Measuring Post-IPO Performance for Regional Banks: Evidence from Indonesia

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This paper investigates regional banks' post-Initial Public Offering (IPO) performance to achieve the objective of Indonesia's Regional Champion Program (RCP) in solvability, profitability, efficiency, interest income, intermediary capability, and loan risk. In 2010, Indonesia's banking authority launched the RCP to increase regional banks' institutional resilience, intermediary function, and financial inclusion. We apply the Difference-in-Differences (DiD) approach to a panel data set of Indonesian monthly bank data from 2009 – 2019. The research finds that regional banks' profitability, efficiency, and interest income, increase after IPO; this result is consistent in the medium and long term. Inline, we also find that regional banks' capital increase after IPO. However, it only persists in the short-term period. Furthermore, our findings also show that regional banks' intermediary capability, reflected in Loan to Deposit Ratio (LDR) and loan growth, decreases after IPO. Finally, in line with Boubakri et al. (2005), our results show an insignificant association between IPO and regional banks' loan risk.

Keywords: regional bank, initial public offering, stock market, performance, risk, Indonesia.

1. Introduction

Indonesia is projected to become the fourth-largest economy in the world by 2050 (PWC, 2017). However, stock market capitalization in Indonesia is relatively low compared to other developing countries (WEO, 2019). Although the banking sector dominates Indonesia's stock market, only three regional banks have traded their shares on the Indonesia Stock Exchange (IDX).

Indonesian regional development banks (Bank Pembangunan Daerah/BPD) or regional banks are commercial banks owned by the province and district/city governments. Since regional banks in Indonesia have their captive market in their respective provinces/area, regional banks have higher profitability than other commercial banks in Indonesia (Trinugroho et al., 2014). However, their solvency ratio still lower compares to the other banks in Indonesia. This phenomenon is because regional banks' dividend policy is still determined by the provincial government's political policy. Therefore, to increase regional banks' institutional resilience, intermediary capability, and financial inclusion, Indonesia's banking authority has launched BPD Regional Champion Program or Regional Champion Program (RCP) since 2010.

The impact of privatization, including Initial Public Offering (IPO) to banks' performance (e.g., La Porta et al., 2002, Boubakri et al., 2005), and regional banks' performance and risk (e.g., Trinugroho et al., 2018, Meslier et al., 2020) have been studied widely. However, there is still a research gap in the study of IPO and regional banks' performance. Therefore, this paper aims to elaborate on regional banks' after IPO performance in terms of their solvency, profitability, efficiency, interest income, intermediary capability, and loan risk. To our best knowledge, this paper is the only research that focuses on this particulartopic.

Although IPO is one of the predominant ways firms increase their capital, developing country banks' solvency tends to decrease after IPO (Boubakri et al., 2005). This result is in line with the insignificant evidence of the association between bank IPO and profitability (Boubakri et al., 2005; Haber, 2005). On the other hand, several studies that focus on a developing country find evidence that banks' profitability and efficiency increase after IPO (Di Patti and Hardy, 2005, Beck et al., 2005, Houge and Loughran, 1999, Lin and Zhang, 2009).

Since regional banks concentrate their services to a particular area, regional banks tend to have a higher competitive advantage and market share than other financial institutions (Dick, 2007, Trinugroho et al., 2018). Therefore, regional banks' service networks also a significant factor in

increasing regional banks' profitability. Although firms tend to use their capital from IPO to invest in fixed assets, including new service offices, study about the association between regional banks networks and IPO is still relatively limited. However, this is important because regional banks' networks play a crucial role in their profit and intermediation capability (e.g., Harimaya and Kondo, 2016; Kondo, 2018).

In addition to the previous studies, our research empirically investigates regional banks' solvency, profitability, efficiency, interest income, intermediary capability, and loan risk after IPO, using a difference- in-differences (DiD) approach. DiD approach needs a treatment group which includes regional banks that already go public, and a control group consists of private regional banks.

Using more comprehensive monthly data for Indonesian banks from 2009 to 2019, we find robust evidence that the regional banks' profitability, efficiency, and interest income increase after IPO. Therefore, our findings consistent with Beck et al. (2005) and Di Patti and Hardy (2005). The results also show that regional banks' profitability still consistent three years after the IPO. Unlike other public banks in Indonesia, which show decreased solvability after IPO, we find that the solvability of the regional bank is increasing after the IPO. However, this is only consistent in the short-term. Furthermore, regional banks' intermediary capability, reflected in Loan to Deposito Ratio (LDR) and loan growth, decreases after IPO. Finally, consistent with Boubakri et al. (2005) and therefore different from Beck et al. (2005) and Lin and Zhang (2009), our results show an insignificant association between IPO and regional banks' loanrisk.

The rest of the paper is organized as follows. In Section 2, we provide the related literature, followed by the institutional setting in Section 3. In Section 4 and 5, we present and discuss the research method and empirical results, respectively. Finally, section 6 provides concluding remarks and policy implications.

2. Related Literature

2.1. Bank Initial Public Offering

Banks' Initial Public Offering (IPO) cannot be separated from bank privatization since IPO is the foremost option of state-owned enterprise privatization. In the broader economic view, there are two main theories of government intervention in financial institutions. The development theory argues that government participation in the financial sector is essential for economic growth (e.g.,

Bai and Xu, 2005). On the other side, the political theory views that firms' government control is part of the political contribution to their supporters (e.g., La Porta et al., 2002). At the micro-level, Houge and Loughran (1999) states that there are four reasons for banks to go public, they are meeting mandatory capital requirements, selling overpriced shares, taking benefit of favorable market conditions, and attracting management with a stock option plan. They can show evidence that banks decide to go public to take advantage of the market's favorable condition. However, there is mixed evidence of IPO impact on banks' performance.

Despite the fact that Initial Public Offering (IPO) is one of the prominent options for firms to increase their capital, to our best knowledge, there is no empirical evidence that IPO increases banks' solvency. On the contrary, Boubakri et al. (2005), who study bank privatization in developing countries, find that after IPO, banks' capital adequacy tends to decrease. Besides, they also cannot find a significant association between IPO and banks' profitability. The finding is consistent with Haber (2005), who cannot find evidence that privatization increases Mexican banks' profitability. Contrary, by using Chinese bank data, Lin and Zhang (2009) find that public banks have high profitability. However, they argue their results because Governments tend to select banks with better performance to go public. Furthermore, Di Patti and Hardy (2005) find that Pakistani banks' profitability increase just after the IPO. Inline, Beck et al. (2005) also find that banks' profitability increase after the privatization of Nigerian state-owned banks. Different from Lin and Zhang (2009), they argue that these findings because the government tends to privatize banks with poor performance.

Regarding efficiency, using the Cost to Income ratio as a proxy of efficiency, Lin and Zhan (2009) find that Chinese banks' efficiency improves after IPO. However, in line with Yin et al. (2015), Lin and Zhan (2009) argue that their findings are because the Chinese government tends to select higher-performing banks for public listing activities. Boubakri et al. (2005) find that banks' Net Interest Margin (NIM) increases after IPO, which implies that banks' efficiency decreases after IPO. However, using Net Interest Income (NII) to capture efficiency, Houge and Loughran (1999) find that US banks' efficiency increase after IPO. In Indonesia, Trinugroho et al. (2014) find that NIM negatively associated with banks' efficiency. They also find that government-owned banks have higher NIM than other banks.

Concerning loan growth and risk, Houge and Loughran (1999) found that public banks' loan

growth is higher than private banks. They cannot find significant evidence that banks increase their risk-taking activity after they become public. Inline, Boubakri et al. (2005) find insignificant evidence of the association between IPO and loan risk. On the other hand, Beck et al. (2005) find that banks' loan risk decreases after privatizing state-owned banks. Lin and Zhang (2009) find that public banks in China have lower loan risk. In Mexico, Haber (2005) mentions that a decrease in loan risk after privatization is because banks tend to become risk-averse and put their assets in government securities.

In addition to those studies, our focus is to elaborate post-IPO performance in term of solvability, profitability, efficiency, interest income, intermediary capability, and loan risk of regional banks, a specific type of government bank whose operations centered on a particular area/region.

2.2. Regional Banks: Performance and Risk

Regional banks have a different character in each country. Nevertheless, regional banks are commonly identified as banks with regional ties, such as a service network that focuses only on one particular area/region. Since regional banks focus their operation in certain regions, they can customize their services to their specific customer, and thus increase their competitive advantage (Dick, 2007). Kondo (2018) finds that Japanese regional banks with more branches positively correlated with higher loan growth. However, regional banks with a higher number of branches have lower profitability (Kondo, 2018).

Regarding profitability, Liu and Wilson (2010) find that regional banks' income diversification strategy increases profitability. They also find that GDP growth and stock market development significantly associated with regional banks' profitability. On the other hand, Meslier et al. (2020) cannot find a significant association between regional banks' profitability and short-term loan to Small Medium Enterprises. These two findings imply that regional banks' profitability has become more dependent on non- interest revenue. Since lower NIM is also associated with higher efficiency (e.g. Boubakri et al., 2005; Houge and Loughran, 1999), Liu and Wilson (2010) show regional banks with higher efficiency have more market share. Trinugroho et al. (2018) find that Indonesian regional banks have higher market power than other commercial banks.

In Indonesia, regional banks are owned by province and district/city governments; therefore, it is seen as banks with more capital access. Jiang et al. (2013) shows that government-owned banks in China can adjust their capital faster than private-owned banks. They also find that local-

government undercapitalized banks are more able to increase their capital than private-owned banks. This is crucial since capital requirement plays a crucial role in Chinese regional banks' loan growth (Jianzhong, 2017). Regarding public regional banks, Baba and Inada (2009) find that public regional banks are negatively associated with lower subordinated debts. They argue this can indicate the importance of regional banks increasing market- discipline to their stockholder. Yeh (2017) found that higher quality of accounting information can protect regional banks from default risk during the adverse period.

3. Overview of Capital Market and Regional Banks in Indonesia

As the country with the fourth-largest population globally, Indonesian Gross Domestic Product (GDP) is predicted to be ranked 4th in the world by 2045 (PWC, 2017). However, Indonesia's financial market deepening is still considered shallow. Indonesia's capital market capitalization at 46% of GDP places Indonesia in the 46th rank (WEF, 2019). The banking industry dominates the Indonesian Stock Exchange (IDX). Nevertheless, there are only three regional banks from the 43 banks in the IDX, which is relatively limited compared to 27 regional banks in Indonesia. The government and the Indonesian Financial Services Authority made various efforts to increase domestic market capitalization, including reducing the minimum threshold of shares traded on the capital market and simplifying corporate prospectus in the Initial Public Offering process. Indonesia's banking law[3] divides banks into two main categories rural/community and commercial banks. A rural bank is a relatively small bank that only receives a deposit and provides loans, with a limited network and cannot participate in clearing transactions managed by the central bank. Meanwhile, a commercial bank is a bank with a larger scale of assets and operations that can provide most fuctions of modern bank. Regional development bank or regional bank is one type of Indonesia commercial bank which is owned by provincial and district/city governments. The characterisic of the regional bank is unique because they have networks in areas that are generally inaccessible to other commercial banks. Therefore, regional banks play an essential role in increasing financial inclusion and literacy in remote areas, especially in Indonesia, as one of the world's largest archipelago countries.

