

APPENDICES (Tables SA1-SA5): VARIABLE DEFINITIONS, CORRELATION MATRIX AND ROBUSTNESS TESTS

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ORIGINAL ARTICLE

All that Glitters is Not Gold! Could M&As Post-Bank Reforms be Just a Tool for Balance Sheet Embellishment?

Doriana Cucinelli¹ | Federica Ielasi² | Simona Zambelli²,  

¹Department of Economics and Management, University of Parma, Via Kennedy 6, Parma, 43123, Italy

²Department of Economics and Management, University of Florence, Via delle Pandette 9, Florence, 50127, Italy

Corresponding author email: simona.zambelli@unifi.it

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Table SA1 – Variable Descriptions

Table reports the description, the measurement and the source for all the variables considered in our study, grouped in various categories according to their type.

Variable name	Variable Definition	Measure	Source
TRANSACTION CHARACTERISTICS			
M&A dummy	Dummy variable representing whether the bank has been involved in an M&A transaction.	Dummy equals 1 if bank has been involved in a M&A transaction, 0 otherwise.	Orbis Bank Focus
ACQUIRER dummy	Dummy variable representing whether the bank has been involved <i>as acquirer</i> in an M&A transaction.	Dummy equals 1 if bank has been involved in a M&A operation as acquirer, 0 otherwise.	Orbis Bank Focus
REFORM DUMMY & OTHER PERIOD DUMMIES			
2016 REFORM (TIME)	Post-reform dummy, capturing the period subsequent to the introduction of the Reform of Credit Cooperative banks (CCBs), which entered into force in April 2016 (<i>in accordance with the Bill of Law No. 18 of 14/02/2016, converted into Law No. 49 of 08/04/2016</i>).	Dummy equals 1 over the period after 2016, 0 before.	Author's definition
ENTRANCE of CCB REFORM	Dummy variable capturing the period from the year of entrance of the CCB Reform (2016) onwards.	Dummy equals 1 over the period from 2016 onwards, 0 before.	Author's definition
ANNOUNCEMENT of CCB REFORM (TIME 2)	Dummy variable related to the announcement in 2015 of the CCB Reform, capturing the period from 2015 onwards.	Dummy equals 1 over the period from 2015 onwards, 0 before.	Author's definition
PLACEBO 1 (2014)	Dummy variable representing a fake introduction of the CCB Reform, considering 2 years before its actual issuance.	Dummy equals 1 over the period from 2014 onwards, 0 otherwise.	Author's definition
PLACEBO 2 (2013)	Dummy variable representing a fake introduction of the CCB Reform, considering 3 years before its actual issuance.	Dummy equals 1 over the period from 2013 onwards, 0 otherwise.	Author's definition
BANK TYPE			
COMMERCIAL dummy	Dummy variable representing the commercial bank type. This variable also includes Popular banks as "other types of banks".	Dummy equals 1 in case of commercial bank, 0 otherwise.	Orbis Bank Focus
COOPERATIVE (CCB) dummy	Dummy variable representing the status of credit cooperative banks.	Dummy equals 1 in case of credit cooperative bank, 0 otherwise.	Orbis Bank Focus

SAVINGS dummy	Dummy variable representing the savings banks (in Italy, they are called “Casse di Risparmio”).	Dummy equals 1 in case of saving banks, 0 otherwise.	Orbis Bank Focus
	BANK CHARACTERISTICS		
SIZE	Bank size in terms of logarithmic transformation of total assets (TA).	Natural logarithm of total asset (ln TA).	Orbis Bank Focus
LISTED	Dummy variable representing whether a bank is quoted in the stock market.	Dummy equals 1 if bank is listed, 0 otherwise.	Orbis Bank Focus
	BANK ECONOMIC PERFORMANCE		
ROA	Return on Assets.	Income before taxes over Total Assets.	Orbis Bank Focus
RO_RWA	Risk-adjusted profitability, in terms of Return on risk weighted asset.	Income before taxes over Total Risk Weighted Assets (RWA).	Orbis Bank Focus
COST/INCOME Ratio	The cost-to-income ratio is a proxy of bank operating performance and measures how efficiently the bank is run. The lower the ratio, the higher the efficiency of the bank and the higher its operating profitability. To minimize the effect of outliers, in our main analyses we have used the winsorized ratio at 0.1.	Operating Expenses over the Operating Income (OE/OI).	Orbis Bank Focus
	BANK CAPITALIZATION, CAPITAL ADEQUACY, RISK & STABILITY		
CAPITALIZATION (EQUITY/TA)	Proportion of Equity in relation to the Total Assets of the bank.	Total Equity over Total Asset $= \frac{E}{TA}$	Orbis Bank Focus
TIER-1 RATIO	TIER-1 RATIO is the ratio between the TIER 1 Capital (TIER 1), as defined by regulators, over risk-weighted assets (RWA). <i>Tier 1</i> capital is the sum of Common Equity <i>Tier 1</i> (CET_1) and <i>Additional Tier 1</i> Capital (AT_1), net of the regulatory adjustments.	$TIER_1 \quad CAPIT_RATIO = \frac{TIER_1}{RWA}$	Orbis Bank Focus
RWA_DENSITY	Risk-weighted assets density is a proxy of a bank’s risk appetite and risk exposure. The higher the ratio, the more risky the bank’s assets become. A higher RWA density implies a deterioration in the risk quality profile.	Risk weighted assets (RWA) over total asset $= \frac{RWA}{TA}$	Orbis Bank Focus
GROSS LOANS/TA	Gross loans ratio as a proxy of bank business model.	Gross customer loans (GL) over total asset (TA) $= \frac{GL}{TA}$	Orbis Bank Focus
GROSS LOANS GROWTH	It is a measure of the credit lending activity expansion.	Year-Percentage Growth of gross loans (GL).	Orbis Bank Focus

