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Basel III joint regulatory constraints: interactions and implications for the financing of the economy[1]
Preliminary draft

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[1] The opinions expressed in the paper represent the authors' personal opinions and do not necessarily reflect the views of the ACPR or their staff

Outline

Motivation

- Basel 3: for the 1st time at the international level, a multi-dimensional framework with several requirements for both capital and liquidity, in response to the 2007-09 global financial crisis
- Different ratios pursue different objectives, but present some overlap
- Lack of history and unconclusive literature on the compounded effects of liquidity and capital standards taken together on banks' resilience and lending supply
- 3 types of potential interactions: i) complementarity; ii) substitutability; and iii) independence, with different implications for the vindication of the Basel 3 framework.

Literature Review

- **Capital-liquidity interactions: from banks' risk-taking behaviour to financial (in)stability**: 4 conceptual channels of interactions between liquidity and capital requirements (BCBS, 2016): (i) quality of assets, (ii) fire sales, (iii) bank profitability, and (iv) bank solvency
- No consensus in literature on whether banks treat capital and liquidity as substitutes or complements:
  - Proponents of the substitutability hypothesis:
    - Regulating liquidity not necessary as long as capital set to sufficiently high levels (Admati and Hellwig, 2013)
    - Maturity transformation found to decline when capital increases for US banks (DeYoung et al., 2018) and UK banks (Acosta-Smith et al., 2019)
    - Not all regulations will bind at the same time (Cecchetti and Kashyap, 2018)

Literature Review

- Proponents of the complementarity hypothesis:
  - Liquidity requirements more efficient than capital requirements in dealing with liquidity-driven runs
  - Larger reduction in lending to non-financial agents, in particular for the least liquid and least capitalized institutions, when adding liquidity requirements to capital requirements (Behn et al., 2019)
- Synthesis: among multiple regulations, which one binds for credit creation depends on banks' balance sheet structure and business models (Xing et al., 2020)

This study: research questions and contributions

- Research questions:
  - Can we theoretically determine which ratio binds compared to another within Basel 3 multi-standard framework?
  - How liquidity and capital ratios interact with regard to their effects on lending growth?
- Twofold contribution of this paper to the literature:
  - Attempt to jointly model the 4 main Basel 3 constraints in a comprehensive but simplified framework based on banks' objective of profit maximisation
  - Empirical estimation of the effect on lending growth of the interactions between the Basel 3 ratios in a pairwise fashion to shed light on the substituability/complementarity relationship

Theoretical model

⇒ Obj: first insight on how liquidity and capital constraints interact

- Representative **bank's balance sheet**

Table : Structure of the bank's balance sheet

$Assets = A$		Liabilities =LBT	
L	$\tilde{r^l}$	D	$\tilde{r^d}$
S	$\tilde{r^s}$	B	$\tilde{r^b}$
		K	$\tilde{r^k}$
$Total = A$		$Total = LBT = A$	

with the following inequalities: $\tilde{r^s} < \tilde{r^d} < \tilde{r^b} < \tilde{r^l} < \tilde{r^k}$
(returns considered as exogenous and random)

- Maximization of **bank's profit**, mean-variance investor (Freixas and Rochet)

$$\begin{aligned}\max_{S,L,D,B,K} E(\pi_{adj}) \quad = \quad & \tilde{r^l}L + \tilde{r^s}S - \tilde{r^d}D - \tilde{r^b}B - \tilde{r^k}K - \frac{\rho}{2}(\sigma^2_{\tilde{r^s}}S^2 \\ & + 2\sigma_{\tilde{r^s}\tilde{r^l}}SL + \sigma^2_{\tilde{r^l}}L^2 + \sigma^2_{\tilde{r^d}}D^2 \\ & + 2\sigma_{\tilde{r^l}\tilde{r^l}}DL + 2\sigma_{\tilde{r^l}\tilde{r^s}}DS + \sigma^2_{\tilde{r^l}}B^2\end{aligned}$$