However, regional banks in Indonesia are considered less resilient, with lower progress in terms of services development than other types of banks. Therefore, the banking authority has issued Regional Champion Program (RCP) for regional banks since 2010. RCP is initiated with three

main pillars: (i) resilience institution; (ii) intermediary capability; and (iii) capable human resources to increase financial inclusion. These pillars are designed to improve regional banks' profitability, which is supported by the lower loan interest rate, the loan portion of the productive sector and Small Medium Enterprise (SME), and public access to various financial products. There are only three regional banks with a capital of more than five trillion Rupiah or classified as BUKU 3[4].

Since IPO can improve firms' capital, and also banks' performance, including profitability, efficiency (Di Patti and Hardy, 2005, Beck et al, 2005, Houge and Loughran, 1999, Lin and Zhang, 2009), capital intermediary (Harimaya and Kondo, 2016, Kondo, 2018), and then market-discipline (Baba and Inada, 2009, Yeh, 2017), our research focuses on regional banks' performance after IPO, to see whether the IPO is the right decision for regional banks in Indonesia to achieve the RCP goals.

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[3] Undang-Undang Nomor 10 Tahun 1998 tentang Perbankan (Banking Law).
[4] BUKU is a bank classification in Indonesia based on the capital amount. BUKU 4 is a classification for a bank with capital > 30 trillion Rupiah. BUKU 3 is a classification for a bank with capital ≤ 30 trillion Rupiah and > 5 trillion Rupiah. BUKU 2 is a classification for a bank with capital ≤ 5 trillion Rupiah and > 1 trillion Rupiah. BUKU 1 is a classification for a bank with capital ≤ 1 trillion Rupiah.

4. Research Method

4.1. Data

To examine regional banks post-IPO performance on solvability, profitability, efficiency, interest income, intermediary capability, and loan risk. We use monthly bank data from 2009 to 2019 provided by Indonesia Financial Services Authority/Otoritas Jasa Keuangan (OJK). The bank data can be classified as regional and non-regional banks, and also public and private banks. We can also identify the period before and after the bank go public. The final sample comprises 124 banks that consist of 27 regional banks (97 non-regional banks, and 43 public banks (81 private banks). Seventeen banks go public in the sample period, including three regional banks.

We use the Capital Adequacy Ratio (CAR) provided by OJK as a proxy of banks' solvability. Following Trinugroho et al. (2020), Return of Assets (ROA), Operating Expenses to Operating Revenues Ratio (BOPO), and Net Interest Margin (NIM) as a proxy of profitability, efficiency, and interest revenue, repectively. Furthermore, we also use Loan to Deposit Ratio (LDR), Loan Growth, and Deposit Growth to measure banks' intermediary capability. Lastly, we use the Non-Performing Loan (NPL) ratio as a proxy of loan risk (Trinugroho et al., 2020).

4.2. Empirical Strategy

With the data we have, we can use the Difference-in-Differences (DiD) approach to examine regional banks' solvability, profitability, intermediary capability, and credit risk after IPO. This approach is commonly used in a natural experiment setting to measure the impact of certain intervention to a treatment group, and compare the intervention's impact in the treatment group with the non-treatment group or the control group. The treatment group in our research consists of public regional banks. We use two layers of control groups. Our first control banks are private regional banks. Next, we compare our treatment group with non-regional banks, including all banks that go public in the sample period, and all public banks. In the first model, we only estimate the model in the regional banks sample (3.417 observations). Therefore the DiD approach in our first model only use private regional banks as control banks as follows:

Model 1

$$Y_{b,t} = \alpha + \beta_1\, IPO + \beta_2\, BPD_b + \beta_3\, IPO * BPD_b + \beta_4\, BankSpesific_{b,t} + \beta_5\, Macro_t + \varepsilon_{b,t}$$

Y b,t is the dependent variables which are Capital Adequacy Ratio (CAR), Return on Assets

(ROA), Operating Expenses to Operating Revenues Ratio (BOPO), Net Interest Income (NIM), Loan to Deposit Ratio (LDR), Loan Growth, Deposit Growth, and Non-Performing Loan (NPL) of a bank (b) at the time (t), consistently with Trinugroho et al. (2020). Post t is a dummy variable equal to one in time when the bank goes public. BPD b is a dummy variable equal to one if the regional bank is also a public bank. *BankSpecific b, t* is a control variable of bank fundamentals captured by the natural logarithm of total bank assets (lnTA). The interaction variable of Post and BPD (IPO t * BPD b) is the variable of interest. This variable represents post-IPO regional banks' solvability, profitability, efficiency, interest income, intermediary capability, and loan risk, as it captured by the dependent variables. We also use *Macro t* to capture macro-economic variables that can impact the dependent variable. Following Pontinex and Siregar (2019), we use monthly data of Inflation (CPI) from Indonesia Statistics (Badan Pusat Statistik/BPS) and the Industrial Production Index from CEIC Data as proxies for the macro-economic variables. Table 1 reports the descriptive statistics of the variables.

Next, we also use the non-regional banks as our control banks. This setting allows us to examine post-IPO performance on all the banks in Indonesia, and compare it with regional banks performance after IPO. In our second model, we employ the model to the sample that consists of all the banks (14.303 observations). The DiD approach as follows:

Model 2

$$Y_{b,t} = \alpha + \beta_1 IPO_b + \beta_2 Post_t + \beta_3 BPD_b + \beta_4 IPO_b * Post_t + \beta_5 IPO_b * Post_t * BPD_b$$

$$+ \beta_6 BankSpesific_{b,t} + \beta_7 Macro_t + \varepsilon_{b,t}$$

In addition to our first model, IPO b is a dummy variable equal to one if the bank is a public bank. The first interaction variable in the second model of IPO and Post (*IPO b * Post t*) represents all public banks' post- IPO performance. The variable of interest which is the second interaction variable with triple interaction of IPO, Post, and BPD (*IPO b * Post t * BPD b),* captures regional banks' performance after IPO, with the control group of private regional banks, and also private and public non-regional banks. With the second model we can compare regional banks' post-IPO performance and all public banks' post-IPO performance. In addition, we test regional banks' performance with the lead of dependent variables to examine regional banks' performance for several future periods after the IPO.

5. Results

5.1. Descriptive Statistics of Variables and Correlation Matrix

Table 1 shows the descriptive statistics of the regional banks sample and all banks sample for all variables. The average regional banks' CAR is 20.01%, relatively lower than the average of all banks. However, regional banks have higher profitability, efficiency, and interest income than the industry, in line with Trinugroho et al. (2014). Nevertheless, the average intermediation performance of regional banks, reflected by LDR, is 75,85%, lower than the average of all banks. Regional banks also have lower loan growth and deposit growth. Finally, the average NPL ratio of regional banks is 2,94%, slightly higher than the average industry.

We also provide the statistics of variables for treated and control banks in Table 2. On average, CAR and NIM of public regional banks in the treated group are lower than the private regional banks in the control group. However, the treated group has higher ROA and lower BOPO. Regarding the intermediation capability, the treated group has lower LDR, loan growth, and deposit growth than the control group. Furthermore, the treated group has a lower NPL ratio than the control group.

Table 3 provides the correlation matrix of variables. The dummy variable for treated banks or public regional banks, BPD is negatively correlated with CAR, ROA, NIM, LDR, loan growth, deposit growth, and NPL. On the other side, BPD is positively correlated with BOPO and lnTA.

Table 1 Descriptive Statistics of Variables – Regional Banks and All Banks

Variable	Definition	Regional Banks					All Banks				
		Obs	mean	sd	min	max	Obs	mean	sd	min	max
CAR	Capital Adequacy Ratio	3417	20.006	5.966	9.88	110.781	14275	24.023	13.879	9.88	119.446
ROA	Return on Assets	3417	4.139	6.998	-56.909	135.09	14275	2.4980	5.0351	-70.46	135.09
BOPO	Expense to Revenue Ratio	3417	73.82	14.514	29.666	235.092	14275	83.895	19.071	0	432.726
NIM	Net Interest Margin	3417	7.204	2.078	-.534	27.066	14275	4.749	2.8045	-67.92	27.066
LDR	Loan to Deposit Ratio	3417	75.85	12.802	42.57	128.434	14275	90.618	32.725	42.462	313.047
loangrowth	Loan Growth (yoy)	3417	9.433	30.907	-94.365	341.508	14275	14.059	39.681	-96.561	382.557
depositgrowth	Deposito Growth (yoy)	3417	8.958	30.625	-93.797	224.631	14275	12.225	35.854	-93.968	226.556
NPL	Non-Performing Loan Ratio	3417	2.943	3.1431	.089	45.46	14275	2.8058	2.8963	0	46.553
lnTA	Natural Logarithm	3417	16.15	.99504	11.351	18.559	14275	16.177	1.6846	9.641	20.927
IPI	Production Index	3417	4.305	3.5418	-7.120	14.260	14275	4.3261	3.5488	-7.121	14.260
CPI	Costumer Price Index	3417	4.674	1.6987	2.414	8.359	14275	4.7022	1.6950	2.414	8.3591

This table shows the summary statistics of the key variables.

Table 2 Descriptive Statistics of Variables – Treated Regional Banks and Control Regional Banks (Model 1)

Variable	Definition	Treated Regional Banks					Control Regional Banks				
		Obs	mean	sd	min	max	Obs	mean	sd	min	max
CAR	Capital Adequacy Ratio	264	19.631	3.362	10.409	36.951	3153	20.037	6.134	9.88	110.782
ROA	Return on Assets	264	4.487	7.849	.851	89.949	3153	4.110	6.923	-56.909	135.09
BOPO	Expense to Revenue	264	72.979	9.509	49.18	92.181	3153	73.901	14.856	29.666	235.092

NIM	Net Interest Margin Ratio	264	6.828	.9838	3.66	14.663	3153	7.2361	2.142	-.534	27.066
LDR	Loan to Deposit Ratio	264	73.404	9.249	46.25	96.07	3153	76.056	13.037	42.57	128.434
loangrowth	Loan Growth (yoy)	264	7.465	30.732	-83.377	168.982	3153	9.598	30.920	-94.366	341.508
depositgrowth	Deposito Growth (yoy)	264	6.771	28.798	-72.529	155.623	3153	9.1420	30.770	-93.798	224.631
NPL	Non-Performing Loan Ratio	264	2.646	1.296	.648	4.94	3153	2.968	3.249	.0889	45.46
lnTA	Natural Logarithm	264	17.635	.672	14.274	18.559	3153	16.030	.914	11.352	18.092
IPI	Production Index	264	4.256	3.552	-7.121	14.260	3153	4.309	3.541	-7.121	14.260
CPI	Costumer Price Index	264	4.681	1.700	2.414	8.359	3153	4.674	1.699	2.414	8.359

This table shows the summary statistics of the key variables used in the Difference-in-Differences (DID) analysis in model 1.