LLP RATIO	It is a measure of the capacity of a bank to absorb potential losses on loans.	Loan loss provisions (LLP) over gross loans (GL) = $\frac{LLP}{GL}$	Orbis Bank Focus
NON PERFORMING LOANS RATIO (NPL)	It is a measure of credit portfolio quality.	Non performing loans (NPL) over gross loans (GL) = $\frac{NPL}{GL}$	Orbis Bank Focus
Z-SCORE –winsorized	Z-score is a proxy for bank stability, and it is measured as the ratio between the Return on Asset (ROA) plus bank Capitalization over the standard deviation of ROA (Barra and Ruggiero, 2023). The lower the Z-score, the lower is the bank’s stability and the higher is the related default risk, and vice versa (see, e.g., Ayadi et al, 2021). In our main analyses, the denominator of the Z-score is computed by considering the entire sample period. To minimize the effects of outliers, we have winsorized the Z-score results at 0.1.	$Z = \frac{ROA + CAPITALIZATION}{SD_{ROA}} = \frac{ROA + (\frac{EQUITY}{TA})}{SD_{ROA}}$	Own elaboration on Orbis Bank Focus data
Z-score First Component (ROA over sdROA)	It is the first component of the Z-score ratio.	$1st \text{ _ component} = \frac{ROA}{SD_{ROA}}$	Own elaboration on Orbis Bank Focus data
Z-score Second Component (Equity to Total Asset over_sdROA)	It is the second component of the Z-score ratio.	$2nd \text{ _ component} = \frac{\frac{EQUITY}{TA}}{SD_{ROA}}$	Own elaboration on Orbis Bank Focus data
TIME-WINDOW VARIABLES			
ECONOMIC PERFORMANCE WINDOWS			
Δ ROA	It is a time-window variable related to the return on asset (ROA) over a certain time period (t–t+1; t– t+2; t-1 – t+1; t-1 – t+2).	Bank profitability window	Own elaboration on Orbis Bank Focus data
Δ RO RWA	It is a time-window variable related to the return on risk weighted asset (RWA) over a certain time period (t–t+1; t– t+2; t-1 – t+1; t-1 – t+2).		
Δ COST/INCOME – winsorized	It is a time-window variable related to the winsorized cost-to-income ratio over a certain time period (t–t+1; t– t+2; t-1 – t+1; t-1 – t+2).	Bank operating efficiency window	Own elaboration on Orbis Bank Focus data
RISK & STABILITY WINDOWS			
Δ ZSCORE –winsorized	It is a time-window variable related to the winsorized Z-score over a certain time period (t–t+1; t– t+2; t-1 – t+1; t-1 – t+2).		Own elaboration on Orbis Bank Focus data

Δ RWA_DENSITY	It is a time-window variable related to the risk-weighted assets density over a certain time period (t—t+1; t— t+2; t-1 — t+1; t-1 — t+2).	Bank risk and stability window	
Δ ROA over sdROA	It is a time-window variable related to the first component of Z-score over a certain time period (t—t+1; t— t+2; t-1 — t+1; t-1 — t+2).		
Δ Equity to Total Asset over_sdROA	It is a time-window variable related to the second component of Z-score over a certain time period (t—t+1; t— t+2; t-1 — t+1; t-1 — t+2).		
Δ LLP RATIO	It is a time-window variable related to the loan loss provisions ratio over a certain time period (t—t+1; t— t+2; t-1 — t+1; t-1 — t+2).	Cost of risk window	Own elaboration on Orbis Bank Focus data
	CAPITAL & ADEQUACY WINDOWS		
Δ_EQUITY/TA	It is a time-window variable related to the equity over total assets over a certain time period (t—t+1; t— t+2; t-1 — t+1; t-1 — t+2).	Bank capitalization and capital requirements window variables	Own elaboration on Orbis Bank Focus data
Δ_TIER 1 RATIO	It is a time-window variable related to the Tier1 ratio over a certain time period (t—t+1; t— t+2; t-1 — t+1; t-1 — t+2).		
	OTHER CONTROLS: MACROECONOMIC VARIABLES		
BANK ASSET CONCENTRATION	Degree of concentration in the Italian banking industry, calculated as a share of assets held by the 5 largest banks.	Share of assets of a country's 5 largest banks	World Bank Database
DOMESTIC CREDIT_GDP	It is a measure of the banking system development. It considers financial resources provided to the private sector (through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment). https://tradingeconomics.com/ .	Domestic credit to private sector (% GDP)	World Bank Database
GDP_GROWTH	Annual growth of Gross Domestic Product	Annual percentage growth rate of GDP, computed at market prices based on constant local currency.	World Bank Database
	REGIONAL MACROECONOMIC VARIABLES		

