as a comparison. The estimation model used in the research is as follows:

$$Performance_{it} = \alpha + \beta_1 Performance_{it-1} + \beta_2 P2PLending_{it} + \beta_3 MSMEs_{it} + \beta_4 NonMSMEs_{it} + \beta_5 LDR_{it} + \beta_6 Branch_{it} + \beta_7 P2PL\_java_{it} + \beta_8 P2PL_{it} * MSMEs_{it} + \beta_9 MSMEs_{it} * ICT_{it} + e_{it} \quad (1)$$

$$Risk_{it} = \alpha + \beta_1 Risk_{it-1} + \beta_2 P2PLending_{it} + \beta_3 MSMEs_{it} + \beta_4 NonMSMEs_{it} + \beta_5 LDR_{it} + \beta_6 Branch_{it} + \beta_7 P2PL\_java_{it} + \beta_8 P2PL_{it} * MSMEs_{it} + \beta_9 MSMEs_{it} * ICT_{it} + e_{it} \quad (2)$$

Table 1. Descriptive Statistics

Variabel	N	Mean	Std. Dev	Min	Max
BankCredit	825	199,081.97	489,737.78	11,666.43	3,006,421.07
NPL Bank	825	5,259.15	13,898.72	106.13	87,110.50
P2P Lending outstanding	825	105,566.315	438,037.97	9.53	3,879,767.16
MSMEs Credit	825	32,854.01	43,377.17	2,304.00	186,722.44
Non-MSMEs Credit	825	166,292.10	460,868.80	8,423.65	2,861,943.03
LDR	825	1.02	0.39	0.51	2.75
Branch	825	108	115	16	471
ICT	825	5.28	0.78	3.29	7.27

Source: data is processed, 2024

The estimation model in this study used six equations by developing two equations (1) and (2). The dependent variable in this research consisted of two: credit growth as a proxy for bank performance and Non-Performing Loans (NPL) as a proxy for bank risk. Meanwhile, the independent variables in the six models were different. Model 1 used independent variables: Lag NPL, growth in credit disbursed by P2P lending, MSME credit, non-MSME credit, LDR, and number of banks. Then, Lag NPL, growth in credit disbursed by P2P lending, MSME credit, non-MSME credit, LDR, number of banks, regional ICT, and interaction between regional P2P lending and regional ICT comprised the independent variables in model 2. Model 3 utilized independent variables: Lag NPL, credit growth distributed by P2P lending, MSME credit, non-MSME credit, LDR, number of banks, and the interaction of P2P lending with the island category. Model 4 included the following independent variables: Lag NPL, credit growth distributed by P2P lending, MSME credit, non-MSME credit, LDR, number of banks, interaction of P2P lending with island category, and interaction of P2P lending with MSME credit. Finally, model 5 incorporated the following independent variables: Lag NPL, growth in credit disbursed by P2P lending, MSME credit, non-MSME credit, LDR, number of banks, interaction between P2P lending and island category, interaction between P2P Lending and MSME credit, and interaction between MSME credit and ICT.

The main independent variable in this study is P2P Lending. Both the performance and risk variables are dependent on the P2P Lending variable, which is present in four equations. The primary goal of this study is to ascertain the impact of P2P lending on risk and performance in general. Furthermore, the objective of this investigation is to ascertain the regional impact of P2P lending on risk and performance. Testing the effect of P2P Lending regionally is grouped into two islands, namely Java and outside Java. The Java Island category encompasses all provinces in Java, while the outside Java category includes the islands of Sumatra, Kalimantan, Sulawesi, Bali and Nusa Tenggara, Maluku, and Papua. Outside Java was used for testing P2P Lending regionally as a comparison. Testing P2P Lending regionally is contained in models 3, 4, and 5.

Furthermore, this investigation endeavored to evaluate the impact of P2P Lending on the credit extension of banks to micro, small, and medium-sized enterprises (MSME). The primary concentration of P2P lending services is on individuals and MSMEs, as outlined in the OJK financial literacy strategy 2021-2025 and the P2P lending credit distribution policy in POJK 77/2016. Will P2P lending be more competitive with respect to the MSME credit services that were evaluated in the fifth equation?

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MSME credit, non-MSME credit, the number of bank branches, and LDR are among the control variables incorporated into the model. P2P Lending is one of the credit providers that concentrate on MSME credit, which is why MSME credit is included. Therefore, in order to determine whether P2P Lending is more competitive than institutions that concentrate on MSME credit, MSME credit is incorporated into the second equation. Meanwhile, the inclusion of bank branches is intended to determine whether conventional financial service providers that depend on an increased number of branch offices will result in improved performance. Furthermore, the LDR variable was employed to assess the liquidity of a bank, as it is a comparison between the amount of funds distributed in credit and the amount of funds effectively collected by the bank.