Tabel 3 Correlation Matrix

	BPD	POST	CAR	ROA	BOPO	NOM	LDR	Loan gr	Deposit gr	NPL	lnTA	IPI	CPI
BPD	1												
POST	0.882	1											
CAR	-0.0600	-0.0520	1										
ROA	-0.0100	-0.0682	0.0521	1									
BOPO	0.0695	0.118	-0.188	-0.331	1								
NIM	-0.120	-0.150	0.0121	0.391	-0.366	1							
LDR	-0.0373	-0.00113	-0.0934	0.0133	0.0964	0.149	1						
Loan gr	-0.0292	0.0170	0.0509	0.120	-0.0467	0.0711	0.0173	1					
Deposit gr	-0.0294	0.0255	0.0538	0.0700	-0.0279	0.0101	-0.190	0.818	1				
NPL	-0.00448	0.0345	0.0838	-0.148	0.485	-0.0555	0.00186	-0.109	-0.0852	1			
lnTA	0.407	0.412	-0.146	-0.385	0.173	-0.417	0.124	0.0674	0.0604	0.0398	1		
IPI	-0.00255	0.0168	0.0201	0.0516	0.00176	0.0111	-0.0172	0.226	0.185	0.00803	0.0160	1	
CPI	-0.0224	-0.0252	-0.129	-0.0183	-0.112	0.167	-0.0758	0.0850	0.0897	-0.0243	-0.111	-0.0681	1

BPD is ia treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. CAR is Capital Adequacy Ratio, ROA is return on asset, BOPO is operating expenses and operating revenues ratio, NIM is Net Interest Margin, LDR is Loan to Deposit Ratio, Loan gr is loan growth (year on year), Deposit gr is deposit growth (year on year), NPL is non-performing loan ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index.

5.2. Empirical Results

We analyze regional banks' post-IPO performance by employing the DiD approach. Table 4. presents the result of our first model. The variable of interest is the interaction between the dummy variable of treated banks (BPD) and the dummy variable of post IPO (BPD*Post). The results show that the IPO has a positive and significant association with ROA. It also has a negative and significant association with BOPO and LDR.

In Table 5, we exclude one of the regional banks from the treated group, which is Bank Banten. The exclusion because Bank Banten is a public bank before it has classified as a regional bank. We find that IPO has a positive and significant association with CAR, ROA, and NIM. On the other side, IPO has a negative and significant association with BOPO and LDR. The results indicate that regional banks have higher solvency after the IPO. Regional banks' profitability also increases after becoming public banks, reflected in higher ROA, NIM, and lower BOPO, in line with Lin and Zhang (2009), Di Patti and Hardy (2005), and Beck et al. (2005). However, the results show that IPO decreases regional banks' intermediary capability, as reflected by the LDR. Furthermore, the empirical evidence shows no significant association between IPO with regional banks' loan growth, deposit growth, and loan risk. This can be caused by a regional banks' intermediation performance, which is more influenced by their particular market condition. The findings also imply that regional banks' higher profitability after IPO not because of the intermediary capability increase, but from the improvement of regional banks' efficiency and interestincome.

Next, we compare our treated group with 17 banks that have become public in the sample period (2009- 2019). In Table 6, the primary variable of interest is the interaction variable of IPO, Post, and BPD (IPO*Post*BPD). This triple interaction variable shows regional banks' post-IPO performance, compared to all the banks that have become public in the sample period. In addition, we also provide the interaction variable of IPO and Post (IPO*Post) to show post-IPO performance of all banks that have become public in the sample period. By providing the second interaction variable (IPO*Post), we can compare regional banks after IPO performance with other public banks performance after IPO. The results show that IPO has a positive and significant association with regional banks' CAR, ROA, and NIM. Meanwhile, IPO has a negative and significant impact on regional banks' BOPO, LDR, loan growth, and deposit growth. The regional banks' results are opposite to the public banks' performance after the IPO in the sample period. Different with the

regional banks, we argue that non-regional banks tend to increase their intermediary capability after IPO to meet their new shareholders expectations. Furthermore, inconsistent with Beck et al. (2005) and Lin and Zhang (2009), our results show that banks' NPL increase after IPO. However, there is no significant evidence that regional banks' NPL increases after IPO; this particular finding for regional banks is in line with Boubakri et al. (2005). The findings also implied that regional banks do not increase their risk-taking behavior after the IPO.

Furthermore, we also compare our treated group with all the public banks or include 26 banks that have become public before the sample period. The results in Table 7 in line with the findings in Table **6.** Regional banks' solvency, profitability, efficiency, and interest income increase after IPO, as reflected by positive and significant CAR, ROA, NIM, and negative and significant BOPO. However, IPO has a negative and significant association with regional banks' intermediary capability, LDR and loan growth.

To see the impact of IPO more detailed in several periods after the regional banks go public, we also show regional banks' solvability, profitability, efficiency, interest income, intermediary capability, and loan risk until the third year after the IPO. As presented in Table 8-15, the increase in regional banks' solvency only consistent in the short period after the IPO. On the other hand, regional banks' profitability increased persists until three years after regional banks go public. Furthermore, regional banks' post-IPO intermediary capability decrease until three years after the IPO.

5.3. Robustness Check

To confirm our results are consistent, we also execute a robustness check using an incremental regression approach by including all the variables in the empirical model. As presented in Appendix 1. (Table A1- A8), the result of our variables of interest remains robust as the main findings.

6. Conclusion and Policy Implications

We empirically analyze regional banks' post-Initial Public Offering (IPO) performance in solvency, profitability, efficiency, interest income, intermediary capability, and loan risk. By using a treatment group and control group, and also prior and post IPO conditions, we use a natural experiment condition to investigate regional banks' after IPO performance. Our treatment banks are regional banks that perform IPO in the sample period (2009-2019). The treatment group already

includes all public regional banks in Indonesia. Our findings show that public regional banks' solvency and profitability increase after the IPO. However, post-IPO public regional banks' intermediary capability tend to decrease. Furthermore, in line with Boubakri et al. (2005), we find insignificant evidence of the association between IPO and regional banks' loan risk.

In addition, we also find that, in contrast to public regional banks, public banks have lower solvency and profitability after the IPO. Nevertheless, public banks' have higher loan growth, deposit growth, and NPL after the IPO. Elaborating regional banks' performance in several periods after the IPO, we find that regional banks' solvency only consistent in the short term period. However, regional banks' profitability reflected by higher ROA, NIM, and lower BOPO persist until the third year after the IPO. Therefore, our results support prior studies' findings showing that government-owned banks have higher profitability and more access to capital than other banks (e.g. Lin and Zhang, 2009, Trinugoroho et al., 2014, Trinugroho et al., 2018).

Our findings implied several policy implications. First, since there is a robust evidence that regional banks' solvency and profitability increase after IPO, it supports the Regional Champion Program (RCP) in increasing regional banks' institution resilience. Therefore, regulators can further encourage regional banks to become public. Since regional banks show consistent and higher profitability compare to other banks, regional banks can also attract more capital and investors to the domestic capital market. Regulators can also provide more incentives for regional banks that intend to go public. For example, a reduction in registration fees, supervision levy, and also IPO process assistance.

Authorship contribution statement

Inka Yusgiantoro: Conceptualization, Supervision, Formal

Analysis Ivan Guruh: Review, Validation, Project

administration

Indra Tumbelaka: Conceptualization, Methodology, Formal Analysis, Software,

Writing, Milan Malinda: Methodology, Formal Analysis, Software, Writing

Tabel 4 Private Regional Banks as the Control Group (Include Bank Banten Tbk.[1] in the Treatment Group)

	(1) CAR	(2) ROA	(3) BOPO	(4) NIM	(5) LDR	(6) loangr	(7) depositgr	(8) NPL	(9) CAR	(10) ROA	(11) BOPO	(12) NIM	(13) LDR	(14) loangr	(15) depositgr	(16) NPL
BPD	-0.653	7.974*	9.651***	4.0***	8.948***	22.036	25.811***	1.85*0								
	(-1.23)	(4.49)	(9.49)	(6.36)	(7.11)	(-3.05)	(-4.21)	(19.34)								
Post	0.946	4.558***	12.607***	0.802	5.431***	18.799**	24.181***	2.051								
	(1.50)	(-2.67)	(7.72)	(-3.56)	(3.90)	(2.59)	(3.89)	(13.06)								
BPD*Post									0.321	3.078***	3.389	0.193	3.139	-2.303	-0.537	0.279
									(0.74)	(5.35)	(2.32)	(1.07)	(4.21)	(-1.92)	(-0.40)	(1.39)
lnTA	-0.998***	3.197***	2.166***	0.879	1.971***	2.918**	2.574**	0.116	-10.08***	3.080**	2.026***	0.864*	1.840	2.596**	2.197*	0.089*
	(-6.26)	(-8.57)	(5.60)	(-16.43)	(7.76)	(4.14)	(3.68)	(0.95)	(-6.36)	(-8.36)	(5.27)	(-16.24)	(7.28)	(3.65)	(3.11)	(0.74)
CPI	0.515	0.254***	0.806*	0.47*0		2.009*	2.008**	-0.036	0.515*	0.249*	0.812	0.150*	0.475	1.995**	1.992*	-0.037
	(-9.47)	(-4.28)	(-4.97)	(8.35)	(-3.52)	(6.38)	(6.30)	(-1.19)	(-9.48)	(-4.19)	(-4.99)	(8.36)	(-3.54)	(6.25)	(6.17)	(-1.22)
IPI	0.020	0.115***	-0.046	0.017	-0.095	1.998	1.623***	0.003	0.021	0.104**	-0.033	0.015	-0.082	2.028**	1.659**	0.050
	(0.75)	(5.64)	(0.70)	(1.74)	(-1.49)	(12.29)	(10.26)	(0.17)	(0.78)	(5.17)	(-0.50)	(1.59)	(-1.29)	(12.43)	(10.44)	(0.34)
constant	38.439***	56.104***	42.770***	20.603***	47.010***	-55.094***	48.442***	1.239	38.578***	54.408***	44.817***	20.382***	48.913***	-50.402***	-42.953*	1.632
	(14.62)	(8.93)	(6.54)	(22.83)	(11.11)	(-4.50)	(-4.00)	(0.62)	(14.75)	(8.74)	(6.89)	(22.71)	(11.60)	(-4.10)	(-3.52)	(0.23)
R-sqr	0.043	0.187	0.049	0.194	0.031	0.076	0.062	0.008	0.043	0.165	0.042	0.190	0.023	0.067	0.050	0.002
N	3418	3418	3418	3418	3418	3417	3418	3418	3418	3418	3418	3418	3418	3417	3418	3418

This table presents the first model estimation using difference-in-difference analysis for panel data of the treated banks (include Bank Banten Tbk.). We employ regression with robust standard to estimate the followingequation:

$$Ib_i = \alpha + \beta1\ I_i + \beta2\ BPD_b + \beta3\ I_i * BPD_b + \beta4\ BankSpesific_b + \beta5\ Macro_i + b_i$$

BPD is ia treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. CAR is Capital Adequacy Ratio, ROA is return on asset, BOPO is operating expenses to operating revenues ratio, NIM is Net Interest Margin, LDR is Loan to Deposit Ratio, Loangr is loan growth (year on year), Depositgr is deposit growth (year on year), NPL is non- performing loan ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

[1]Bank Banten is a public bank before it has classified as a regional bank since 2017.