REGIONAL GDP_GROWTH	Regional Annual growth of Gross Domestic Product. It is a measure of regional economic expansion.	Annual percentage change in regional gross domestic product.	Author's elaboration on ISTAT data
REGIONAL CREDIT/GDP	It represents the regional credit-to-GDP ratio.	<p>It is computed as the ratio between regional bank loans (<i>R.Loans</i>, or regional credit to private sector) and regional GDP (<i>R.GDP</i>).</p> $\frac{R.Loans}{R.GDP}$	<p>Author's elaboration on Bank of Italy data combined with ISTAT data (for regional bank loans –<i>R.Loans</i>–) and ISTAT data (for regional GDP – <i>R.GDP</i>–).*</p> <p>*Data on regional bank loans (<i>R.Loans</i>) are available from Bank of Italy from 2012 onward; previous data are available at “<i>Annuario statistico italiano</i>” by ISTAT.</p>
REGIONAL MKT CONCENTRATION	It is a proxy of regional loans' market concentration of CCBs, measured by the <i>Herfindahl Hirshmen Index (HHI)</i> .	$HHI=S1^2+S2^2+S3^2+\dots+S_n^2$ <p>where:</p> <p>S_n represents the market share percentage of the single CCB in a given Region, expressed as a whole number.</p> <p>S_n is calculated as ratio between the loans of the single CCB in a given Region (<i>CCB Loans</i>) over the total bank loans provided in the same Region (<i>R.Loans</i>).</p> $S_n = \frac{CCB Loans}{R.Loans} * 100$ <p>n = is the number of the CCBs in a given Region</p>	<p>Author's elaboration on Orbis dataset (for <i>CCB Loans</i>), and Bank of Italy data combined with ISTAT data (for regional bank loans –<i>R.Loans</i>–).*</p> <p>* Data on regional bank loans (<i>R.Loans</i>) are available from Bank of Italy from 2012 onward; previous data are available at “<i>Annuario statistico italiano</i>” by ISTAT.</p>

Table SA2 – Correlation matrix

This Table reports the correlations across the main variables used in our multivariate analyses (descriptions are reported in Appendix A1). Correlations statistically significant at the 5 % level are highlighted in bold.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) MA	1.000																		
(2) E/TA	-0.053	1.000																	
(3) TIER_1 ratio	-0.094	0.693	1.000																
(4) RWA_DENS.	-0.017	0.343	-0.234	1.000															
(5) GL/TA	0.066	-0.291	-0.366	0.262	1.000														
(6) NPL ratio	0.037	-0.009	-0.134	0.219	-0.045	1.000													
(7) GROW_GL	0.083	-0.164	-0.139	-0.071	0.061	-0.352	1.000												
(8) ROA	-0.020	0.093	0.043	-0.041	-0.059	-0.222	0.280	1.000											
(9) RO RWA	-0.007	-0.003	-0.003	-0.065	-0.008	-0.049	0.036	0.120	1.000										
(10) C/I ratio_w	-0.014	0.062	0.029	-0.009	0.089	-0.040	-0.017	-0.226	-0.051	1.000									
(11) Z-SCORE_w	-0.074	0.100	0.148	-0.054	-0.097	0.126	0.022	0.114	0.017	-0.214	1.000								
(12) LLP RATIO	-0.005	0.028	-0.094	0.213	-0.029	0.590	-0.225	-0.228	-0.046	-0.004	-0.002	1.000							
(13) SIZE	0.258	-0.375	-0.354	-0.155	0.219	-0.044	0.013	0.012	0.024	-0.031	-0.034	-0.038	1.000						
(14) BANK ASSET CONCENTRAT.	0.009	-0.019	-0.002	-0.013	0.154	-0.251	0.009	0.054	0.024	-0.013	0.045	-0.065	0.034	1.000					
(15) DOMESTIC CREDIT_GDP	-0.017	0.004	-0.095	0.227	-0.201	0.193	-0.140	-0.074	-0.013	-0.013	0.046	0.195	-0.001	-0.012	1.000				
(16) GDP_GROW	0.015	-0.012	0.057	-0.114	0.153	-0.103	0.126	0.016	0.004	0.023	-0.061	-0.186	-0.050	-0.383	-0.626	1.000			
(17) LISTED	0.214	-0.068	-0.092	-0.112	-0.078	-0.084	0.010	0.031	0.009	0.003	-0.020	-0.060	0.520	0.021	0.047	-0.084	1.000		
(18) CCB DUMMY	-0.030	-0.038	0.017	0.063	0.021	-0.009	0.069	0.050	-0.024	-0.037	0.033	-0.016	-0.374	-0.018	-0.065	0.049	-0.272	1.000	
(19) 2016 CCB REFORM	0.036	-0.016	0.094	-0.232	0.245	-0.286	0.159	0.070	0.030	0.026	-0.046	-0.218	0.023	0.301	-0.837	0.595	-0.034	0.041	1.000

Table SA3 – Placebo Tests and Dynamic DID Impact on M&As (Focus: Total sample)