RESULT AND DISCUSSION

Robustness Test and Endogeneity Test

In this study, robustness checking and endogeneity tests have been conducted to produce accurate estimates. The test stages that have been carried out include an overidentification test, an autocorrelation test, and an unbiased test.

Step 1 Overidentification Test

In the research model, the over-identification test was carried out using the Sargan test. The summary of the Sargan test results in Table 2. As indicated by Table 2, it is revealed that the P-value for the performance and risk variables in all was greater than 5%. This denotes that models 1, 2, 3, and 4 did not encounter overidentification problems. The five models can be declared valid (just identified).

Step 2 Autocorrelation Test

Auto correlation testing was done by looking at the Z-auto correlation value in first-difference errors. Table 3 is a summary of the auto correlation test results. Table 3 indicates that the P-value for the second order exceeded 5%. This suggests the absence of auto correlation across the four research models.

Step 3 Unbiasedness Test

The purpose of this test was to mitigate the problem of heteroscedasticity-induced standard error bias. The Windmeijer (WC) robust two-step was employed to execute the standard error bias test on the model. The regression results Table 4 and Table 5, which was employed in the final analysis of this study, contains the results of the WC robust standard error regression.

Data Analysis and Result

The regional influence of P2P lending on bank performance is presented in Table 4. The dependent variable used aggregate credit growth disbursed by banks in each province. Meanwhile, to explain the influence of P2P lending, it was proxied by the growth in credit distribution channeled by P2P lending.

Table 2. Sargan Test Result

Y	Model 1	Model 2	Model 3	Model 4
Performance	Chi2 = 336.747 Pvalue = 0.685	Chi2 = 125.443 Pvalue = 0.806	Chi2 = 125,420 Pvalue = 0.806	Chi2 = 125.253 Pvalue = 0.809
Risk	Chi2 = 360.199 Pvalue = 0.342	Chi2 = 141.262 Pvalue = 0.454	Chi2 = 142.844 Pvalue= 0.4174	Chi2 = 144.736 Pvalue = 0.375

Source: Data processing, 2023

Table 3. Autocorrelation Test Results

Y	Model 1	Model 2	Model 3	Model 4
Performance	Zvalue = 1.039 Pvalue = 0.298	Zvalue = -1.039 Pvalue = 0.299	Zvalue = -1.267 Pvalue = 0,205	Zvaleu = -0.926 Pvalue = 0.355
Risk	Zvalue = -0.659 Pvalue = 0.510	Zvalue = -0.7116 Pvalue = 0.477	Zvalue = -0.805 Pvalue = 0.4285	Zvalue = -1.007 Pvalue = 0.314

Source: Data processing, 2023

The Spatial Influence of P2P Lending on Bank Performance

In Table 4, the estimated results of the influence of the presence of P2P lending on bank performance are presented. Built on the test results in Table 4 in models 1, 2, and 4, P2P lending had a noteworthy detrimental impact on banking performance. The adverse influence of P2P lending revealed that the growth in credit distribution by P2P lending had a high potential to reduce the growth in the amount of credit distributed by banks.

The emergence of P2P Lending as a novel entity within the credit service sector has intensified the competitive landscape. The expansion of credit distribution through P2P Lending has the potential to diminish the market influence exerted by banks. The diminishing influence of banks in the market will significantly affect the volume of credit that is allocated. This will result in a reduction of the bank's income level. The diminution of bank income will inevitably influence the institution's liquidity capacity. The diminished capacity for bank liquidity will significantly influence the escalation of bank fragility. The findings of this research align with the competitive fragility perspective articulated by Berger et al., (2009) and Beck et al., (2013).

Moreover, P2P Lending, as a newcomer, has the speed to develop a digital-based service system. All P2P Lending services are carried out digitally, thus providing easy, fast, and flexible services (Cheng & Qu, 2020). The P2P Lending service system in Indonesia is regulated in POJK No.10/2022. Based on the POJK policy, the process and requirements for submitting P2P Lending credit are completely carried out digitally.