Theoretical model

- The **balance-sheet** constraint:

$$L + S = K + D + B \tag{2}$$

- The **risk-based Tier 1 capital** constraint:

$$\frac{K}{\theta_L L + \theta_S S} \geq \overline{K} \tag{3}$$

- The **leverage** constraint:

$$\frac{K}{L + S} \geq \overline{LR} \tag{4}$$

- The **LCR** constraint:

$$\frac{\phi S}{l_D.D + l_B.B} \geq \overline{LCR} \tag{5}$$

- The **NSFR** constraint:

$$\frac{K + asf_D.D + asf_B.B}{rsf_S.S + rsf_L.L} \geq \overline{NSFR} \tag{6}$$

Theoretical model

- Conditions determining which constraints bind:
  - A regulatory ratio considered more binding than another if the maximum amount of loans under this constraint is lower than under another constraint
  - Relative bindingness of the solvency ratio compared to the leverage ratio depends on the loans' average risk weight θ_L and the size of the management buffer m (with $\gamma = 1 + m$)

$$(3) \Leftrightarrow L_{Tier1}^{max} = \frac{K}{\gamma \overline{K} \theta_L} - \frac{\theta_S}{\theta_L} S \tag{7}$$

$$(4) \Leftrightarrow L_{Lev}^{max} = \frac{K}{\overline{LR}} - S \tag{8}$$

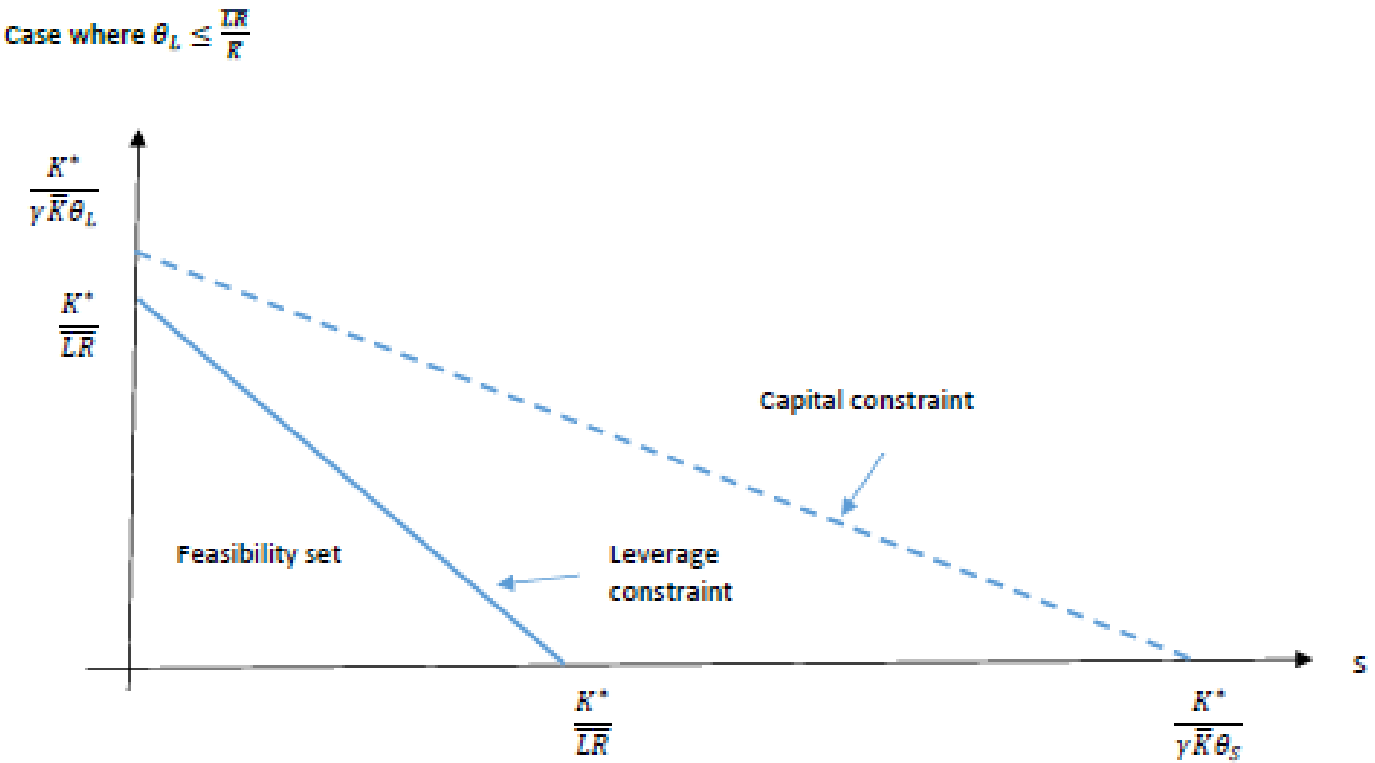
$$(7) + (8) \Leftrightarrow L_{Tier1}^{max} < L_{Lev}^{max} \Leftrightarrow \frac{K}{\gamma \overline{K} \theta_L} < \frac{K}{\overline{LR}} \tag{9}$$

$$\Leftrightarrow \theta_L > \frac{\overline{LR}}{\gamma \overline{K}} \tag{10}$$

.