Tabel 5 Private Regional Banks as the Control Group (exclude Bank Banten Tbk.[1] from the Treatment Group)

	(1) CAR	(2) ROA	(3) BOPO	(4) NIM	(5) LDR	(6) loangr	(7) deposit gr	(8) NPL	(9) CAR	(10) ROA	(11) BOPO	(12) NIM	(13) LDR	(14) loangr	(15) deposit gr	(16) NPL
BPD	-0.436	8.165**	- 10.520***	1.152	- 91.39***	21.867	25.667	1.899								
	(-0.82)	(4.63)	10.21***	(7.05)	(- 7.27)	(-3.03)	(-4.19)	(- 19.35)								
Post	2.521***	-3.024	63.330	0.019	3.894*	19.855	25.136	1.713***								
	(4.34)	(-1.81)	(5.18)	(0.11)	(2.79)	(2.73)	(4.03)	(9.68)								
BPD*Post									2.105***	4.760***	3.700***	1.118***	-4.819*	-0.992	0.664	-0.098
									(6.15)	(7.84)	(4.23)	(11.92)	(-6.31)	(-0.75)	(0.44)	(-0.43)
lnTA	- 1.193**	- 3.392***	2.934**	0.981	2.167***	2.794**	2.460**	0.158	- 1.199***	- 3.268***	2.774	0.963**	2.028**	2.462**	2.070	0.129
	(-7.46)	(-8.86)	(7.83)	(-19.03)	(8.32)	(3.84)	(3.41)	(1.25)	(-7.55)	(-8.64)	(7.45)	(-18.80)	(7.83)	(3.35)	(2.84)	(3.0)
CPI	- 0.529***	0.280***	0.767*	0.142	0.443*	2.013**	2.007**	0.034	0.529	0.27*	0.775**	0.143	0.451*	1.995***	1.985**	0.036
	(-9.81)	(-4.57)	(-4.73)	(8.01)	(-3.32)	(6.36)	(6.27)	(1.11)	(9.8)	(4.46)	(4.76)	(8.04)	(-3.36)	(6.23)	(6.12)	(1.16)
IPI	0.019	0.114***	-0.041	0.016	-0.093	1.997	1.623	0.003	0.020	0.102	-0.027	0.01	-0.081	2.027	1.658	0.050
	(0.71)	(5.58)	(-0.63)	(1.69)	(-1.47)	(12.28)	(10.25)	(0.19)	(0.74)	(5.09)	(0.41)	(1.52)	(-1.27)	(12.42)	(10.43)	(0.36)
constant	415.42*	59.303***	306.35	222.26	437.98*	-532.06	-466.63	0.586	41.63	57.484	32.978	21.970	45.834	-48.328	-40.945	1.009
	(15.79)	(9.19)	(4.85)	(25.65)	(10.08)	(-4.21)	(-3.73)	(0.28)	(15.91)	(9.00)	(5.24)	(25.47)	(10.60)	(-3.81)	(-	(0.4

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								)		)				)	)		3.25)	9)
R-sqr	0.049	0.199	0.051	0.208	0.035	0.075	0.062	0.008	0.049	0.176	0.042	0.202	0.026	0.067	0.050	0.00 2
N	3418	3418	3418	3418	3418	3417	3418	3418	3418	3418	3418	3418	3418	3417	3418	3418

This table presents the first model estimation using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.). We employ regression with robust standard to estimate the following equation:

$$Y_{b,} = \alpha + \beta 1\ Post + \beta 2\ BPD_b + \beta 3\ Post * BPD_b + \beta 4\ BankSpesific_{b,} + \beta 5\ Macro + \varepsilon_{b,}$$

Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is ia treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. CAR is Capital Adequacy Ratio, ROA is return on asset, BOPO is operating expenses to operating revenues ratio, NIM is Net Interest Margin, LDR is Loan to Deposit Ratio, Loangr is loan growth (year on year), Depositgr is deposit growth (year on year), NPL is non- performing loan ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

[1]Bank Banten is a public bank before it has classified as a regional bank since 2017.

Tabel 6 All banks as the control group. IPO is a dummy variable, one for a go public bank in the sample period (2009-2019)

	(1) CAR	(2) ROA	(3) BOPO	(4) NIM	(5) LDR	(6) loangr	(7) deposit gr	(8) NPL	(9) CAR	(10) ROA	(11) BOPO	(12) NIM	(13 LDR	(14) loangr	(15) deposit gr	(16) NPL
IPO	3.051 (-4.96)	-0.609 2.41)	-0.105 (0.19)	0.220 (2.33)	3.700* (-3.77)	0.223 (0.11)	0.092 (0.05)	0.199 (-2.20)								
Post	1.299 (2.00)	0.763 3.13)	5.398 (7.67)	0.285 (2.29)	7.980* (7.62)	5.195 (2.48	6.127 (3.18)	0.399 (4.03)								
BPD	5.432 (-30.44)	2.444 (17.25)	13.56 0 (-44.04)	3.271 (76.8 7)	19.894 (-48.16)	5.760 (-8.81)	3.909 (6.27)	0.151 (2.50)								
IPO*Post									0.981 *	2.133 ***	9.397* **	0.925* **	5.791* **	6.568* **	7.338 ***	0.382* **

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								2.44) 1.372 **	20.33 2.872 ***	(13.56 - 15.074	10.88) 2.956* **	(1.17) - 13.537‡	(5.75) - 7.436‡	(7.73) - 6.476	(4.71) -0.107
IPO*Post* BPD								(3.01)	(19.5 9)	15.90)	(29.78)	(6.47)	5.61)	4.82)	0.90)
lnTA	2.749	0.25 3	1.615*	0.096	1.347	0.002	0.346 0.008	2.655	0.265	1.444 0.139**		1.673	0.077	0.404	0.014
	32.58)	5.53)	16.49)	6.51)	(8.25)	(0.01)	(1.84) (0.48)	30.80)	5.78)	15.20) 9.75)		(10.06	(0.37)	(2.12)	(0.96)
CPI	0.700	0.40 8	0.588*	0.028	0.014	2.456	2.212 0.171*	0.703	0.424	0.519* 0.042*		0.070	2.483	2.232	0.171**
	11.40)	5.63)	6.34)	2.17)	0.09)	(12.0 1)	(11.6 7) 12.75)	11.30)	6.20)	(-5.34) 2.88)		(0.42)	(12.08)	(11.6 8)	12.70)
IPI	0.092	0.059	0.108	0.001	0.094	1.760	1.573 0.017	0.090	0.058	0.100 0.001		0.105	1.764	1.576	0.017
	2.95)	(8.42)	2.64)	(0.23)	(1.30)	(17.7 6)	(17.8 8) 2.75)	2.81)	(7.96)	(-2.33) 0.08)		(1.40)	(17.76)	(17.9 0)	2.76)
constant	73.76	6.470	116.0	5.650	74.355	4.062	10.13 3.519	70.72	7.250	109.61 7.238*		63.414	6.849	14.09	3.423*
	(48.7 6)	(7.80)	(63.48)	(21.8 0)	(26.67)	(- 1.06)	(- 2.92) (12.01)	(46.2 7)	(8.59)	(62.31) (28.49)		(22.16)	(- 1.77)	(- 3.46)	(12.19)
R-sqr	0.134	0.049	0.122	0.250	0.080	9.03	0.037 0.012	0.106	0.019	0.038 0.018		0.013	0.035	0.035	0.012
N	14282	14282	14282	14282	14282	14258	14262 14282	14282	14282	14282 14282		14282	14258	14262	14282

This table presents the second model estimation using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.). We employ regression with robust standard to estimate the following equation:

$$Y_{b,t} = \alpha + \beta_1 IPO_b + \beta_2 Post_t + \beta_3 BPD_b + \beta_4 IPO_b * Post_t + \beta_5 IPO_b * Post_t * BPD_b + \beta_6 BankSpesific_{b,t} + \beta_7 Macro_t + \varepsilon_{b,t}$$

IPO is a dummy variable, one for a public bank in the sampel period (2009-2019), 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. CAR is Capital Adequacy Ratio, ROA is return on asset, BOPO is operating expenses to operating revenues ratio, NIM is Net Interest Margin, LDR is Loan to Deposit Ratio, Loangr is loan growth (year on year), Depositgr is deposit growth (year on year), NPL is non-performing loan ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 7 All banks as the control group. IPO is a dummy variable, one for all go public banks

	(1) CAR	(2) ROA	(3) BOPO	(4) NIM	(5) LDR	(6) loangr	(7) deposit gr	(8) NPL	(9) CAR	(10) ROA	(11) BOPO	(12) NIM	(13) LDR	(14) loangr	(15) deposit gr	(16) NPL
IPO	3.694* (-6.00)	-0.399 (-1.59)	0.327 (0.60)	0.520* (5.38)	7.636** (-7.65)	1.128 (0.54)	1.237 (0.63)	-0.12 (-1.41)								
Post	0.006 (0.01)	0.170 (0.69)	5.187 (8.61)	0.549** (5.29)	15.651** (-14.26)	1.425 (0.67)	1.421 (0.71)	0.544* (5.65)								
BPD	6.658** (-30.47)	2.117* (15.29)	11.829*** (-35.40)	3.649** (80.77)	27.618** (-47.24)	5.848 (-8.17)	4.078 (-5.98)	0.289* (4.45)								
IPO*Post									1.262** (4.61)	0.982** (-15.04)	9.895 (27.6)	0.241** (5.14)	12.863* (20.93)	2.165* (2.88)	1.384 (2.08)	0.386 (7.78)
IPO*Post *BPD									1.092* (4.81)	1.340** (15.49)	-11.244 (-15.81)	2.194** (37.92)	12.354*** (-9.59)	2.272* (-2.74)	-0.164 (-0.16)	0.058 (0.63)
lnTA	-2.393** (24.34)	0.213* (4.44)	-2.186** (20.86)	0.191** (13.41)	3.607* (17.94)	-0.097 (-0.44)	0.245 (1.21)	-0.033* (2.02)	-2.519** (25.09)	0.141* (-3.02)	2.530** (24.02)	0.103** (-7.05)	(14.75)	-0.223 (-1.00)	0.168 (0.82)	-0.028 (-1.79)
CPI	0.697** (11.47)	0.096* (5.09)	0.620** (-6.70)	-0.023 (1.83)	0.014 (0.09)	2.408 (11.86)	2.153 (11.42)	0.172* (12.83)	0.698** (11.31)	0.105** (-5.43)	0.577** (-6.05)	0.033* (-2.25)	0.075 (0.46)	2.420 (11.91)	2.157 (11.37)	0.173** (12.95)
IPI	0.095** (-3.05)	0.058 (8.35)	0.103* (-2.53)	0.002 (0.36)	0.075 (1.08)	1.762 (17.78)	1.575 (17.89)	-0.017* (-2.70)	0.091** (-2.84)	0.057 (7.91)	-0.093 (-2.22)	-0.001 (-0.12)	0.097 (1.31)	1.766 (17.78)	1.577 (17.91)	0.017** (-2.72)
constant	69.353*** (42.38)	5.725** (6.79)	123.630*** (65.74)	6.716** (26.93)	46.277** (14.95)	-1.911 (-0.49)	-7.700* (-2.18)	4.019*** (13.88)	68.837*** (41.08)	5.315** (6.32)	124.963*** (66.86)	6.625* (26.16)	45.660** (14.13)	-1.940 (-0.49)	-7.879* (-2.20)	4.027 (14.30)
	0.145		0.131	0.274				0.015	0.107				0.040	0.034	0.033	0.014
N	14282	14282	14282	14282	14282	14258	14262	14282	14282	14282	14282	14282	14282	14258	14262	14282