This Table reports the results of placebo tests and dynamic difference-in-differences analyses on M&As, considering our total sample and using various fake treatment dates as placebo tests (2013 and 2014). The dependent variable is the M&A involvement. In Models 1-4, we conduct the first placebo test (PLACEBO 1), considering the period from 2014 onward. In Models 5-8, we conduct the second placebo test (PLACEBO 2), considering the period from 2013 onward. In Models 9-12, we use a dynamic DID method, including multiple periods (both fake treatment years and the actual post-reform period). For each test, we consider specifications with and without region fixed effects. The key variables are the following: TREATED is a dummy variable equals 1 if bank is a CCB, 0 otherwise; TIME is the dummy variable related to the actual CCB reform period, taking the value of 1 after 2016, and zero otherwise; PLACEBO 1 (2014) is a dummy variable equals 1 from 2014 onwards, 0 otherwise; PLACEBO 2 is a dummy variable equals 1 from 2013 onwards, 0 otherwise; (TIME * TREATED), is the related interaction term, which takes the value 1, in case of CCBs after the 2016 Reform, and 0 otherwise; (PLACEBO 1 * TREATED), is the related interaction term, which takes the value of 1, in case of CCBs from 2014 onward, 0 otherwise; (PLACEBO 2 * TREATED), equals 1 in case of CCBs from 2013 onward, 0 otherwise. The other variables are: bank capitalization, measured as the ratio between equity and total assets (EQUITY/TA); bank risk appetite, proxied by the risk-weighted assets over total assets ratio (RWA DENSITY); bank business model, proxied by the ratio between the gross loans and total assets (GROSS LOANS/TA); credit portfolio quality, measured by the ratio between the non-performing loans over gross loans (NPL RATIO); bank lending activity, measured by the annual percentage change of gross loans (GROWTH GROSS LOANS); bank size, measured by the natural logarithm of total assets (SIZE); LISTED status of banks, proxied by a dummy variable equals 1 if the bank is listed, 0 otherwise. We also controlled for other macroeconomic indicators: bank asset concentration, measured as a share of the assets of the 5 largest banks, over total commercial banking assets (BANK ASSET CONCENTRATION); banking system development, measured by the ratio between the domestic credit to the private sector over GDP (DOMESTIC CREDIT_GDP); economic growth as the annual growth of GDP (GDP_GROWTH). All bank-specific and macroeconomic variables are considered at time t-1.

Dependent Variable: M&A involvement (Focus: Total sample)	PLACEBO TEST 1				PLACEBO TEST 2				DYNAMIC DID			
	(1) PROBIT	(2) PROBIT	(3) LOGIT	(4) LOGIT	(5) PROBIT	(6) PROBIT	(7) LOGIT	(8) LOGIT	(9) PROBIT	(10) PROBIT	(11) LOGIT	(12) LOGIT
TREATED (CCBs)	2.18e-05 (0.026)	-0.005 (0.027)	0.008 (0.028)	0.000 (0.030)	-0.008 (0.031)	-0.011 (0.032)	0.0029 (0.032)	-0.003 (0.035)	-0.012 (0.032)	-0.014 (0.032)	-0.003 (0.034)	-0.007 (0.035)
TIME (2016 REFORM)	-	-	-	-	-	-	-	-	0.013 (0.024)	0.016 (0.025)	0.008 (0.026)	0.009 (0.027)
PLACEBO 1 (2014)	0.015 (0.025)	0.011 (0.026)	0.011 (0.025)	0.005 (0.027)	-	-	-	-	0.051 (0.035)	0.046 (0.038)	0.039 (0.041)	0.032 (0.044)
PLACEBO 2 (2013)	-	-	-	-	0.008 (0.032)	0.006 (0.032)	0.009 (0.030)	0.003 (0.032)	-0.032 (0.040)	-0.028 (0.041)	-0.017 (0.043)	-0.015 (0.045)
TIME * TREATED (CCBs after 2016 Reform)	-	-	-	-	-	-	-	-	0.042** (0.020)	0.041** (0.021)	0.045** (0.022)	0.044* (0.023)
PLACEBO 1 * TREATED (CCBs after 2014)	0.029 (0.028)	0.030 (0.029)	0.033 (0.029)	0.039 (0.032)	-	-	-	-	-0.020 (0.048)	-0.014 (0.051)	-0.011 (0.054)	0.001 (0.059)
PLACEBO 2 * TREATED (CCBs after 2013)	-	-	-	-	0.036	0.036	0.037	0.041	0.034	0.028	0.025	0.017