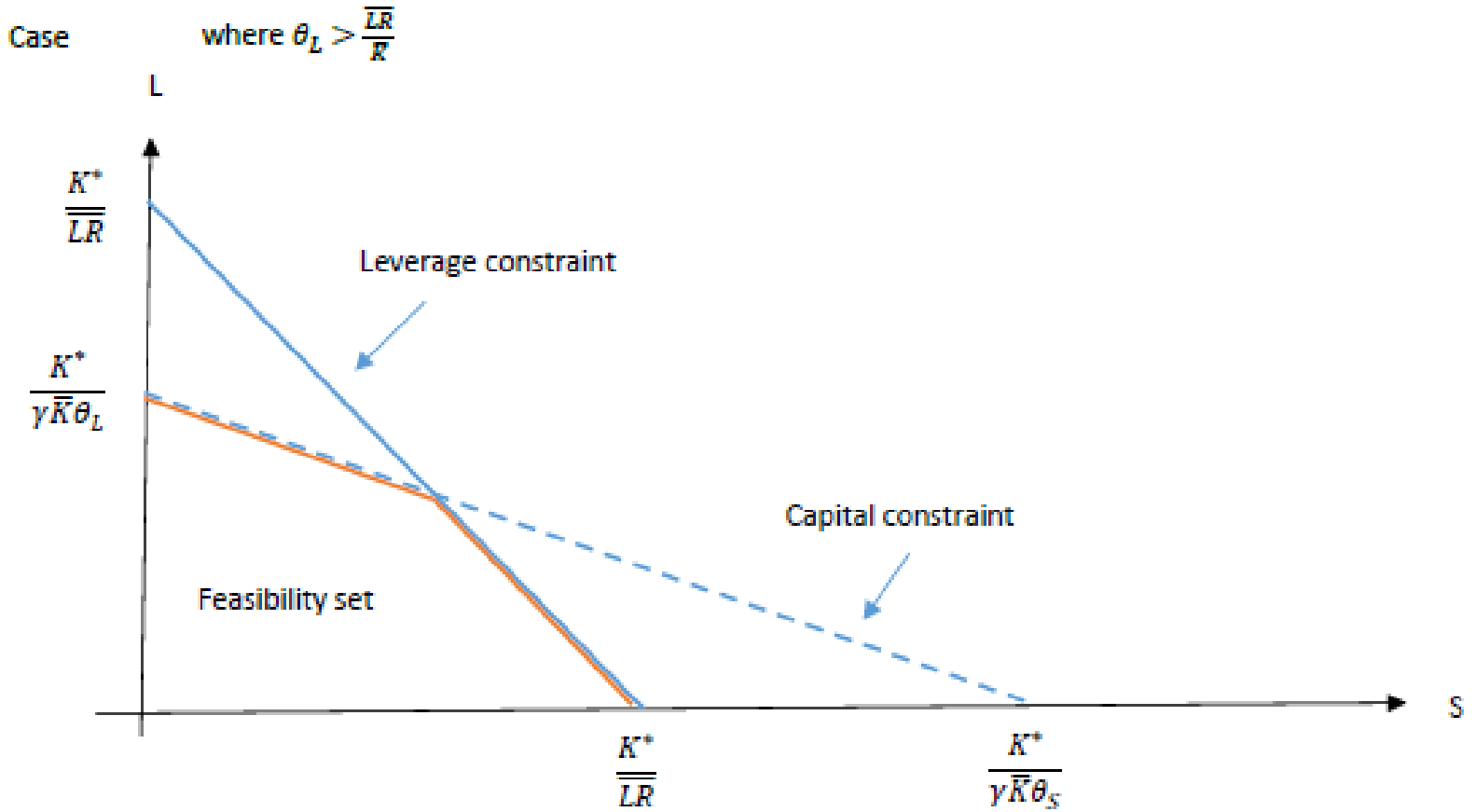
Theoretical model

Figure : Comparison between the maximum amount of loans allowed under the risk-based capital ratio and the leverage ratio - low value of θ_L