This table presents the second model estimation using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.). We employ regression with robust standard to estimate the following equation:

$$Y_{b,t} = \alpha + \beta1\,IPO_b + \beta2\,Post + \beta3\,BPD_b + \beta4\,IPO_b * Post + \beta5\,IPO_b * Post * BPD_b + \beta6\,BankSpesific_{b,t} + \beta7\,Macro + \varepsilon_{b,t}$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. CAR is Capital Adequacy Ratio, ROA is return on asset, BOPO is operating expenses to operating revenues ratio, NIM is Net Interest Margin, LDR is Loan to Deposit Ratio, Loangr is loan growth (year on year), Depositgr is deposit growth (year on year), NPL is non-performing loan ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 8 Lead Variable of CAR

	(1) CARt1	(2) CARt	(3) CARt3	(4) CARt6	(5) CARt9	(6) CARt12	(7) CARt24	(8) CARt36	(9) CARt1	(10) CARt2	(11) CARt3	(12) CARt6	(13) CARt9	(14) CARt12	(15) CARt24	(16) CARt36
IPO	-3.707* (6.06)	-3.921* (6.54)	4.071** (6.94)	4.078* (7.24)	4.333* (8.10)	4.524* (8.75)	5.486* (12.35)	5.879* (16.21)								
Post	0.129 (0.20)	0.432 (0.68)	0.648 (1.03)	0.740 (1.20)	1.174 (1.96)	1.494 (2.53)	2.695* (5.04)	2.968* (6.25)								
BPD	-6.620* (30.41)	-6.595* (30.38)	6.573** (30.33)	6.532** (30.07)	6.512 (30.11)	6.503 (30.05)	6.470 (29.54)	6.524** (29.72)								
IPO*Post									1.151** (4.18)	1.045 (5.77)	0.963* (3.43)	0.859 (6.93)	0.641 (2.12)	-0.472* (1.52)	-0.166* (0.5)	0.218* (0.66)
IPO*Post*BPD									1.033* (4.48)	0.962 (4.14)	0.838 (3.57)	0.396 (1.34)	-0.189 (0.63)	0.632 (2.07)	1.369** (4.08)	1.842 (4.90)
lnTA	-2.413* (24.34)	-2.419* (24.18)	2.406* (23.98)	2.189* (21.91)	2.082* (20.82)	1.967* (19.70)	1.640* (16.60)	1.351* (14.66)	2.539* (25.11)	2.541* (24.97)	2.524* (24.80)	2.305* (22.83)	2.190* (21.78)	2.071* (20.68)	1.717* (17.36)	1.420* (15.48)
CPI	0.740* (11.95)	0.753* (12.08)	0.788** (12.54)	0.854** (13.30)	0.864* (13.48)	0.734* (11.21)	0.601* (9.05)	0.306** (4.88)	0.741** (11.79)	0.756* (11.90)	0.791* (12.34)	0.857* (13.05)	0.867** (13.22)	0.737** (11.02)	0.608** (8.97)	0.314 (5.92)
IPI	0.106* (5.42)	0.148* (4.80)	0.141** (4.65)	0.108** (3.59)	0.141* (4.75)	0.097* (3.60)	0.043 (1.41)	0.046 (1.51)	0.102* (3.20)	0.143 (4.54)	0.136 (4.39)	0.103 (5.36)	0.136** (4.49)	0.091* (3.05)	-0.037 (1.19)	0.052 (1.68)
constant	69.884 (42.10)	70.211 (41.68)	70.106 (41.54)	66.715 (39.83)	65.117 (38.92)	62.42 (37.58)	56.236 (34.02)	49.869 (32.46)	69.372 (40.89)	69.621 (40.60)	69.458 (40.55)	66.046 (38.98)	64.313 (38.16)	61.532 (36.86)	54.895 (33.02)	48.349 (31.52)
R-sqr	0.146	0.146	0.144	0.128	0.120	0.110	0.087	0.073	0.108	0.108	0.106	0.091	0.083	0.072	0.048	0.032

This table presents the second model regression results to test lead variables of dependent variables, t1-t36 is lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$Y_{b,t} = \alpha + \beta_1\,IPO_b + \beta_2\,Post_t + \beta_3\,BPD_b + \beta_4\,IPO_b * Post_t + \beta_5\,IPO_b * Post_t * BPD_b + \beta_6\,BankSpesific_{b,t} + \beta_7\,Macro_t + \varepsilon_{b,t}$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. CAR is Capital Adequacy Ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 9 Lead Variable of ROA

	(1) ROAt	(2) ROAt 0.121	(3) ROAt3	(4) ROAt 0.181	(5) ROAt 0.117	(6) ROAt 0.011	(7) ROAt 24	(8) ROAt3 6	(9) ROAt 1	(10) ROAt 2	(11) ROAt 3	(12) ROAt 6	(13) ROAt 9	(14) ROAt1 2	(15) ROAt 24	(16) ROAt 36
IPO	-0.003		0.164				0.304*	0.400*								
	(0.01)	(0.54)	(0.74)	(0.82)	(0.52)	(0.05)	(-3.53)	4.70								
Post	0.508*	0.680*	0.762**	0.848*	0.777	0.606*	0.386	-0.195								
	(2.25)	(-3.00)	(3.41)	(3.76)	(5.45)	(2.76)	(-3.66)	1.83								
BPD	2.042	2.029	2.014*	1.968*	1.969	2.018	1.935	1.957**								
	(15.02)	(15.06)	(14.98)	(14.87)	(14.81)	(15.37)	(15.76)	(15.75)								
IPO*Post									1.269**	1.318*	1.352*	1.415*	1.397	1.328**	1.366*	1.263*
									16.38	16.28	16.59	17.21	16.79	15.75	14.71	13.32
IPO*Post* BPD									1.345*	1.368	1.367	1.383	1.279	1.173*	1.673	1.592
									(8.23)	(7.55)	(7.27)	(6.78)	(6.27)	(5.56)	(4.27)	(4.04)
lnTA	-0.020	0.037	0.077	0.156*	0.203**	0.226**	0.322**	0.311**	0.042	0.096	0.134	0.212	0.261	0.287*	0.382**	0.374**

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CPI	0.62)	(1.27)	(2.70)	(6.19)	(8.34)	(9.45)	(14.05)	(13.06)	(1.42)	(3.53)	(5.06)	(9.23)	(11.5 6)	(12.82)	(16.39)	(15.41)
	-0.172*	0.245*	0.273*	0.303**	-0.050	0.211*	0.349*	0.234**	0.179**	0.252*	0.279*	0.309*	0.056	0.204**	0.358*	0.244*
IPI	(6.61)	(-8.30)	(9.55)	(10.39)	(-2.28)	(5.66)	(14.38)	(11.97)	(6.79)	(-8.42)	(-9.61)	(10.46)	(2.53)	(5.43)	(14.41)	(12.16)
	0.058	0.004	0.005	0.128*	0.136**	0.144	0.034*	0.014	0.056**	0.002	0.003	0.130*	0.138	0.145**	0.035	0.012
	(6.45)	(0.55)	(0.69)	(9.89)	(13.38)	(10.66)	(-4.09)	(1.29)	(6.19)	(0.31)	(0.45)	(-9.86)	(13.26)	(10.62)	(4.21)	(1.13)
constant	3.054	2.725	2.218	1.692	0.225	1.812*	1.156*	1.763*	2.792	2.517	2.032	1.506	0.438	2.069*	1.452*	2.094*
	(5.48)**	(5.12)**	(4.27)**	(3.52)**	(-0.56)	(4.72)	(-3.30)	(4.67)	(5.15)**	(4.86)**	(4.04)**	(3.26)*	(-1.16)	(5.74)	(4.22)	(-5.61)
R-sqr	0.043	0.044	0.046	0.056	0.049	0.056	0.062	0.052	0.018	0.020	0.022	0.033	0.026	0.032	0.038	0.028
N	14280	14279	14278	14275	14272	14269	14257	14245	14280	14279	14278	14275	14272	14269	14257	14245

This table presents the second model regression results to test lead variables of dependent variables, t1-t36 is lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$Y_{b,t} = \alpha + \beta_1\, IPO_b + \beta_2\, Post_t + \beta_3\, BPD_b + \beta_4\, IPO_b * Post_t + \beta_5\, IPO_b * Post_t * BPD_b + \beta_6\, BankSpesific_{b,t} + \beta_7\, Macro_t + \varepsilon_{b,t}$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. ROA is return on asset. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 10 Lead Variable of BOPO

	(1) BOPO t1	(2) BOPO t2	(3) BOPO t3	(4) BOPO t6	(5) BOPO t9	(6) BOPO t12	(7) BOPO t24	(8) BOPO t36	(9) BOPO t1	(10) BOPO t2	(11) BOPO t3	(12) BOPO t6	(13) BOPO t9	(14) BOPO t12	(15) BOPO t24	(16) BOPO t36
IPO	0.354	0.395	0.391	0.427	0.670	0.857	0.514	0.950								
	(0.64)	(0.70)	(0.69)	(0.75)	(1.16)	(1.46)	(0.92)	(1.68)								
Post	5.130	5.000	4.922	4.579	4.006	3.485	3.004**	2.005								
	(8.40)	(8.11)	(7.95)	(7.36)	(6.33)	(5.44)	(4.79)	(3.13)								
BPD	-	-	-	-	-	-	-	-								

Table (second model regression results, lead variables t1–t36):

Variable								
IPO*Post	11.861* (-35.75)	11.884* (-35.79)	11.915* (-35.91)	12.013* (-36.17)	12.078* (-36.20)	12.239 (-37.00)	12.361 (-37.15)	12.468 (-37.31)
IPO*Post*BPD								
lnTA	2.130* (20.94)	2.075* (20.89)	2.047* (20.74)	1.967* (21.27)	1.872* (21.15)	1.779* (20.24)	1.640* (17.94)	1.620* (17.20)
CPI	0.528* (5.69)	0.471* (5.18)	0.409 (-4.51)	0.231 (2.47)	-0.160 (1.76)	0.014 (0.15)	0.169 (1.84)	0.168 (1.95)
IPI	0.087* (2.75)	0.094* (2.42)	-0.068 (-1.74)	0.041 (1.07)	0.068 (1.85)	0.060 (1.56)	0.151** (3.88)	0.210* (5.04)
constant	122.246 (66.83)	121.156 (67.60)	120.335 (68.19)	117.860 (70.56)	116.008 (73.26)	113.99 (72.46)	110.80 (70.74)	110.406 (70.83)
R-sqr	0.129	0.127	0.126	0.123	0.120	0.118	0.112	0.111
N	14280	14279	14278	14275	14272	14269	14257	14245

Variable								
IPO*Post	9.860 (27.39)	9.753 (27.07)	9.660 (26.83)	9.334 (25.75)	8.961 (24.57)	8.628 (23.61)	7.796 (20.69)	7.251 (18.88)
IPO*Post*BPD	11.273* (15.85)	11.265* (15.87)	11.228* (15.83)	11.036* (15.54)	10.534* (14.96)	10.147* (14.37)	10.112* (12.77)	9.911* (12.21)
lnTA	2.474* (24.22)	2.418* (24.19)	2.389* (24.04)	2.309 (24.70)	2.221 (24.59)	2.135 (23.61)	1.984 (21.22)	1.979 (20.55)
CPI	0.485* (5.06)	0.428* (4.55)	0.365* (5.90)	-0.186 (1.93)	-0.114 (1.21)	0.034 (0.35)	0.218 (2.29)	0.221 (2.48)
IPI	-0.077 (1.85)	0.085* (2.09)	0.058 (1.44)	0.051 (1.27)	0.078 (2.04)	0.069 (1.74)	0.161 (3.96)	0.220 (5.09)
constant	123.570 (68.03)	122.466 (68.73)	121.622 (69.28)	119.122 (71.49)	117.356 (73.64)	115.428 (72.21)	111.981 (70.56)	111.790 (70.60)
R-sqr	0.071	0.069	0.067	0.062	0.058	0.054	0.047	0.044
N	14280	14279	14278	14275	14272	14269	14257	14245