EQUITY_TA	0.044 (0.095)	0.027 (0.110)	0.035 (0.093)	0.016 (0.113)	(0.032) 0.047 (0.095)	(0.033) 0.030 (0.109)	(0.034) 0.035 (0.092)	(0.036) 0.016 (0.113)	(0.055) 0.049 (0.093)	(0.057) 0.033 (0.107)	(0.061) 0.042 (0.093)	(0.065) 0.026 (0.112)
RWA_DENSITY	-0.054* (0.029)	-0.055* (0.032)	-0.045 (0.030)	-0.045 (0.035)	-0.056* (0.030)	-0.058* (0.033)	-0.047 (0.031)	-0.048 (0.036)	-0.042 (0.029)	-0.042 (0.032)	-0.032 (0.030)	-0.032 (0.034)
GROSS LOANS_TA	0.116*** (0.028)	0.131*** (0.031)	0.128*** (0.029)	0.142*** (0.033)	0.118*** (0.028)	0.133*** (0.031)	0.130*** (0.029)	0.144*** (0.033)	0.103*** (0.027)	0.117*** (0.031)	0.110*** (0.029)	0.122*** (0.033)
NPL RATIO	0.217*** (0.047)	0.225*** (0.051)	0.196*** (0.044)	0.205*** (0.050)	0.220*** (0.047)	0.228*** (0.051)	0.197*** (0.044)	0.207*** (0.050)	0.215*** (0.046)	0.219*** (0.050)	0.190*** (0.044)	0.199*** (0.049)
GROWTH_GROSS LOANS	0.283*** (0.035)	0.300*** (0.036)	0.304*** (0.032)	0.323*** (0.033)	0.283*** (0.035)	0.300*** (0.036)	0.304*** (0.032)	0.323*** (0.033)	0.271*** (0.034)	0.288*** (0.035)	0.290*** (0.032)	0.308*** (0.033)
SIZE	0.025*** (0.004)	0.026*** (0.0039)	0.026*** (0.004)	0.027*** (0.004)	0.025*** (0.004)	0.026*** (0.004)	0.026*** (0.004)	0.027*** (0.004)	0.026*** (0.004)	0.026*** (0.004)	0.026*** (0.004)	0.027*** (0.004)
BANK ASSET CONCENTRATION	-0.081 (0.068)	-0.092 (0.070)	-0.103 (0.066)	-0.107 (0.069)	-0.079 (0.073)	-0.089 (0.073)	-0.098 (0.068)	-0.103 (0.071)	-0.259*** (0.094)	-0.277*** (0.094)	-0.263** (0.105)	-0.268** (0.105)
DOMESTIC CREDIT_GDP	0.332*** (0.115)	0.352*** (0.119)	0.343*** (0.118)	0.358*** (0.122)	0.329** (0.132)	0.352*** (0.130)	0.353*** (0.129)	0.364*** (0.131)	0.498*** (0.163)	0.534*** (0.165)	0.521*** (0.179)	0.541*** (0.183)
GDP_GROWTH	0.291 (0.426)	0.291 (0.439)	0.216 (0.435)	0.184 (0.452)	0.440 (0.504)	0.433 (0.501)	0.400 (0.477)	0.343 (0.490)	-0.473 (0.388)	-0.474 (0.383)	-0.368 (0.382)	-0.404 (0.387)
LISTED	-0.006 (0.018)	0.006 (0.020)	-0.014 (0.018)	-0.002 (0.021)	-0.005 (0.018)	0.007 (0.020)	-0.013 (0.018)	-0.001 (0.021)	-0.004 (0.018)	0.007 (0.020)	-0.011 (0.018)	0.000 (0.021)
REGION FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Pseudo R-square	0.2613	0.2719	0.2705	0.2806	0.2606	0.2713	0.2700	0.2799	0.2703	0.2803	0.2784	0.2879
Observations	2,691	2,554	2,691	2,554	2,691	2,554	2,691	2,554	2,691	2,554	2,691	2,554

Note: Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table SA4 – Further Robustness Checks with LPM: Two-way Fixed Effects and Placebo Tests (Focus: Total sample)

This Table presents the results of additional difference-in-differences analyses evaluating the impact of the CCB Reform and its announcement on M&As, by employing a two-way fixed effects method and further placebo tests with LPM. Specifically, Models 1-2 include both bank and year fixed effects (TWO-WAY FE), to estimate the impact of the 2016 Reform (Model 1) and its announcement in 2015 (Model 2) on M&As. Models 3-6 conduct additional placebo tests with LPM. Models 7-8 add Dynamic DID specifications, including multiple periods (both fake treatment years and the actual post-reform period). Models 4, 6, and 8 add Region fixed effect. In these Models, the key explanatory variables are defined as follows: TREATED is a dummy variable equals 1 if the bank is a CCB, 0 otherwise; TIME is a dummy variable taking the value of 1 after the 2016 Reform, and 0 otherwise; PLACEBO 1 (2014) is a dummy variable equals 1 from 2014 onwards, 0 otherwise; PLACEBO 2 is a dummy variable equals 1 from 2013 onwards, 0 otherwise; TIME * TREATED is the interaction term taking the value of 1, in case of CCBs after the 2016 Reform, 0 otherwise; TIME 2 * TREATED is the interaction term taking the value of 1, in case of CCBs after 2015 (announcement of CCB Reform); 0 otherwise; PLACEBO 1 * TREATED is the related interaction term, which takes the value of 1, in case of CCBs from 2014 onwards, 0 otherwise; PLACEBO 2 * TREATED equals 1 in case of CCBs from 2013 onward, 0 otherwise. The other explanatory variables are: equity over total assets (EQUITY/TA); risk weighted assets over total assets ratio (RWA DENSITY); gross loans over total assets (GROSS LOANS/TA); non-performing loans over gross loans (NPL RATIO); annual percentage change of gross loans (GROWTH GROSS LOANS); natural logarithm of total assets (SIZE); LISTED dummy. We also controlled for other macroeconomic indicators: bank asset concentration; domestic credit to private sector over GDP (DOMESTIC CREDIT_GDP); annual growth of GDP (GDP_GROWTH). All bank-specific and macroeconomic variables are considered at time t-1.