Theoretical model

Figure : Comparison between the maximum amount of loans allowed under the risk-based capital ratio and the leverage ratio - high value of θ_L



Theoretical model

- Results of the profit maximization programme under the four regulatory constraints:
  - the optimal level of loans L^* depend on a combination of regulatory parameters, determined by the solvency and leverage ratios but also resulting from banks' investment choices:

$$\dot{L_t} = (\beta\gamma + (1-\beta)(1+\gamma))\Gamma \dot{RWA}_{t-1} + controls + \epsilon_t \qquad (11)$$

  - risk-based Tier 1 capital and leverage constraints limit and determine L;
  - the liquidity ratios do not limit the amount of L but determine the structure of liabilities.

From model to data

- Empirical analysis aimed at estimating the theoretical equation of the loan growth as well as the determinants of lending growth, in particular the effects of regulatory ratios and of the interactions between them
- Riskiness of loans and uncertainty shown to be important determinants of regulatory constraint bindingness compared to another in the theoretical model $\Rightarrow$ inclusion of macrofinancial and macroeconomic variables into the empirical model
- The main variables of interest in our empirical model will be the coefficients on the interaction terms between regulatory ratios

Databases

- **Three different supervisory databases used:**
  - **FINREP/COREP** reporting files comprising balance sheet and prudential data on French banks on a consolidated basis
  - **Quantitative Impact Studies (QIS)** database covering only 6 banks for NSFR data as the NSFR was only implemented in 2021
  - **"Legal entity"** database on banks' legal information and affiliations
- **Macroeconomic** variables on the euro area: public databases (Eurostat)
- **Financial** variables: Bloomberg
- Resulting panel of around 2,300 observations covering 120 banks and 32 periods, quarterly frequency over 2014-2021, two different samples

Descriptive statistics

- Data cleaning: elimination of financial and investment firms to focus on credit institutions
- Elimination of observations exceeding 95th percentile of distribution for Tier 1 and leverage ratios, 75th percentile for LCR given very wide distribution, no cleaning of NSFR data

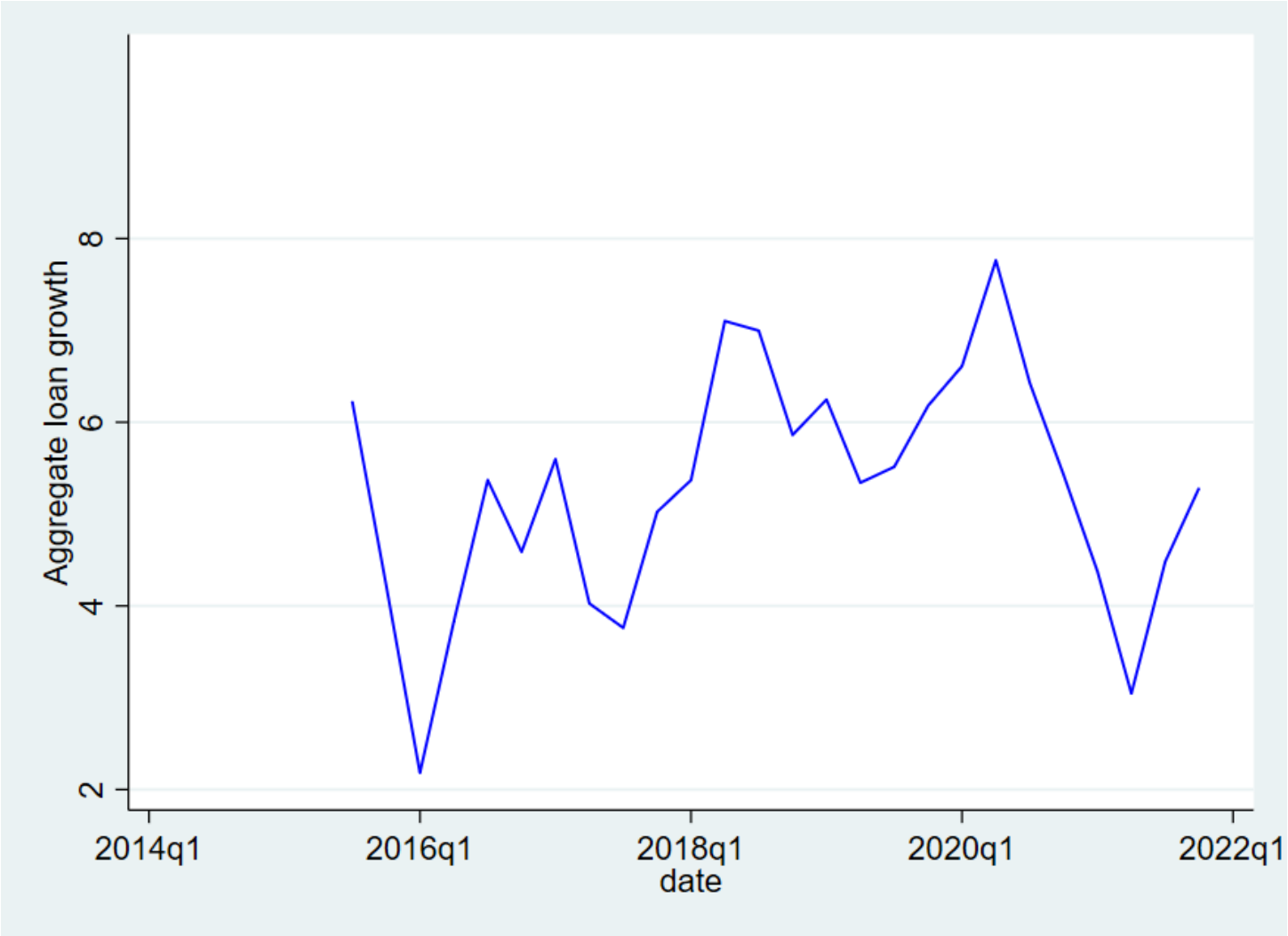
Table : Descriptive statistics on main bank-specific variables (in %) (after cleaning and winsorization)