Table 4. Estimated Results of the influence of P2P Lending on bank performance

	(1)	(2)	(3)	(4)
	Bank Performance	Bank Performance	Bank Performance	Bank Performance
Bank Performance (-1)	-0.427***	-0.373***	-0.415***	-0.413***
	(0.0539)	(0.0508)	(0.0616)	(0.0717)
P2PLending	-0.00195***	-0.00213***	-0.00162	-0.00186***
	(0.000480)	(0.000467)	(0.00130)	(0.000438)
MSMEs	0.00591	0.00850	0.00588	0.00406
	(0.00434)	(0.00563)	(0.00487)	(0.00362)
Non-MSMEs	0.00594	0.00868*	0.00579	0.00581*
	(0.00417)	(0.00519)	(0.00477)	(0.00336)
LDR	0.0532	0.0552	0.0506	0.0584
	(0.0638)	(0.0686)	(0.0634)	(0.0744)
Branch	0.00406	0.00303	0.00392	0.00292
	(0.00305)	(0.00277)	(0.00347)	(0.00286)
P2PLending_Java		0.0000554	0.00000254	-0.00000844
		(0.000730)	(0.000961)	(0.000709)
P2PLending*MSMEs			-0.00000788	
			(0.0000329)	
MSMEs*ICT				0.00208
				(0.00129)
_cons	-0.841**	-0.905***	-0.815**	-0.700***
	(0.340)	(0.308)	(0.348)	(0.232)
N	825	825	825	825

Source: Data processing, 2023
Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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The process and validation of P2P Lending credit applications use integrated big data to make them easier, cheaper, and faster. This can also be one of the triggers for people to switch to using P2P Lending in credit services. The more people choose P2P Lending, the less the reach of bank credit will be. The decreasing amount of bank credit distribution also causes the bank's profit level to decrease.

Another factor that has contributed to the development of P2P lending in Indonesia is the COVID-19 pandemic. The impact of the COVID-19 pandemic has changed the way and behavior of people interact and transact. People prefer to use various digital-based services, including credit services (Daragmeh et al., 2021). The habit of using digital-based services can accelerate the increase in the reach of P2P Lending credit services. Increasing the reach of digital-based P2P Lending has the potential to shift the conventional banking credit market.

Furthermore, spatial analysis of P2P lending on performance can be seen in models 2, 3, and 4. The research results also demonstrated that the spatial influence of P2P lending on bank performance on Java Island did not exhibit a substantial disparity compared to areas outside Java Island. This denotes that the decrease in the expansion of banking credit distribution is due to P2P lending in Java and outside Java and follows a similar trend.

In aggregate, the amount of credit disbursed by P2P Lending in Java is higher than outside Java. The reach of banking credit in Java is also higher than outside Java. The amount of credit disbursed by P2P Lending reached IDR 615,453.47 billion for Java and IDR 147,691.34 billion for outside Java (OJK, 2023). Meanwhile, in the same year, the amount of credit disbursed by banks amounted to IDR 5,290,335 billion for Java and IDR 1,799,908 billion for outside Java. This indicates that the need for funding in Java is higher than outside Java. Java has a significant financial demand due to its continued prominence as a corporate and economic hub. Regionally, Java continues to be the primary contribution to the national economic structure. The contribution of Java Island reached 57.05%, while in detail, the contribution of islands outside Java is as follows: Sumatra at 22.01%, Kalimantan at 8.49%, Sulawesi at 7.10%, Bali and Nusa Tenggara at 2.77%, and Maluku and Papua at 2.58% (BPS, 2023).

On the other hand, P2P Lending, being a digital credit service, necessitates the presence of an internet network and infrastructure. With the advancement of Information and Telecommunication Technology (ICT), the ICT Index has risen by 5.90 (BPS, 2023). Regionally, DKI Jakarta Province exhibits the highest ICT Index score at 7.73, whereas Papua Province records the lowest at 3.44. The disparity between the maximum and minimum ICT Index values in 2023 has diminished by 4.29. The narrowing gap signifies a reduction in the disparity of ICT development in Indonesia. No provinces in Indonesia are classified as having very low ICT development. Excluding DKI Jakarta and Papua, which are classified as the top and lowest, 32 more provinces are designated as middle. The geographical rise in ICT Index accomplishment indicates that all regions in Indonesia, both inside and outside Java, possess the same accessibility to ICT development distribution. The equality of ICT Index will affect the accessibility of digital financial services.

Additionally, the Human Development Index (HDI) indicates geographical advancements. Indonesia's HDI rating attained 74.39 (BPS, 2023). The region with the highest HDI is DKI Jakarta Province, with a score of 83.55. Simultaneously, Papua Province exhibits the lowest performance, recorded at 63.01. Regionally, two provinces are classified as having very high HDI, 28 provinces are categorized as having good achievement, four provinces are grouped as having

medium achievement, and no provinces are classified as having poor HDI. The rise in HDI achievement indicates a reduction in the inequality of human development across regions. The rise in HDI also signifies an enhancement in the population's capabilities regarding education, knowledge, health, and quality of life across each region. The enhancement of HDI will also influence the elevation of awareness, knowledge, and comprehension of digital financial services.

Additional tests in this study were also conducted to see whether P2P Lending is more competitive in MSME credit. Based on the test results presented in Table 4 of the fourth model, the effect was negative, although it is not statistically significant. The reason for this is that the absorption of bank credit for MSMEs remains low. Bank Indonesia observed that in 2020, the absorption of MSME credit in aggregate only reached 19%. According to Bank Indonesia Regulation No. 17/2015, it is mandatory for banks to allocate a minimum of 20% of their credit to MSMEs.