This table presents the second model regression results to test lead variables of dependent variables, t1-t36 is lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$Y_{b,t} = \alpha + \beta_1\, IPO_b + \beta_2\, Post_t + \beta_3\, BPD_b + \beta_4\, IPO_b * Post_t + \beta_5\, IPO_b * Post_t * BPD_b + \beta_6\, BankSpesific_{b,t} + \beta_7\, Macro_t + \varepsilon_{b,t}$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. BOPO is operating expenses to operating revenues ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 11 Lead Variable of NIM

	(1) $NIMt_1$	(2) $NIMt_2$	(3) $NIMt_3$	(4) $NIMt_6$	(5) $NIMt_9$	(6) $NIMt_{12}$	(7) $NIMt_{24}$	(8) $NIMt_{36}$	(9) $NIMt_1$	(10) $NIMt_2$	(11) $NIMt_3$	(12) $NIMt_6$	(13) $NIMt_9$	(14) $NIMt_{12}$	(15) $NIMt_{24}$	(16) $NIMt_{36}$
IPO	0.535 (5.81)	0.541 (6.00)	0.551* (6.23)	0.605 (7.24)	0.633 (8.04)	0.658 (8.87)	0.604 (10.25)	0.576** (9.76)								
Post	0.534 (5.34)	0.523 (5.33)	0.497* (5.15)	0.395 (4.31)	0.340 (3.92)	0.286 (3.48)	0.210 (3.14)	0.144 (2.12)								
BPD	3.647 (80.21)	3.643 (79.84)	3.637* (79.48)	3.618 (78.75)	3.606 (78.26)	3.597 (77.86)	3.515 (75.83)	3.443** (74.42)								
IPO*Post									0.238* (5.01)	0.239 (4.99)	0.250* (5.20)	0.289 (5.94)	0.307** (6.25)	0.328 (6.59)	0.417 (8.14)	0.493 (9.40)
IPO*Post* BPD									2.206 (38.06)	2.211 (38.08)	2.214 (37.95)	2.223 (36.29)	2.203* (36.08)	2.193 (35.68)	2.187 (22.13)	2.037 (20.03)
lnTA	0.196*** (14.06)	0.194*** (14.08)	0.189*** (13.76)	0.165*** (12.63)	0.157*** (11.85)	0.145*** (10.77)	0.095*** (6.84)	0.089** (6.28)	0.109 (7.57)	0.107 (7.56)	0.103 (7.25)	0.081 (6.00)	0.074** (5.41)	0.064 (4.54)	0.016 (1.09)	0.009 (0.61)
CPI	-0.031 (2.45)	-0.030 (2.42)	-0.030 (2.45)	-0.040 (-3.33)	-0.050 (4.13)	-0.041 (3.27)	-0.037 (3.07)	-0.042** (3.65)	0.041 (2.77)	0.040 (2.74)	0.040 (2.76)	0.050 (3.48)	0.060** (4.18)	0.050 (3.44)	0.047 (5.39)	0.052 (5.95)
IPI	-0.001 (0.13)	0.011 (2.01)	0.011 (2.20)	0.021 (-4.23)	0.026 (5.15)	0.021 (4.18)	0.017 (3.07)	-0.008 (1.47)	0.004 (0.55)	0.014 (2.15)	0.014 (2.51)	0.024 (3.96)	0.029** (4.77)	0.024 (3.95)	0.020 (5.05)	0.010 (1.70)
constant	6.838 (27.07)	6.851 (26.98)	6.772 (26.76)	6.485 (26.65)	6.436 (26.29)	6.190 (25.07)	5.413 (21.64)	5.341 (21.13)	6.759 (26.21)	6.779 (26.09)	6.709 (25.88)	6.454 (25.93)	6.425 (25.56)	6.195 (24.36)	5.415 (21.05)	5.308 (20.46)
R-sqr	0.274	0.274	0.273	0.270	0.269	0.267	0.253	0.246	0.014	0.014	0.014	0.014	0.014	0.013	0.013	0.013
N	14280	14279	14278	14275	14272	14269	14257	14245	14280	14279	14278	14275	14272	14269	14257	14245

This table presents the second model regression results to test lead variables of dependent variables, t1-t36 is lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$LDR_{b,i} = \alpha + \beta_1\, IPO_b + \beta_2\, Post_t + \beta_3\, BPD_b + \beta_4\, IPO_b * Post_t + \beta_5\, IPO_b * Post_t * BPD_b + \beta_6\, BankSpesific_{b,i} + \beta_7\, Macro_t + \epsilon_{b,t}$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. NIM is Net Interest Margin. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 12 Lead Variable of LDR

	(1) LDRt-1	(2) LDRt-2	(3) LDRt-3	(4) LDRt-6	(5) LDRt-9	(6) LDRt-12	(7) LDRt-24	(8) LDRt-36	(9) LDRt1	(10) LDRt2	(11) LDRt3	(12) LDRt6	(13) LDRt9	(14) LDRt12	(15) LDRt24	(16) LDRt36
IPO	-7.845 (-7.97)	8.122* (8.41)	8.448* (-8.98)	9.301* (10.81)	9.798* (12.39)	10.000 (13.32)	10.414 (14.68)	10.921 (15.04)								
Post	15.15 (13.91)	14.57 (13.55)	13.96 (13.25)	12.262 (12.35)	10.799 (11.46)	9.666 (10.57)	6.145 (-6.90)	3.511 (4.02)								
BPD	-27.52 (-47.14)	-27.42 (-47.00)	-27.32 (-46.88)	-27.048 (-46.54)	-26.717 (-46.21)	-26.385 (-45.91)	-25.229 (-44.77)	-24.25 (-43.93)								
IPO*Post									-12.594 (-20.32)	-12.30 (-19.72)	-12.031 (-19.18)	-11.21 (-17.61)	-10.328 (-15.98)	-9.485* (-14.51)	-6.666* (-9.96)	-4.080 (-5.96)
IPO*Post*BPD									-12.389 (-19.70)	-12.49 (-19.78)	-12.633 (-19.72)	-13.13 (-19.40)	-13.805 (-19.46)	-14.262 (-19.46)	-16.576 (-19.50)	-18.77 (-21.79)
lnTA	3.530 (17.46)	3.422 (16.79)	3.332 (16.27)	3.059** (14.86)	2.826 (13.86)	2.590 (12.77)	1.737 (8.88)	1.098 (5.68)	2.924** (14.34)	2.825 (13.77)	2.746 (13.33)	2.502 (12.14)	2.293 (11.29)	2.072* (10.27)	1.269* (6.53)	0.657 (3.42)
CPI	0.126 (0.81)	0.249 (1.61)	0.364 (2.36)	0.466* (2.99)	0.393 (2.53)	0.308 (2.00)	0.497 (3.26)	1.042 (6.95)	0.185 (1.13)	0.306 (1.87)	0.419 (2.56)	0.518 (3.13)	0.443 (2.69)	0.356 (2.21)	0.544* (3.42)	1.089 (6.99)
IPI	0.129 (1.83)	0.147 (2.07)	0.165 (2.28)	0.127 (1.76)	0.260 (3.56)	0.305 (4.14)	0.047 (0.63)	0.033 (0.45)	0.151 (2.01)	0.170 (2.24)	0.188 (2.44)	0.150 (1.95)	0.283 (3.63)	0.328** (4.17)	0.071 (0.90)	0.056 (0.72)
constant	46.67 (14.96)	47.640 (15.14)	48.378 (15.19)	52.188 (15.97)	55.367 (17.08)	59.028 (18.30)	71.804 (23.26)	78.47 (25.17)	45.966 (14.15)	46.816 (14.31)	47.404 (14.36)	50.81 (15.11)	53.707 (16.17)	57.235 (17.35)	69.605 (22.05)	76.19 (24.01)

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R-sqr	0.152	0.150	0.148	0.141	0.134	0.128	0.108	0.096	0.038	0.037	0.035	0.031	0.028	0.024	0.014	0.012
N	14280	14279	14278	14275	14272	14269	14257	14245	14280	14279	14278	14275	14272	14269	14257	14245

This table presents the second model regression results to test lead variables of dependent variables, t1-t36 is lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$ Y_{b,t} = \alpha + \beta_1\, IPO_b + \beta_2\, Post_t + \beta_3\, BPD_b + \beta_4\, IPO_b * Post_t + \beta_5\, IPO_b * Post_t * BPD_b + \beta_6\, BankSpesific_{b,t} + \beta_7\, Macro_t + \varepsilon_{b,t} $$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. LDR is Loan to Deposit Ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 13 Lead Variable of Loan Growth

	(1) loangr t1	(2) loangr t2	(3) loangr t3	(4) loangr t6	(5) loangr t9	(6) loangr t12	(7) loangr t24	(8) loangrt t36	(9) loangr t1	(10) loangr t2	(11) loangr t3	(12) loangr t6	(13) loangr t9	(14) loangrt t12	(15) loangrt t24	(16) loangrt t36
IPO	0.063 (0.03)	0.160 (0.08)	0.781 (0.39)	2.601 (1.37)	4.115 (2.28)	4.660 (2.71)	3.642 (2.39)	1.796 (1.27)								
Post	0.932 (0.44)	1.258 (0.60)	0.998 (0.48)	-0.583 (0.30)	-1.201 (0.63)	-1.022 (0.55)	0.926 (0.56)	4.250* (2.71)								
BPD	-5.625 (-7.89)	-5.434* (-7.63)	-5.306** (-7.41)	-5.195* (-7.24)	-4.909* (-6.90)	-4.628* (-6.67)	-4.900* (-7.09)	-4.906* (-7.04)								
IPO*Post									2.624* (3.47)	3.126* (4.07)	3.453 (4.47)	3.472 (4.48)	4.071* (5.19)	4.547* (5.82)	5.868* (7.20)	7.699* (9.34)
IPO*Post* BPD									-1.963* (2.03)	-1.825 (1.71)	-1.559 (1.52)	-1.124 (0.75)	-1.793 (1.03)	-2.407 (1.29)	-3.624 (1.80)	-4.940* (2.37)
lnTA	0.771 (3.38)	1.382* (5.87)	1.932* (8.03)	2.782* (11.87)	3.825* (16.11)	4.493* (19.04)	4.503* (19.61)	4.345* (18.68)	0.921 (3.97)	1.536 (6.45)	2.174* (8.65)	2.988 (12.71)	4.041* (17.18)	4.697* (20.23)	4.709* (20.67)	4.526* (19.72)
CPI	2.439 (3.38)	1.965 (4.87)	1.653 (8.03)	1.337 (11.87)	1.463 (16.11)	3.378 (19.04)	0.664 (19.61)	0.368* (18.68)	2.155 (3.97)	1.982 (6.45)	1.673 (8.65)	1.366 (12.71)	1.500 (17.18)	3.417 (20.23)	0.700 (20.67)	-0.341* (19.72)