Variable	Obs.	Mean	Std. Dev.	Min	Max
Lending growth (nonfinancial private sector)	2,881	6.23	5.68	-6.37	19.57
Tier 1 ratio	3,718	17.79	4.77	6.08	32.05
Tier 1 buffer	3,719	14.08	5.82	-3.36	29.8
Leverage ratio	3,532	7.30	2.68	.10	16.38
LCR	833	149.79	38.44	.69	253.50
NSFR	270	105.32	14.25	75.90	142.96
Average risk-weight	3,397	43.13	21.84	5.57	242.86
Size	3,426	.87	2.39	0	16.30
Business model	3,426	59.13	20.08	3.35	83.86
NPLR	3,403	2.73	1.43	.78	6.36

Sources: ACPR, Authors' calculations.

Descriptive statistics

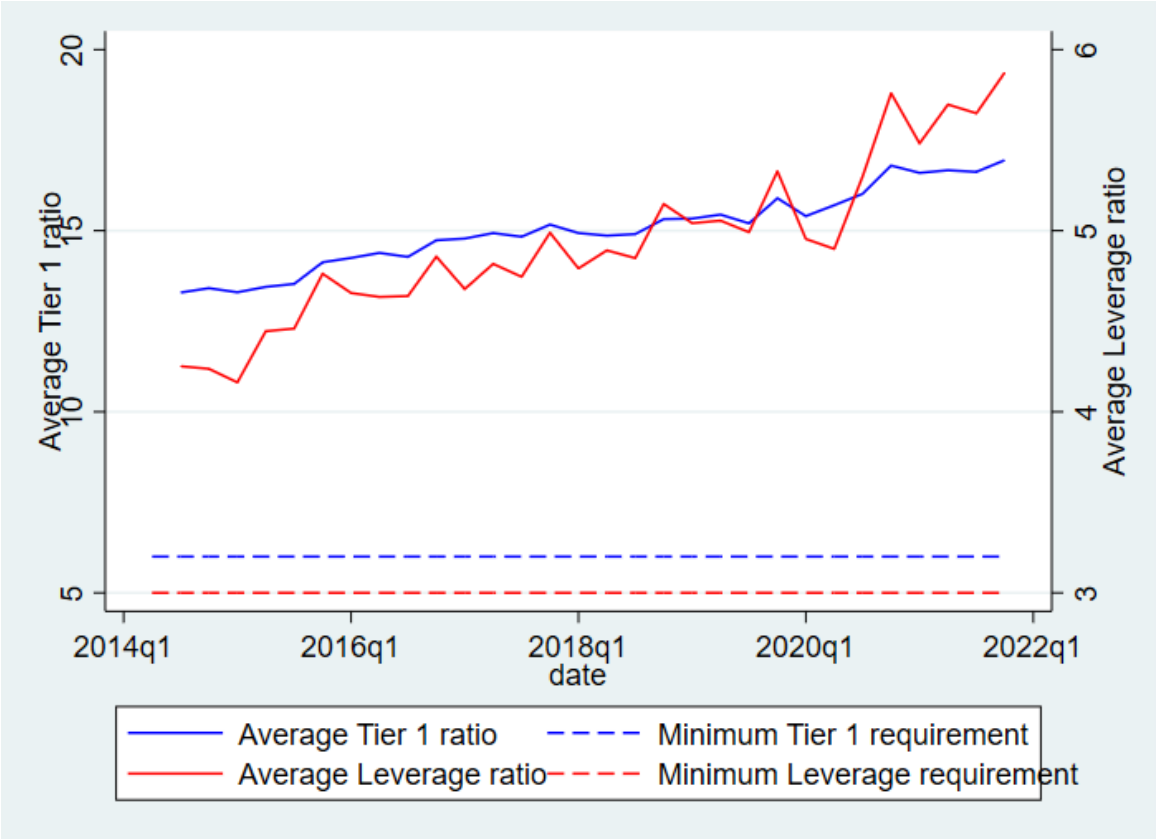
Figure : Aggregate lending growth on a year-on-year basis 2014-2021 (in %)