Below are illustrated Figures 1, 2, 3, 4, and 5 regarding the growth of credit distribution on Java Island and outside Java Island (Sumatra Island, Kalimantan Island, Sulawesi Island, and Nusa Tenggara, Maluku, and Papua Islands).

Figure 1 depicts the fluctuating growth in banking credit distribution and P2P lending on Java Island. The rise in credit within the banking sector was accompanied by a corresponding increase in P2P lending credit. However, the growth in P2P lending credit surpassed that of the banking sector. Similarly, the decrease in bank credit was followed by a decrease in P2P lending credit, albeit the reduction in credit distribution was more pronounced in banks.

Based on Figure 2, it can be seen that the growth of banking credit and P2P lending has parallel trends. The increase and decrease in credit disbursed by banks and P2P lending follow the same pattern. When bank credit rises, credit disbursed by P2P lending also exhibits an increase—likewise, a decrease in bank credit results in a corresponding decrease in P2P lending.

Figure 3 demonstrates a similar pattern of development in banking credit distribution and P2P lending on Kalimantan Island. The banks' credit distribution and P2P lending patterns in Kalimantan are identical to those observed on Sumatra Island.

In Figure 4, the growth of banking credit and P2P lending in Sulawesi fluctuates. The increase and decrease in banking credit were followed by an increase and decrease in P2P lending credit. However, the increase in credit distribution was higher in P2P lending, while the decrease in credit distribution was higher in banking.

This research aligns with the competitive fragility view (Degl et al., 2020 ; Gao & Reed, 2021; Risfandy et al., 2022; Shen et al., 2023). According to some empirical evidence, higher competition can reduce market share, decreasing bank performance. Furthermore, Albaity et al., (2019) and Amanda, (2023) have asserted that the presence of more business entities operating in the same industry might lead to heightened competition, which in turn can affect the stability of banks. The level of competition intensifies as competitors provide greater convenience and enhanced flexibility in their services. Risfandy et al., (2022) also shared the same viewpoint, stating that intense rivalry can undermine banks' stability, leading to a decline in performance.

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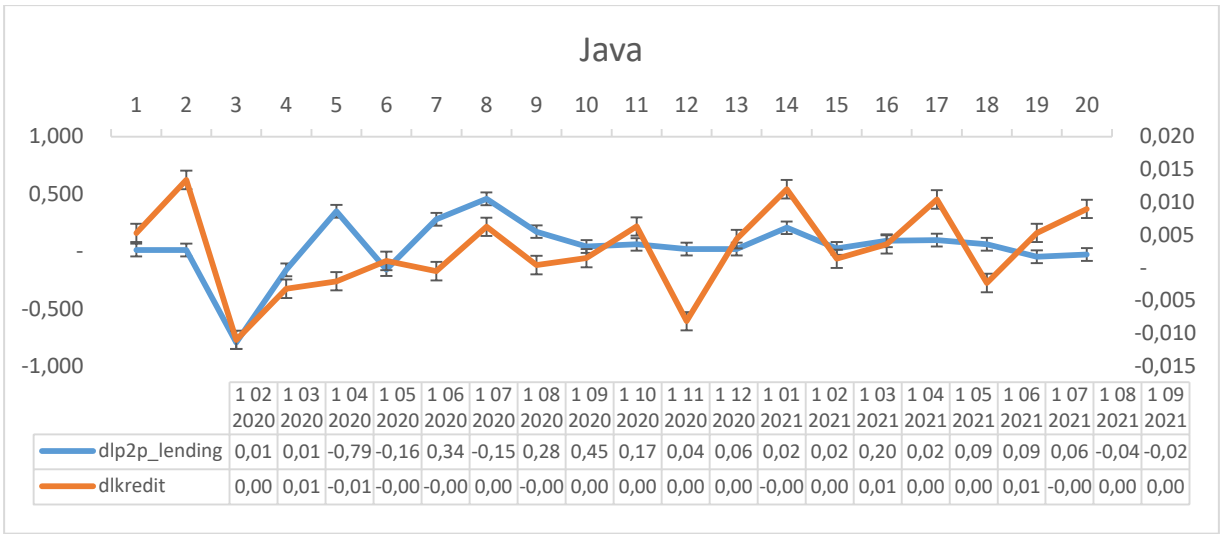
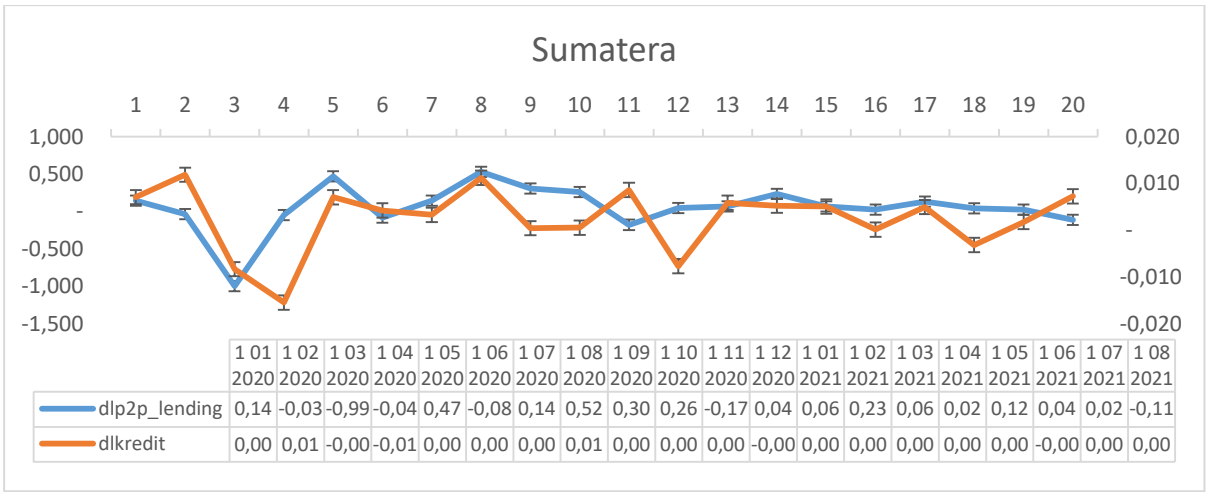