Dependent Variable: M&A involvement	TWO-WAY FE		PLACEBO TEST 1		PLACEBO TEST 2		DYNAMIC DID	
	(1) LPM	(2) LPM	(3) LPM	(4) LPM	(5) LPM	(6) LPM	(7) LPM	(8) LPM
TREATED (CCBs)	-	-	0.024 (0.022)	0.021 (0.023)	0.028 (0.026)	0.025 (0.027)	0.024 (0.027)	0.022 (0.027)
TIME (2016 REFORM)	-	-	-	-	-	-	0.007 (0.028)	0.007 (0.028)
PLACEBO 1 (2014)	-	-	0.002 (0.025)	0.000 (0.026)	-	-	0.025 (0.041)	0.022 (0.041)
PLACEBO 2 (2013)	-	-	-	-	0.018 (0.028)	0.018 (0.029)	0.020 (0.042)	0.023 (0.042)
TIME * TREATED (CCBs after 2016)	0.042* (0.024)	-	-	-	-	-	0.070*** (0.024)	0.069*** (0.024)
TIME 2 * TREATED (CCBs after 2015 Announcement)	-	0.088*** (0.028)	-	-	-	-	-	-
PLACEBO 1 * TREATED (CCBs after 2014)	-	-	0.015 (0.024)	0.014 (0.024)	-	-	-0.019 (0.042)	-0.015 (0.042)
PLACEBO 2 * TREATED (CCBs after 2013)	-	-	-	-	0.011	0.008	-0.010	-0.014

EQUITY/TA	0.426 (0.327)	0.381 (0.320)	0.337*** (0.100)	0.325*** (0.103)	0.333*** (0.100)	0.321*** (0.103)	0.310*** (0.100)	0.300*** (0.104)
RWA_DENSITY	-0.109 (0.088)	-0.084 (0.087)	-0.068** (0.032)	-0.086** (0.035)	-0.066** (0.032)	-0.083** (0.036)	-0.043 (0.032)	-0.060* (0.036)
GROSS LOANS/TA	0.0839 (0.0822)	0.091 (0.081)	0.052* (0.029)	0.055* (0.031)	0.051* (0.029)	0.054* (0.031)	0.037 (0.029)	0.039 (0.030)
NPL RATIO	0.0518 (0.121)	0.057 (0.121)	0.201*** (0.049)	0.211*** (0.056)	0.196*** (0.048)	0.204*** (0.056)	0.205*** (0.049)	0.213*** (0.057)
GROWTH_GROSS LOANS	0.192** (0.088)	0.190** (0.087)	0.054 (0.038)	0.053 (0.038)	0.054 (0.038)	0.053 (0.038)	0.054 (0.037)	0.052 (0.037)
SIZE	0.157*** (0.034)	0.159*** (0.0334)	0.032*** (0.004)	0.032*** (0.005)	0.032*** (0.004)	0.032*** (0.005)	0.031*** (0.004)	0.031*** (0.005)
BANK ASSET CONCENTRATION	-	-	-0.018 (0.070)	-0.006 (0.072)	0.000 (0.069)	0.011 (0.071)	-0.205** (0.085)	-0.192** (0.083)
DOMESTIC CREDIT_GDP	-	-	0.109 (0.100)	0.111 (0.101)	0.167 (0.105)	0.168 (0.105)	0.451*** (0.156)	0.450*** (0.156)
GDP_GROWTH	-	-	0.606* (0.326)	0.615* (0.331)	0.843** (0.332)	0.838** (0.337)	-0.047 (0.305)	-0.032 (0.305)
LISTED	-	-	0.012 (0.031)	0.023 (0.032)	0.012 (0.031)	0.023 (0.032)	0.015 (0.031)	0.026 (0.032)
Constant	-2.158*** (0.473)	-2.233*** (0.468)	-0.551*** (0.134)	-0.553*** (0.135)	0.626*** (0.145)	-0.628*** (0.147)	-0.744*** (0.159)	-0.742*** (0.159)
YEAR FE	YES	YES	-	-	-	-	-	-
BANK ID FE	YES	YES	-	-	-	-	-	-
REGION FE	NO	NO	NO	YES	NO	YES	NO	YES
Observations	2,614	2,614	2691	2691	2691	2691	2691	2691
R-squared	0.308	0.311	0.062	0.067	0.062	0.067	0.069	0.074

Note: Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SA5– TRIPLE DID with PSM: Effects on capitalization, stability, risk and performance (Focus: Total Sample)