Source: ACPR

Descriptive statistics

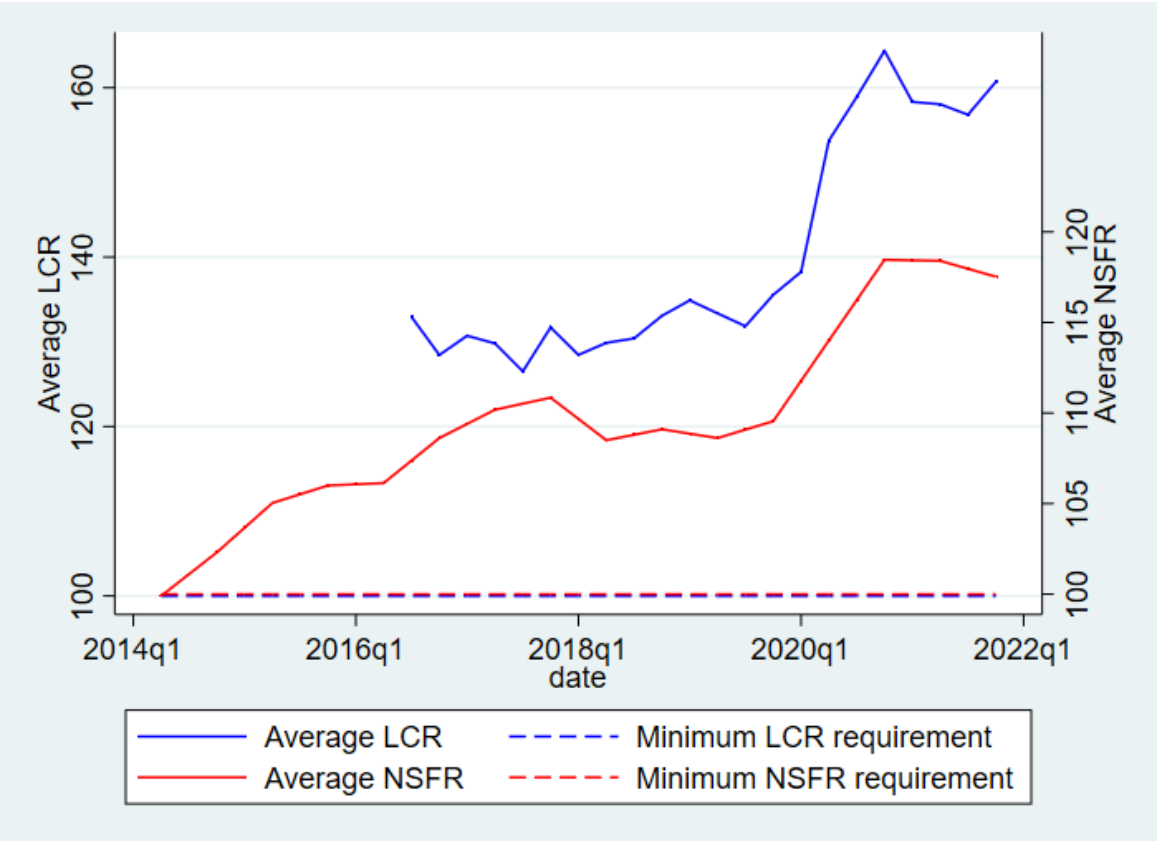
Figure : Risk-based capital Tier 1 ratio and leverage ratio since 2014 (in %)