	1 02 2020	1 03 2020	1 04 2020	1 05 2020	1 06 2020	1 07 2020	1 08 2020	1 09 2020	1 10 2020	1 11 2020	1 12 2020	1 01 2021	1 02 2021	1 03 2021	1 04 2021	1 05 2021	1 06 2021	1 07 2021	1 08 2021	1 09 2021
dlp2p_lending	0,01	0,01	-0,79	-0,16	0,34	-0,15	0,28	0,45	0,17	0,04	0,06	0,02	0,02	0,20	0,02	0,09	0,09	0,06	-0,04	-0,02
dlkredit	0,00	0,01	-0,01	-0,00	-0,00	0,00	-0,00	0,00	0,00	0,00	0,00	-0,00	0,00	0,01	0,00	0,00	0,01	-0,00	0,00	0,00

Source: Processed data, 2023.

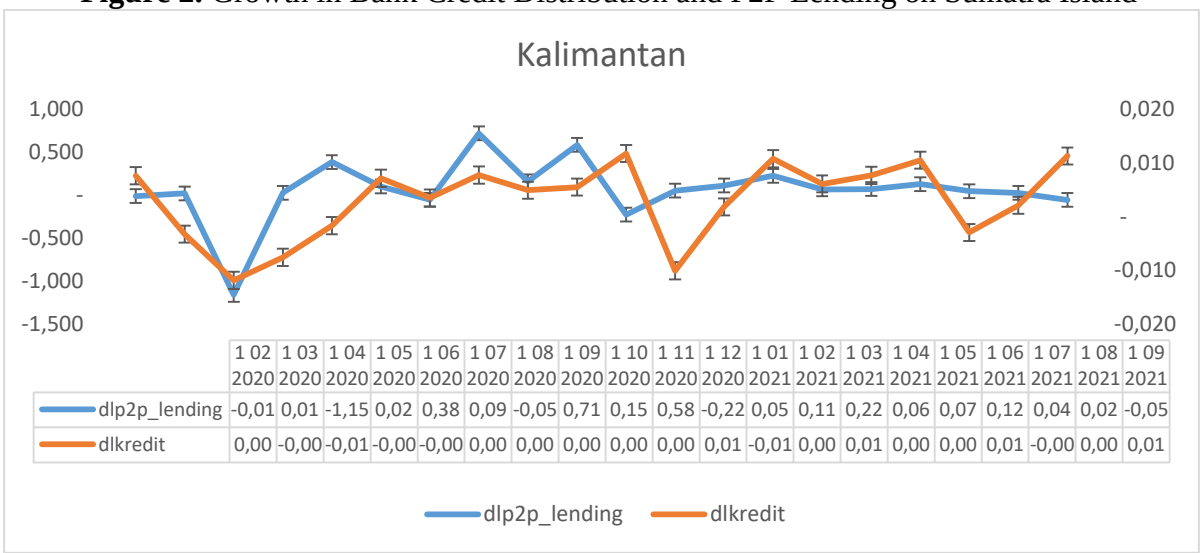
Figure 1. Growth in Bank Credit Distribution and P2P Lending on Java Island