This Table presents the second-stage estimates for various types of outcomes using a triple difference-in-differences approach in conjunction with a linear probability model (subsequent to the implementation of a PSM approach in the first stage). In particular, this Table reports the outcomes in terms of capitalization, risk, stability, profitability, and efficiency of banks involved in M&As (TREATED group), compared to banks not involved in M&As (CONTROL group) across different time periods, ranging from the year before the M&A (t-1) to 2 years after (t+2). Specifically, Panel A refers to the impact on capitalization in terms of TIER1 ratio (Models 1-4) and EQUITY_TA (Models 5-8); Panel B refers to the impact on risk and stability in terms of Z-SCORE (Models 9-12) and RWA DENSITY (Models 13-16); Panel C reports the impact on profitability in terms of ROA (Models 17-20) and RO_RWA (Models 21-24); Panel D focuses on the impact on cost efficiency in terms of COST/INCOME ratio (Models 25-28) and on cost of risk, in terms of LLP ratio (Models 29-32). Within each Panel, we consider the variation in the above outcomes over 4 different time periods, reported in separate columns (from t-1 to t+2). In this Table the interaction terms are defined as follows: (CCB REFORM#M&A) refers to the interaction between the 2016 Reform (CCB Reform) and M&As; (CCB#M&A) refers to the interaction between cooperative banks (CCBs) and M&As; (CCB#CCB REFORM) refers to the interaction between CCBs and the 2016 Reform; (CCB#M&A#CCB REFORM) represents our key variable of interest, i.e., the triple interaction among CCBs, M&As, and the 2016 Reform, showing the outcomes of the CCBs involved in M&As after the 2016 Reform, compared to the other banks. Observable matching characteristics: E/TA; RWA ratio; GL/TA; NPL ratio; Growth GL; SIZE; LISTED; Bank Assets concentration; Domestic credit to GDP; GDP growth.

Panel A –Capitalization

Triple DID-PSM Model specifications	Δ TIER1 ratio				Δ EQUITY/TA			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	TIER1 (t; t+1)	TIER1 (t; t+2)	TIER1 (t-1; t+1)	TIER1 (t-1; t+2)	E/A (t; t+1)	E/A (t; t+2)	E/A (t-1; t+1)	E/A (t-1; t+2)
M&A	-0.005 (0.010)	0.020 (0.016)	-0.011 (0.018)	0.020 (0.026)	0.001 (0.009)	-0.002 (0.015)	0.010 (0.012)	0.007 (0.021)
CCB REFORM	-0.029*** (0.010)	-0.016 (0.016)	-0.046*** (0.012)	-0.018 (0.019)	-0.014*** (0.005)	-0.006 (0.011)	-0.010* (0.006)	0.005 (0.011)
CCB REFORM#M&A	0.006 (0.029)	-0.013 (0.018)	-0.015 (0.035)	-0.019 (0.028)	0.010 (0.025)	0.022 (0.018)	0.023 (0.023)	0.043*** (0.016)
CCB	-0.015** (0.006)	-0.016** (0.007)	-0.023*** (0.009)	-0.021** (0.010)	-0.002 (0.005)	-0.008 (0.011)	-0.002 (0.006)	-0.008 (0.011)
CCB#M&A	-0.006 (0.007)	0.008 (0.009)	-0.023*** (0.009)	-0.002 (0.011)	-0.003 (0.005)	-0.004 (0.010)	-0.003 (0.005)	-0.003 (0.010)
CCB#CCB REFORM	-0.032*** (0.010)	-0.027* (0.016)	-0.056*** (0.013)	-0.039** (0.017)	-0.019*** (0.005)	-0.020* (0.011)	-0.019*** (0.006)	-0.012 (0.011)
CCB#M&A#CCB REFORM	-0.024*** (0.009)	-0.003 (0.013)	-0.053*** (0.015)	-0.014 (0.017)	-0.015*** (0.006)	-0.007 (0.011)	-0.014* (0.008)	0.000 (0.010)

BANK CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
COUNTRY CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
REGION FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,761	1,263	1,763	1,264	1,791	1,291	1,791	1,291
R-squared	0.064	0.119	0.109	0.178	0.034	0.055	0.089	0.084

Panel B –Stability and Risk

Triple DID-PSM	$\Delta Z\text{-SCORE}_{\text{winsorized}}$				$\Delta RWA_{\text{DENSITY}}$			
Model	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16
Specification	ZSCORE_W (t; t+1)	ZSCORE_W (t; t+2)	ZSCORE_W (t-1; t+1)	ZSCORE_W (t-1; t+2)	RWA (t; t+1)	RWA (t; t+2)	RWA (t-1; t+1)	RWA (t-1; t+2)
M&A	-2.411 (1.678)	-4.996 (4.645)	-8.264* (5.007)	-12.780 (9.683)	0.020 (0.025)	0.101** (0.040)	0.018 (0.022)	0.100*** (0.024)
CCB REFORM	-5.54*** (1.46)	-1.657 (2.192)	-5.157*** (1.660)	7.010*** (2.543)	0.056*** (0.010)	0.089*** (0.014)	0.052*** (0.020)	0.105*** (0.021)
CCB REFORM#M&A	-4.334** (1.949)	0.748 (1.782)	-2.303 (2.432)	11.06*** (2.461)	0.126** (0.052)	0.132** (0.064)	0.204*** (0.073)	0.252*** (0.084)
CCB	-0.288 (0.795)	-1.620 (1.273)	0.229 (0.998)	-1.143 (1.535)	0.005 (0.008)	0.017 (0.011)	0.005 (0.012)	0.014 (0.014)
CCB#M&A	-1.426 (1.032)	-2.025 (2.553)	0.271 (1.304)	-0.382 (2.947)	-0.007 (0.013)	0.024 (0.017)	-0.013 (0.018)	0.009 (0.021)
CCB#CCB REFORM	-7.235*** (1.272)	-3.999** (1.942)	-8.015*** (1.488)	2.554 (2.320)	0.055*** (0.010)	0.084*** (0.013)	0.053*** (0.020)	0.100*** (0.021)
CCB#M&A#CCB REFORM	-9.205*** (1.644)	-3.379 (2.254)	-10.69*** (2.256)	2.555 (3.046)	0.049*** (0.011)	0.082*** (0.015)	0.061*** (0.020)	0.107*** (0.022)
BANK CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
COUNTRY CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
REGION FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,791	1,291	1,791	1,291	1,694	1,712	1,189	1,208
R-squared	0.086	0.069	0.135	0.153	0.204	0.261	0.255	0.341