Source: ACPR

Descriptive statistics

Figure : LCR and NSFR since 2014 (in %)



Source: ACPR

Descriptive statistics

Table : Correlation between bank-specific variables (in %)

Variables	Lending growth	Tier 1 ratio	Management buffer	Leverage ratio	LCR	NS
Lending growth	1.0000					
Tier 1 ratio	0.0298 (0.1132)	1.0000				
Management buffer	-0.0137 (0.4670)	0.6583*** (0.0000)	1.0000			
Leverage ratio	-0.0296 (0.1175)	0.4095*** (0.0000)	0.2873*** (0.0000)	1.0000		
LCR	-0.0190 (0.6349)	0.0330*** (0.3597)	-0.1430*** (0.0001)	0.1900*** (0.0000)	1.0000	
NSFR	0.4306*** (0.0000)	0.4867*** (0.0000)	-0.0783 (0.2958)	0.2391*** (0.0012)	0.7739*** (0.0000)	1.0
Size	-0.1003*** (0.0000)	-0.2272*** (0.0000)	-0.2252*** (0.0000)	-0.3536*** (0.0000)	-0.0927** (0.0176)	-0.67 (0.0
Loan share	0.1778*** (0.0000)	0.0661*** (0.0001)	0.0538*** (0.0018)	0.4196*** (0.0000)	-0.2299*** (0.0000)	-0.0 (0.7
Change in NPLR	0.0186 (0.3176)	0.0877*** (0.0000)	0.0274 (0.1435)	-0.1546*** (0.0000)	0.1090*** (0.0062)	0.40 (0.0

Sources: ACPR, Authors' calculations.
Note: P-values in parentheses

Model set-up

- Use of panel data fixed-effect model
- Dependent variable: $\Delta L_{i,t}$, year-on-year growth rate of loans to the NF private sector
- Equation to be estimated:

$$\begin{aligned}\Delta L_{i,t} = {} & \alpha + \beta_1(Reg1_{i,t-4} * Reg2_{i,t-4}) + \beta_2 Reg1_{i,t-4} + \beta_3 Reg2_{i,t-4} \\ & + \beta_4(Reg1^2_{i,t-4} * Reg2^2_{i,t-4}) + \lambda X_t + \gamma Z_{i,t-4} + \sigma_i + \eta_t \\ & + \epsilon_{i,t} \end{aligned} \quad (12)$$

with:

- Reg_1 and Reg_2 the values of regulatory ratios; $Reg_1 * Reg_2$ the interaction term between the two ratios;
- Variable of interest: β_1, the coefficient of the interaction term between two regulatory ratios: the sign of this coefficient will shed light on the substitutability and complementarity between regulatory ratios, β_1 can be seen as the cross-derivative of $\Delta L_{i,t}$ with respect to Reg_1 and Reg_2;
- X_t a vector of explanatory macro and financial variables;
- Z_{t-4} a vector of bank-specific control variables (lagged growth rate of the risk-weighted assets, regulatory ratios not included in the pairwise interaction, size, share of loan business, NPL ratio);
- α the intercept;
- σ_i denotes bank fixed effects, η_t time fixed effects;
- ϵ the vector of error terms, with i referring to bank i and t to time t.

Results of the econometric estimations-Baseline estimation

- Overall, a weak degree of interactions between regulatory ratios, reflection of the low bindingness of the ratios;
- Only one pairwise interaction having a significant effect on lending growth for the full sample: the one between the management buffer (MB) and the LCR (column 2), with a positive effect of this interaction; other interactions found not to impact lending growth;
- Opposite sign of the interaction term between the MB and the LCR, compared to the coefficients of the individual buffer: evidence that the two buffers act as **partial substitutes** with regard to their effects on lending growth;
- But puzzling negative effect of MB and LCR taken separately on lending growth.