	1 01 2020	1 02 2020	1 03 2020	1 04 2020	1 05 2020	1 06 2020	1 07 2020	1 08 2020	1 09 2020	1 10 2020	1 11 2020	1 12 2020	1 01 2021	1 02 2021	1 03 2021	1 04 2021	1 05 2021	1 06 2021	1 07 2021	1 08 2021
dlp2p_lending	0,14	-0,03	-0,99	-0,04	0,47	-0,08	0,14	0,52	0,30	0,26	-0,17	0,04	0,06	0,23	0,06	0,02	0,12	0,04	0,02	-0,11
dlkredit	0,00	0,01	-0,00	-0,01	0,00	0,00	0,00	0,01	0,00	0,00	0,00	-0,00	0,00	0,00	0,00	0,00	0,00	-0,00	0,00	0,00

Source: Processed data, 2023

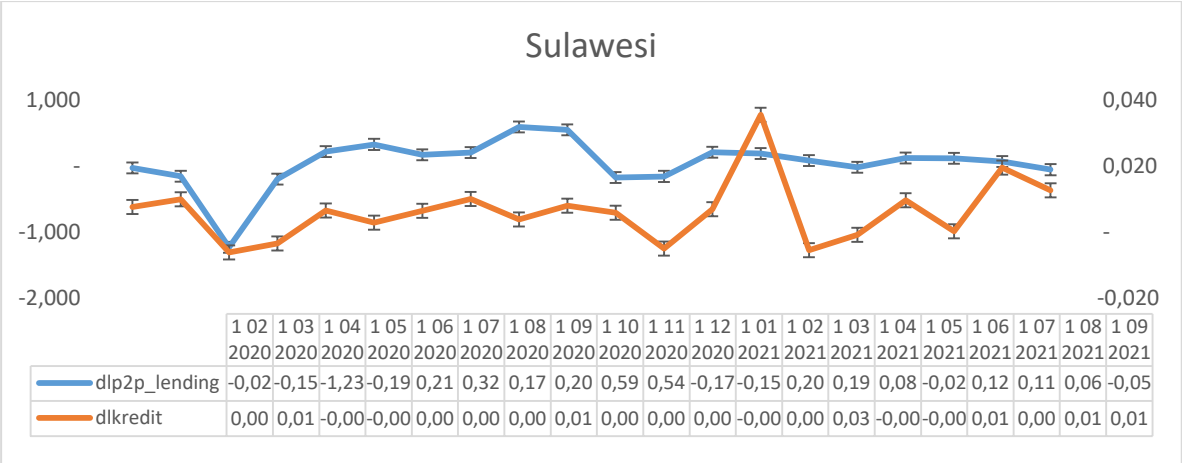
Figure 2. Growth in Bank Credit Distribution and P2P Lending on Sumatra Island



	1 02 2020	1 03 2020	1 04 2020	1 05 2020	1 06 2020	1 07 2020	1 08 2020	1 09 2020	1 10 2020	1 11 2020	1 12 2020	1 01 2021	1 02 2021	1 03 2021	1 04 2021	1 05 2021	1 06 2021	1 07 2021	1 08 2021	1 09 2021
dlp2p_lending	-0,01	0,01	-1,15	0,02	0,38	0,09	-0,05	0,71	0,15	0,58	-0,22	0,05	0,11	0,22	0,06	0,07	0,12	0,04	0,02	-0,05
dlkredit	0,00	-0,00	-0,01	-0,00	-0,00	0,00	0,00	0,00	0,00	0,00	0,01	-0,01	0,00	0,01	0,00	0,00	0,01	-0,00	0,00	0,01

Source: Processed data, 2023.

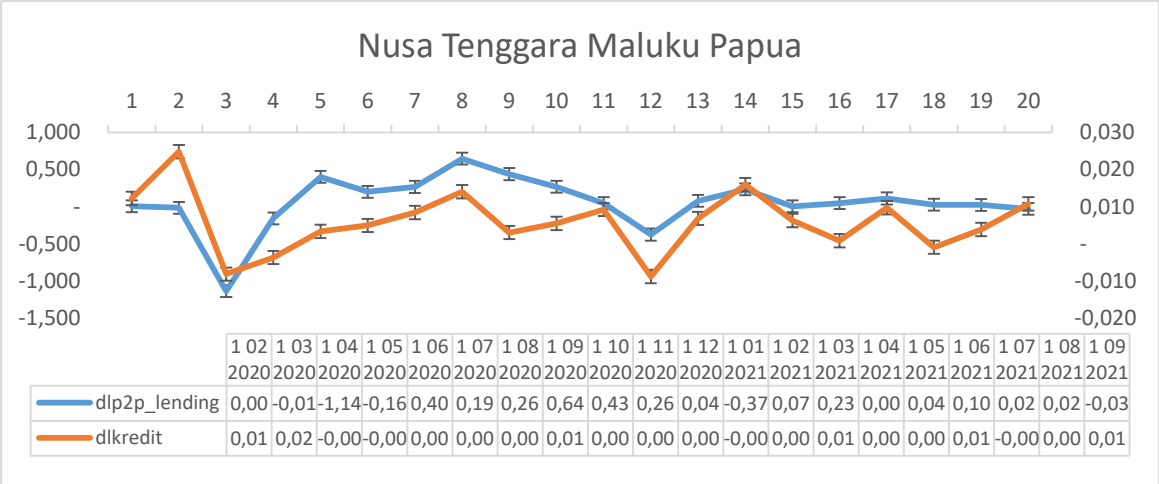
Figure 3. Growth in Bank Credit Distribution and P2P Lending on Kalimantan Island