Panel C –Profitability

Triple DID-PSM	ΔROA				ΔRO_{RWA}			
Model	Model 17	Model 18	Model 19	Model 20	Model 21	Model 22	Model 23	Model 24
Specification	ROA (t; t+1)	ROA (t; t+2)	ROA (t-1; t+1)	ROA (t-1; t+2)	RO_RWA (t; t+1)	RO_RWA (t; t+2)	RO_RWA (t-1; t+1)	RO_RWA (t-1; t+2)
M&A	0.012 (0.007)	-0.006* (0.003)	0.014** (0.006)	-0.004 (0.008)	-0.099 (0.212)	-0.304 (0.424)	-0.095 (0.208)	-0.299 (0.422)
CCB REFORM	0.007** (0.003)	0.007 (0.006)	0.007** (0.003)	0.006 (0.007)	0.016 (0.026)	0.041 (0.048)	0.015 (0.026)	0.036 (0.049)
CCB REFORM#M&A	0.001	-0.000	0.002	0.002	-0.022	0.019	-0.028	0.030

	(0.007)	(0.006)	(0.014)	(0.016)	(0.029)	(0.049)	(0.030)	(0.060)
CCB	0.004	-0.003	0.003	-0.004	0.040	0.057	0.039	0.0560
	(0.003)	(0.003)	(0.003)	(0.003)	(0.040)	(0.060)	(0.039)	(0.060)
CCB#M&A	0.008**	0.000	0.005	-0.004	0.057	0.077	0.051	0.068
	(0.004)	(0.004)	(0.004)	(0.004)	(0.046)	(0.072)	(0.045)	(0.072)
CCB#CCB REFORM	0.008	0.001	0.005	0.003	-0.032	-0.058	-0.038	-0.055
	(0.005)	(0.003)	(0.004)	(0.004)	(0.043)	(0.066)	(0.043)	(0.065)
CCB#M&A#CCB REFORM	0.014**	0.002	0.008**	-0.000	-0.001	-0.030	-0.013	-0.035
	(0.007)	(0.004)	(0.004)	(0.007)	(0.029)	(0.044)	(0.027)	(0.045)
BANK CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
COUNTRY CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
REGION FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,791	1,291	1,791	1,291	1,694	1,189	1,712	1,208
R-squared	0.026	0.043	0.035	0.064	0.072	0.101	0.073	0.100

Panel D – Cost/Income ratio and Cost of Risk

Triple DID-PSM Model	Δ COST/INCOME_winsorized				Δ LLP ratio			
	Model 25	Model 26	Model 27	Model 28	Model 29	Model 30	Model 31	Model 32
Specification	C/I_W (t ; t+1)	C/I_W (t ; t+2)	C/I_W (t-1; t+1)	C/I_W (t-1; t+2)	LLP (t ; t+1)	LLP (t ; t+2)	LLP (t-1; t+1)	LLP (t-1; t+2)
M&A	-0.011 (0.027)	-0.033** (0.013)	-0.053 (0.050)	-0.045 (0.069)	-0.001 (0.004)	0.006 (0.004)	-0.001 (0.003)	0.004 (0.004)
CCB REFORM	0.056*** (0.013)	0.005 (0.022)	0.027* (0.014)	-0.060*** (0.020)	-0.007** (0.003)	-7.68e-05 (0.003)	-0.002 (0.003)	0.002 (0.003)
CCB REFORM#M&A	0.171*** (0.036)	0.176*** (0.044)	0.054 (0.057)	-0.017 (0.079)	-0.009* (0.005)	-0.009* (0.005)	-0.007 (0.006)	-0.011* (0.006)
CCB	0.011 (0.009)	0.016 (0.011)	0.023** (0.010)	0.026** (0.011)	0.001 (0.002)	0.001 (0.001)	0.002 (0.002)	0.001 (0.001)
CCB#M&A	-0.014 (0.019)	-0.009 (0.021)	0.024 (0.022)	0.027 (0.023)	-0.004 (0.003)	-0.004 (0.003)	-0.001 (0.003)	-0.003 (0.003)
CCB#CCB REFORM	0.065*** (0.012)	0.025 (0.022)	0.050*** (0.013)	-0.032 (0.020)	-0.007** (0.003)	-0.001 (0.003)	-0.003 (0.004)	-0.001 (0.003)
CCB#M&A#CCB REFORM	0.073*** (0.015)	0.063*** (0.022)	0.035* (0.020)	-0.013 (0.022)	-0.010*** (0.003)	-0.006** (0.003)	-0.002 (0.004)	-0.003 (0.003)
BANK CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
COUNTRY CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES
REGION FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,790	1,290	1,790	1,290	1,785	1,284	1,784	1,283
R-squared	0.057	0.106	0.174	0.263	0.056	0.137	0.170	0.239

Note: Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.