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	(10.34)	(9.58)	(8.08)	(6.51)	(7.01)	(17.13)	(3.61)	(2.15)*	(10.42)	(9.66)	(8.17)	(6.65)	(7.16)	(17.25)	(3.79)	(1.99)*
IPI	1.871	1.781	1.430**	0.933**	0.455**	-0.051	-0.144	0.273**	1.875*	1.785*	1.433	0.936	0.458**	-0.049	-0.141	-0.270
constant	(18.86) 9.507	(18.7) 20.364	(15.27) 32.081	(10.83) 49.295	(5.45) 67.210	(0.64) 70.87	(1.58) 83.90	(3.47) 86.374	(18.85) 9.968	(18.74) 20.971	(15.26) 33.02	(10.84) 50.925	(5.46) 69.211	(0.62) 72.854	(1.55) 85.712	(5.42) 87.654
	(2.38)	(4.96)	(7.66)	(12.30)	(16.60)	(17.37)	(21.78)	(22.59)	(2.45)	(5.05)	(7.81)	(12.73)	(17.33)	(18.23)	(22.57)	(23.37)
R-sqr	0.040	0.038	0.031	0.028	0.037	0.065	0.040	0.036	0.036	0.035	0.028	0.025	0.033	0.061	0.037	0.033
N	14258	14257	14257	14257	14257	14257	14245	14233	14258	14257	14257	14257	14257	14257	14245	14233

This table presents the second model regression results to test lead variables of dependent variables, t1-t36 is a lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$Y_{b,t} = \alpha + \beta_1\, IPO_b + \beta_2\, Post_t + \beta_3\, BPD_b + \beta_4\, IPO_b * Post_t + \beta_5\, IPO_b * Post_t * BPD_b + \beta_6\, BankSpesific_{b,t} + \beta_7\, Macro_t + \epsilon_{b,t}$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. Loangr is loan growth (year on year). lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 14 Lead Variable of Deposit Growth

	(1) depgrt1	(2) depgrt2	(3) depgrt3	(4) depgrt6	(5) depgrt9	(6) depgrt12	(7) depgrt24	(8) depgrt36	(9) depgrt1	(10) depgrt2	(11) depgrt3	(12) depgrt6	(13) depgrt9	(14) depgrt12	(15) depgrt24	(16) depgrt36
IPO	0.218 (0.11)	0.385 (0.20)	1.345 (0.71)	4.621 (2.54)	6.952 (4.09)	8.094 (5.18)	8.005 (6.10)	5.748* (4.77)								
Post	0.752 (0.38)	0.538 (0.28)	-0.118	-3.066	-4.564*	4.999	-3.232*	0.712								
BPD	3.937 (-5.78)	3.797 (-5.58)	3.689** (-5.40)	3.520** (-5.17)	3.249 (-4.82)	2.990 (-4.57)	2.869 (-4.39)	2.726** (-4.15)								
IPO*Post									1.689*	2.057*	2.332***	2.477*	3.150**	3.747**	5.523*	7.452***

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											(2.53)	(3.04)	(3.42)	(3.61)	(4.52)	(5.42)	(7.40)	(9.83)
IPO*Post*BPD											0.03	0.178	0.435	0.877	0.860	1.008	1.021	-0.760
lnTA	-	-	-	-	-	-	-	-	(0,0)	(0.15)	(0.33)	(0.53)	(0.46)	(0.50)	(0.47)	(-0.35)
	0.264	0.906*	1.396*	2.135*	3.113*	3.699	3.849*	3.862*	0.46	1.028*	1.546*	2.364*	3.395*	4.006*	4.168*	4.131*
	1.77)	4.32)	6.50)	10.60)	15.26)	18.66)	19.02)	18.80)	2.24)	4.83)	7.09)	11.50)	16.29)	19.64)	20.05)	19.59)
CPI	1.875	1.684	1.416*	1.152*	1.596	3.818	1.077	0.724**	1.885	1.696	1.433	1.187	1.645*	3.872*	1.130	0.683*
	(9.79)	(8.87)	(7.47)	(6.14)	(8.40)	(21.4)	(6.32)	(4.89)	(9.7)	(8.90)	(7.54)	(6.32)	(8.66)	(21.71)	(6.64)	(4.61)
IPI	1.657	1.579	1.268*	0.905*	0.294	-0.242	0.123	0.285**	1.659	1.582	1.270	0.906	0.294**	0.243**	0.122	0.285*
	(18.6)	(18.4)	(15.23)	(11.62)	(3.91)	(3.56)	(1.45)	(3.89)	(18.63)	(18.47)	(15.23)	(11.6)	(3.90)	(3.36)	(1.44)	(3.58)
constant	2.924	12.758	23.147	37.639	53.584	54.61	67.685	77.658	3.253	13.426	24.31	40.252	57.212	58.766	72.04	81.143
	(0.82)	(3.49)	(6.20)	(11.05)	(15.59)	(16.2)	(19.9)	(22.63)	(0.8)	(3.62)	(6.42)	(11.5)	(16.28)	(16.98)	(20.65)	(23.14)
R-sqr	0.036	0.034	0.026	0.025	0.034	0.075	0.041	0.036	0.03	0.032	0.024	0.022	0.031	0.071	0.038	0.034
N	14262	14261	14261	14261	14261	14261	14249	14237	14262	14261	14261	14261	14261	14261	14249	14237

This table presents the second model regression results to test lead variables of dependent variables, b1-b36 is a lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$Y_{b,t} = \alpha + \beta_1\, IPO_b + \beta_2\, Post_t + \beta_3\, BPD_b + \beta_4\, IPO_b * Post_t + \beta_5\, IPO_b * Post_t * BPD_b + \beta_6\, BankSpesific_{b,t} + \beta_7\, Macro_t + \varepsilon_{b,t}$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. Depgr is deposit growth (year on year). lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

Tabel 15 Lead Variable of NPL

	(1) NPLt1	(2) NPLt2	(3) NPLt3	(4) NPLt6	(5) NPLt9	(6) NPLt12	(7) NPLt24	(8) NPLt36	(9) NPLt1	(10) NPLt2	(11) NPLt3	(12) NPLt6	(13) NPLt9	(14) NPLt12	(15) NPLt24	(16) NPLt36
IPO	0.136	-0.146	-0.162	0.222*	0.263*	0.293*	0.451*	0.243*								
	(1.52)	(1.64)	(1.83)	(2.56)	(3.08)	(5.55)	(5.53)	(-2.79)								
Post	0.543	0.541	0.541	0.571	0.569*	0.559	0.651	0.305								
	(5.66)	(5.64)	(5.67)	(6.12)	(6.28)	(6.38)	(7.56)	(3.34)								
BPD	0.286	0.280	0.270	0.236	0.192*	0.138	0.075	0.004								
	(4.38)	(4.28)	(4.13)	(3.69)	(3.10)	(2.33)	(1.30)	(0.08)								
IPO*Post									0.375***	0.361**	0.345***	0.320*	0.284*	0.255*	0.176	0.02
									(7.57)	(7.31)	(7.01)	(6.42)	(5.65)	(5.01)	(3.45)	(0.5)
IPO*Post*BPD									0.059	0.052	0.047	0.025	0.005	-0.015	-0.036	-0.04
									(0.64)	(0.56)	(0.50)	(0.26)	(0.05)	(-0.15)	(-0.33)	(-0.41)
lnTA	0.029	-0.023	-0.016	0.003	0.025	0.045	0.065	0.067	0.024	-0.018	0.010	0.011	0.033	0.054	0.080	0.07
	(1.74)	(1.40)	(0.97)	(0.19)	(1.72)	(3.34)	(4.90)	(4.84)	(1.48)	(1.11)	(0.62)	(0.69)	(2.36)	(4.01)	(6.09)	(8.6)
CPI	0.163*	0.153*	0.142*	0.108*	0.062*	0.018	0.076**	0.124**	0.165	0.155*	0.144	0.110*	0.065**	-0.004	0.021	0.12
	(12.03)	(11.06)	(10.18)	(7.54)	(4.15)	(1.18)	(4.84)	(8.01)	(12.14)	(11.18)	(10.29)	(7.48)	(4.30)	(-1.33)	(4.66)	(3.9)
IPI	0.020*	0.020*	0.018*	0.012*	-0.010	0.004	0.021	0.034	0.020	0.020	0.018	0.012*	0.010	-0.020	0.021	0.03
	(5.13)	(3.54)	(2.61)	(1.56)	(1.59)	(0.65)	(3.19)	(5.14)	(3.15)	(3.26)	(2.63)	(1.97)	(1.60)	(-0.65)	(3.20)	(4)
constant	3.928	3.802	3.635	3.154	2.608*	2.069	1.250	0.986	3.928	3.793*	3.615	3.096	2.524	1.965	1.029	0.82
	(13.38)	(12.76)	(12.17)	(10.88)	(10.09)	(8.64)	(5.60)	(4.17)	(13.7)	(13.07)	(12.4)	(10.97)	(10.01)	(8.41)	(4.75)	(3.60)
R-sqr	0.014	0.013	0.012	0.009	0.006	0.005	0.007	0.009	0.013	0.012	0.011	0.008	0.005	0.004	0.006	0.008
N	14280	14279	14278	14275	14272	14269	14257	14245	14280	14279	14278	14275	14272	14269	14257	14245

This table presents the second model regression results to test lead variables of dependent variables, t1-t36 is a lead variable of dependent variable one to 36 months after IPO using difference-in-difference analysis for panel data of the treated banks (exclude Bank Banten Tbk.) and control group banks. We employ regression with robust standard to estimate the following equation:

$$Yb, = \alpha + \beta 1\, IPO\, b + \beta 2\, Post + \beta 3\, BPD\, b + \beta 4\, IPO\, b * Post + \beta 5\, IPO\, b * Post * BPD\, b + \beta 6\, BankSpesific\, b, + \beta 7\, Macro + b,$$

IPO is a dummy variable, one for a public bank, 0 for a private bank. Post is the treatment event, a dummy for one after IPO, 0 otherwise. BPD is a treated group, a dummy variable, one for a public regional bank, 0 for a private regional bank. NPL is non-performing loan ratio. lnTA is natural logarithm of total asset. IPI is industrial production index. CPI is consumer price index. *, **, *** indicate significance at the 5%, 1%, and 0,1% level, respectively.