	1 02 2020	1 03 2020	1 04 2020	1 05 2020	1 06 2020	1 07 2020	1 08 2020	1 09 2020	1 10 2020	1 11 2020	1 12 2020	1 01 2021	1 02 2021	1 03 2021	1 04 2021	1 05 2021	1 06 2021	1 07 2021	1 08 2021	1 09 2021
dlp2p_lending	-0,02	-0,15	-1,23	-0,19	0,21	0,32	0,17	0,20	0,59	0,54	-0,17	-0,15	0,20	0,19	0,08	-0,02	0,12	0,11	0,06	-0,05
dlkredit	0,00	0,01	-0,00	-0,00	0,00	0,00	0,00	0,01	0,00	0,00	0,00	-0,00	0,00	0,03	-0,00	-0,00	0,01	0,00	0,01	0,01

Source: Processed data, 2023.

Figure 4. Growth in Bank Credit Distribution and P2P Lending on Sulawesi Island



	1 02 2020	1 03 2020	1 04 2020	1 05 2020	1 06 2020	1 07 2020	1 08 2020	1 09 2020	1 10 2020	1 11 2020	1 12 2020	1 01 2021	1 02 2021	1 03 2021	1 04 2021	1 05 2021	1 06 2021	1 07 2021	1 08 2021	1 09 2021
dlp2p_lending	0,00	-0,01	-1,14	-0,16	0,40	0,19	0,26	0,64	0,43	0,26	0,04	-0,37	0,07	0,23	0,00	0,04	0,10	0,02	0,02	-0,03
dlkredit	0,01	0,02	-0,00	-0,00	0,00	0,00	0,00	0,01	0,00	0,00	0,00	-0,00	0,00	0,01	0,00	0,00	0,01	-0,00	0,00	0,01

Source: Processed data, 2023.

Figure 5. Growth in Bank Credit Distribution and P2P Lending on Nusa Tenggara, Maluku, Papua Islands

Based on Figure 5, the pattern of increases and decreases in banking credit and P2P lending, which has the same pattern as Java and Sulawesi, can be seen. The increase in P2P lending credit distribution was higher than bank credit distribution.

The growth in credit distribution by P2P lending in Java and outside Java indicates the wider reach of the market served by P2P lending. This encourages increased competition in serving existing markets. Based on Porter's five forces, P2P lending as a new player (new entrants) can increase competition in the financing or credit industry. Increasing the distribution of financing by P2P lending can reduce banks' market power. P2P lending can erode the credit/financing market served by banks. P2P lending also has the potential to reduce income levels, resulting in a decrease in banking profit levels.

Spatial Influence of P2P Lending on Bank Risk

How P2P lending affects bank risk can be elucidated in Table 5. The dependent variable in this model was bank risk, influenced by P2P lending credit growth. In this study, there were six estimation models with different specifications.

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Table 5. Estimated Results of the influence of P2P Lending on bank risk

	(1) NPL	(2) NPL	(3) NPL	(4) NPL
NPL (-1)	-0.0251	-0.0245	-0.0249	-0.0283
	(0.258)	(0.320)	(0.238)	(0.781)
P2PLending	0.00335	0.00363	0.00305	0.00428
	(0.00263)	(0.00305)	(0.0123)	(0.00390)
MSMEs	-0.00269	-0.00203	-0.00102	-0.00260
	(0.00847)	(0.0257)	(0.00944)	(0.0126)
Non-MSMEs	-0.00449	-0.00261	-0.00240	-0.00304
	(0.0102)	(0.0245)	(0.0116)	(0.00870)
LDR	0.338	0.681	0.654	0.196
	(1.623)	(1.361)	(1.872)	(2.295)
branch	-0.00620	-0.00686	-0.00615	-0.00392
	(0.0553)	(0.0205)	(0.0270)	(0.0408)
P2PLending_Java		-0.00559	-0.00607	-0.00498
		(0.00715)	(0.0136)	(0.00886)
P2PLending* MSMEs			0.0000241	
			(0.000392)	
MSMEs*ICT				-0.00108
				(0.0109)
_cons	3.091	2.647	2.521	2.960
	(4.359)	(2.267)	(3.920)	(4.400)
N	825	825	825	825

Source: Data Processing, 2023
Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

According to the test results presented in Table 5 for models 1, 2, 3, and 4, it can be concluded that P2P lending did not have a statistically significant impact on bank risk. Similarly, in models 2, 3, and 4, the influence of spatial P2P lending on bank risk was shown to be insignificant. These findings signify that the growth of credit distribution facilitated by P2P lending does not increase bank risk. These findings consistently demonstrate that the effect of P2P lending does not increase banking risk at national or regional levels.

The findings in Table 3 are possible since customers with the potential to have problems with credit at the bank can be served by P2P lending. Based on POJK 42/2017, which regulates the implementation of credit distribution for commercial banks, credit distributed by banks must meet several conditions. The applicant's creditworthiness analysis process must include credit history and credit collateral/guarantee. Some of these complicated requirements create opportunities for P2P lending to serve it well. Compared to banks, P2P lending itself has simpler credit procedures and requirements. This opportunity must be utilized properly by P2P lending to expand market reach. According to Lu *et al*. (2020) and Liu *et al*. (2019), most P2P loans are micro and personal loans without collateral. The research results of A. Basha *et al*., (2021) also support further research (Lu *et al*., 2020) and H. Liu et al., (2019). As a result, P2P lending provides credit to individuals and MSMEs with limited banking access. The limited access is due to the lack of credit history data from individuals or MSMEs. P2P Lending offers an alternative service to small enterprises and individuals. P2P lending provides fund providers with superior returns and enables

consumers who have restricted access to banking services to participate. Meanwhile, H. Liu et al., (2019) asserted that P2P Lending must possess the capacity to manage risk, particularly in the context of evaluating potential borrowers, as it concentrates on borrowers who have not received financial services from institutions. According to Lu *et al*., (2020), P2P lending is becoming more prevalent as a new form of digital financing. Unsecured micro-loans and short maturities comprise the majority of the P2P lending market.

CONCLUSION AND RECOMMENDATION

Based on the results of testing the effect of P2P lending on bank performance and risk, it can be concluded that banking performance has generally decreased due to P2P lending. This decline's effect on banking performance generally applies to Java and outside Java. Hence, the competition between banking and P2P lending can be confirmed through these findings.

Interestingly, in this research, the influence of P2P lending did not increase banking risk, either in general or spatially. Banking performance has decreased, but banking risks have not increased. In other words, banking profits have decreased, but banking services have not experienced increased risk. It is known that the advantage of P2P lending is that it can take some of the market share that banks have served. However, further investigation needs to be carried out to determine whether customers with the potential to increase banking risk are currently being served by P2P lending. Mitigation efforts that P2P Lending can carry out for at-risk customers by conducting routine evaluations related to the 90-day Payment Success Rate (TKB 90) and the 90-day Default Rate (TWP 90). Analysis of TKB 90 and TWP 90 is important to see the success and failure of fulfilling obligations according to the agreed due date

A strategy that banks can develop to face the increasing presence of P2P lending is to invest in technology. Considering that P2P lending is a digital-based fin-tech company that provides services to the public, banks must respond quickly to changes in the public's needs for digital-based services. Banking can also adopt appropriate technology to increase the quantity and quality of services. The use of technology to increase financial inclusion is also consistent with previous research (Daud & Ahmad, 2023, He et al., 2022; Wu et al., 2023). In addition, the adoption of technology by banks can improve quality and efficiency, resulting in increased income and performance. In addition, to reduce competition, banks can partner with P2P Lending to make credit offers, such as channeling or cross-selling.

This study examines the impact of P2P Lending on regional bank performance, specifically distinguishing between Java Island and areas outside of Java. The segmentation of the Java Island region based on credit distribution data from the OJK is limited to six major provinces: West Java, Banten, DKI Jakarta, D.I. Yogyakarta, Central Java, and East Java. In the meantime, the number of provinces outside Java is higher, and in terms of geography, its area comprises five islands. The characteristics of the islands outside Java exhibit significant diversity, making them compelling subjects for further investigation. Subsequent investigations could examine the impact of P2P Lending on the performance and risk of banks across different regions by categorizing them into six distinct islands: Java, Sumatra, Kalimantan, Sulawesi, Bali, and Nusa Tenggara, as well as Maluku and Papua. Understanding island specifications is crucial as it enables the formulation of suitable policies that take into account the unique characteristics of various regions.

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