References

Baba, N., & Inada, M. (2009). Why do Japanese regional banks issue subordinated debts?. *Japan and the World Economy*, 21(4), 358-364. https://doi.org/10.1016/j.japwor.2009.03.001

Bai, C. E., & Xu, L. C. (2005). Incentives for CEOs with multitasks: Evidence from Chinese state-owned enterprises. *Journal of Comparative Economics*, *33*(3), 517-539. https://doi.org/10.1016/j.jce.2005.03.013

Beck, T., Cull, R., & Jerome, A. (2005). Bank privatization and performance: Empirical evidence from Nigeria. *The World Bank*. https://doi.org/10.1596/1813-9450-3511

Boubakri, N., Cosset, J. C., Fischer, K., & Guedhami, O. (2005). Privatization and bank performance in developing countries. *Journal of Banking & Finance*, 29(8-9), 2015-2041. https://doi.org/10.1016/j.jbankfin.2005.03.003

Dick, A. A. (2007). Market size, service quality, and competition in banking. *Journal of money, credit and banking*, 39(1), 49-81. https://doi.org/10.1111/j.0022-2879.2007.00003.x

Di Patti, E. B., & Hardy, D. C. (2005). Financial sector liberalization, bank privatization, and efficiency: Evidence from Pakistan. *Journal of Banking & Finance*, 29(8-9), 2381-2406. https://doi.org/10.1016/j.jbankfin.2005.03.019

Haber, S. (2005). Mexico's experiments with bank privatization and liberalization, 1991–2003. *Journal of Banking & Finance*, 29(8-9), 2325-2353. https://doi.org/10.1016/j.jbankfin.2005.03.017

Harimaya, K. and Kondo, K. (2016). Effects of branch expansion on bank efficiency: evidence from Japanese regional banks", *Managerial Finance*, Vol. 42 No. 2, pp. 82-94. https://doi.org/10.1108/MF- 11-2014-0278

Houge, T., & Loughran, T. (1999). Growth fixation and the performance of bank initial public offerings, 1983–1991. *Journal of Banking & Finance*, 23(8), 1277-1301. https://doi.org/10.1016/S0378- 4266(99)00014-X

Jiang, C., Yao, S., & Feng, G. (2013). Bank ownership, privatization, and performance: Evidence

from a transition country. *Journal of Banking & Finance*, 37(9), 3364-3372. https://doi.org/10.1016/j.jbankfin.2013.05.009

Jianzhong, D. (2017). Capital requirement and loan suppliers of the regional banks in China. *The Singapore Economic Review*, *62*(04), 837-858. https://doi.org/10.1142/S021759081740029X

Kondo, K. (2018). Does branch network size influence positively the management performance of Japanese regional banks?. *Applied Economics*, *50*(56), 6061-6072. https://doi.org/10.1080/00036846.2018.1489114

La Porta, R., LopezdeSilanes, F., & Shleifer, A. (2002). Government ownership of banks. *The Journal of Finance*, *57*(1), 265-301. https://doi.org/10.1111/1540-6261.00422

Lin, Xiaochi & Zhang, Yi, 2009. Bank ownership reform and bank performance in China. *Journal of Banking & Finance*, Elsevier, vol. 33(1), pages 20-29, January. https://doi.org/10.1016/j.jbankfin.2006.11.022

Liu, H., & Wilson, J. O. (2010). The profitability of banks in Japan. *Applied Financial Economics*, *20*(24), 1851-1866. https://doi.org/10.1080/09603107.2010.526577

Meslier, C., Sauviat, A., & Yuan, D. (2020). Comparative advantages of regional versus national banks in alleviating SME's financial constraints. *International Review of Financial Analysis*, 101471. https://doi.org/10.1016/j.irfa.2020.101471

Pontines, V., & Siregar, R. Y. (2019). Non-core liabilities and interest rate pass-through: bank-level evidence from Indonesia. *Applied Economics*, *51*(25), 2703-2714. https://doi.org/10.1080/00036846.2018.1558352 .

PwC (2017). The Long View How will the global economic order change by 2050?. https://www.pwc.com/gx/en/world-2050/assets/pwc-the-world-in-2050-full-report-feb-2017.pdf

Trinugroho, I., Agusman, A., & Tarazi, A. (2014). Why have bank interest margins been so high in Indonesia since the 1997/1998 financial crisis?. *Research in International Business and Finance*, *32*, 139-158. https://doi.org/10.1016/j.ribaf.2014.04.001.

Trinugroho, I., Sutaryo, Damayanti, S. M., Wiryono, S. K., & Nugroho, L. I. (2018). Regional banks and market power: evidence from Indonesia. *International Journal of Monetary Economics and Finance*, 11(2), 126-139. https://doi.org/10.1504/IJMEF.2018.092352

Trinugroho, I., Santoso, W., Irawanto, R., & Pamungkas, P. (2020). Is spin-off policy an effective way to improve performance of Islamic banks? Evidence from Indonesia. *Research in International Business and Finance*, 56, 101352. https://doi.org/10.1016/j.ribaf.2020.101352

WEF (2019). The Global Competitiveness Report 2019. http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

Yeh, T.-M. (2017). Governance, risk-taking and default risk during the financial crisis: the evidence of Japanese regional banks". *Corporate Governance*, Vol. 17 No. 2, pp. 212-229. https://doi.org/10.1108/CG-02-2016-0027

Yin, H., Yang, J., & Mehran, J. (2015). Do Chinese banks perform better after IPOs?. *Managerial Finance*, *41*(4), 368-384. https://ideas.repec.org/a/eme/mfipps/v41y2015i4p368-384.html

Appendix 2. Robustness Check Tables

Table A1. CAR

	(1) CAR	(2) CAR	(3) CAR	(4) CAR	(5) CAR
IPO*POST	-4.450***	-4.397***	-1.211***	-1.259***	-1.262***
	(-20.12)	(-19.39)	(-4.39)	(-4.59)	(-4.61)
IPO*POST*BPD		-1.151***	0.952***	1.072***	1.092***
		(-4.13)	(4.16)	(4.75)	(4.81)
lnTA			-2.462***	-2.519***	-2.519***
			(-24.48)	(-25.08)	(-25.09)
CPI				-0.685***	-0.698***
				(-11.09)	(-11.31)
IPI					-0.091**
					(-2.84)
constant	25.438***	25.436***	64.224***	68.389***	68.837***
	(169.19)	(168.93)	(39.68)	(41.18)	(41.08)
R-sqr	0.022	0.022	0.099	0.106	0.107
N	14302	14285	14282	14282	14282

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A2. ROA

	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA
IPO*POST	-1.091***	-1.145***	-0.976**	-0.984***	-0.982***
	(-15.11)	(-15.60)	(-14.94)	(-15.05)	(-15.04)
IPO*POST*BPD		1.221***	1.333***	1.353***	1.340***
		(15.72)	(16.24)	(15.82)	(15.49)
lnTA			-0.131**	-0.140**	-0.141**
			(-2.87)	(-3.02)	(-3.02)
CPI				-0.114***	-0.105***
				(-5.78)	(-5.43)
IPI					0.057***
					(7.91)
constant	2.844***	2.842***	4.905**	5.596***	5.315***
	(49.11)	(49.00)	(6.41)	(6.60)	(6.32)

R-sqr	0.010	0.011	0.013	0.014	0.016
N	14302	14285	14282	14282	14282

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3. BOPO

	(1)	(2)	(3)	(4)	(5)
	BOPO	BOPO	BOPO	BOPO	BOPO
IPO*POST	6.119***	6.723***	9.938***	9.898***	9.895***
	(18.41)	(19.83)	(27.52)	(27.61)	(27.60)
IPO*POST*BPD		-13.485***	-11.364***	-11.265***	-11.244***
		(-19.95)	(-16.03)	(-15.84)	(-15.81)
lnTA			-2.483***	-2.530***	-2.530***
			(-23.68)	(-24.01)	(-24.02)
CPI				-0.564***	-0.577***
				(-5.88)	(-6.05)
IPI					-0.093*
					(-2.22)
constant	81.955***	81.958***	121.074***	124.503***	124.963***
	(423.12)	(422.40)	(70.16)	(67.93)	(66.86)
R-sqr	0.022	0.029	0.071	0.073	0.073
N	14302	14285	14282	14282	14282

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A4. NIM

	(1)	(2)	(3)	(4)	(5)
	NIM	NIM	NIM	NIM	NIM
IPO*POST	-0.271***	-0.367***	-0.238***	-0.241***	-0.241***
	(-6.01)	(-8.02)	(-5.08)	(-5.14)	(-5.14)
IPO*POST*BPD		2.103***	2.188***	2.194***	2.194***
		(36.59)	(38.25)	(37.99)	(37.92)
lnTA			-0.100***	-0.103***	-0.103***
			(-6.80)	(-7.05)	(-7.05)
CPI				-0.033*	-0.033*
				(-2.22)	(-2.25)
IPI					-0.001
					(-0.12)
constant	4.837***	4.838***	6.419***	6.621***	6.625***

	(157.71)	(157.48)	(26.23)	(26.68)	(26.16)
R-sqr	0.002	0.010	0.013	0.013	0.013
N	14302	14285	14282	14282	14282

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A5. LDR

	(1) LDR	(2) LDR	(3) LDR	(4) LDR	(5) LDR
IPO*POST	-9.424***	-9.006***	-12.871**	-12.866**	-12.863**
	(-21.12)	(-20.00)	(-20.93)	(-20.93)	(-20.93)
IPO*POST*BPD		-9.767***	-12.322***	-12.333***	-12.354***
		(-15.14)	(-19.55)	(-19.58)	(-19.59)
lnTA			2.990***	2.995***	2.994***
			(14.75)	(14.75)	(14.75)
CPI				0.061	0.075
				(0.37)	(0.46)
IPI					0.097
					(1.31)
constant	93.598**	93.620**	46.511**	46.141**	45.660**
	(244.79)	(244.45)	(15.25)	(14.45)	(14.13)
R-sqr	0.018	0.019	0.040	0.040	0.040
N	14302	14285	14282	14282	14282

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A6. Loan Growth

	(1) loangr	(2) loangr	(3) loangr	(4) loangr	(5) loangr
IPO*POST	1.468*	1.462*	1.968*	2.121*	2.165*
	(2.17)	(2.10)	(2.57)	(2.79)	(2.88)
IPO*POST*BPD		-1.862*	-1.522	-1.901*	-2.272*
		(-2.28)	(-1.91)	(-2.45)	(-2.74)
lnTA			-0.397	-0.214	-0.223
			(-1.74)	(-0.94)	(-1.00)
CPI				2.166***	2.420***
				(10.39)	(11.91)
IPI					1.766***
					(17.78)

constant	13.591**	13.681**	19.940**	6.749	-1.940
	(32.43)	(32.64)	(5.29)	(1.69)	(-0.49)
R-sqr	0.000	0.000	0.001	0.009	0.034
N	14278	14261	14258	14258	14258

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A7.　　Growth Deposit

	(1)	(2)	(3)	(4)	(5)
	depgr	depgr	depgr	depgr	depgr
IPO*POST	1.256*	1.226*	1.205	1.339*	1.384*
	(2.10)	(2.00)	(1.78)	(1.99)	(2.08)
IPO*POST*BPD		0.519	0.507	0.171	-0.164
		(0.53)	(0.52)	(0.18)	(-0.16)
lnTA			0.014	0.178	0.168
			(0.07)	(0.85)	(0.82)
CPI				1.929***	2.157***
				(9.92)	(11.37)
IPI					1.577**
					(17.91)
constant	11.842***	11.849**	11.632**	-0.125	-7.879*
	(30.77)	(30.77)	(3.37)	(-0.03)	(-2.20)
R-sqr	0.000	0.000	0.000	0.008	0.033
N	14282	14265	14262	14262	14262

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A8. NPL

	(1)	(2)	(3)	(4)	(5)
	NPL	NPL	NPL	NPL	NPL
IPO*POST	0.381***	0.381***	0.399***	0.387***	0.386***
	(8.29)	(8.09)	(7.95)	(7.79)	(7.78)
IPO*POST*BPD		0.012	0.024	0.054	0.058
		(0.14)	(0.28)	(0.59)	(0.63)
lnTA			-0.014	-0.028	-0.028
			(-0.89)	(-1.80)	(-1.79)
CPI				-0.171***	-0.173***
				(-12.75)	(-12.95)
IPI					-0.017**

					(-2.72)
constant	2.685***	2.685***	2.904**	3.944***	4.027***
	(84.39)	(84.25)	(11.18)	(13.97)	(14.30)
R-sqr	0.004	0.004	0.004	0.014	0.014
N	14302	14285	14282	14282	14282

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$