Results of the econometric estimations - Baseline estimation

Table : Baseline estimation of yoy lending growth - Whole period and full sample

VARIABLES	Full sample- without NSFR (1)	(2)	(3)
MB*Leverage	0.03		
	(0.10)		
MB*LCR		0.02**	
		(0.01)	
Leverage*LCR			0.02
			(0.01)
MB	0.32	-1.97**	-0.06
	(0.64)	(0.91)	(0.22)
Leverage	-1.24	-0.30	-3.32
	(1.55)	(0.79)	(2.03)
LCR	-0.02	-0.29**	-0.15
	(0.01)	(0.13)	(0.12)
RWA (% chge)	-0.03	-0.04	-0.01
	(0.07)	(0.07)	(0.06)
Macro controls	Yes	Yes	Yes
Squared terms	Yes	Yes	Yes
Bank-specific controls	Yes	Yes	Yes
Bank Fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
Observations	511	511	511
R-squared	0.19	0.21	0.18
Number of banks	54	54	54

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results of the econometric estimations - Baseline estimation

Table : Baseline estimation of yoy lending growth - Sample of 6 largest banks - with NSFR

VARIABLES	Sample of 6 largest banks - with NSFR (4)	(5)	(6)	(7)	(8)	(9)
MB*Leverage	-0.56					
	(0.40)					
MB*LCR		-0.01				
		(0.01)				
Leverage*LCR			0.17			
			(0.09)			
MB*NSFR				-0.02		
				(0.03)		
Leverage*NSFR					0.52	
					(0.33)	
LCR*NSFR						-0.00
						(0.02)
MB	1.14	1.00	-1.05**	2.11	-0.29	-0.46
	(1.33)	(1.91)	(0.38)	(3.35)	(0.61)	(0.86)
Leverage	5.11	1.62	-23.02	1.52	-56.38	1.74
	(3.00)	(1.43)	(14.17)	(1.56)	(40.43)	(2.16)
LCR	0.01	0.12	-0.79*	0.01		
	(0.02)	(0.22)	(0.35)	(0.02)		
NSFR	-0.72***	-0.75***	-0.71***	-0.46	-1.70	1.16
	(0.17)	(0.14)	(0.17)	(1.74)	(1.42)	(2.90)
RWA (% chge)	-0.06	-0.01	-0.10	-0.04	-0.04	-0.04
	(0.12)	(0.11)	(0.10)	(0.14)	(0.11)	(0.11)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes
Squared terms	Yes	Yes	Yes	Yes	Yes	Yes
Bank-specific controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Conclusions

- Analysis of the expected impact on the financing of the economy of adding liquidity rules to capital rules in the Basel 3 regulatory environment;
- Using the results of a theoretical model, determination of conditions under which some regulatory ratios bind while others do not;
- Results of the estimation of an empirical model of year-on-year lending growth of a panel of 120 French banks since 2014:
  - 3 pairwise interactions found to have a significant effect on lending growth, most of them involving the Tier 1 capital management buffer;
  - Significant and partial level of substitutability between MB/LR, MB/LCR and LR/LCR;
  - Regulatory ratios found to interact even more between each other in periods of financial stress and for weaker banks;

Conclusions

- Still important uncovered issues needing to be addressed:
  - Considering the behavior of the different stakeholders at play and corporate governance mechanisms;
  - Introducing such a dual capital-liquidity constraint in a general equilibrium model of banking activities;
  - Implications of the NSFR on the incentives created for banks to borrow from non-banking financial intermediaries (NBFI) on a long-term basis, once the NSFR series are long enough;
  - Whether these new rules have effectively improved the resiliency of banks to shocks still an open question as their relatively good performance during the Covid-19 pandemic is presumably, to a large extent, explained by massive government support to the economy.

Appendix

Appendix

Robustness checks- Focus on weaker banks

- Weaker banks identified as banks displaying capital or liquidity ratios below the 25th percentile of the distribution by date, dummy variable equal to 1; supposed to be more constrained by regulatory ratios;
- Only one pairwise interaction with a (weakly) significant effect on lending growth for weaker banks, in the restricted sample: the one between the leverage ratio and the NSFR, with a coefficient on the interaction term of -0.18;
- Weaker banks found to have a specific behaviour with regard to their lending growth but do not drive overall results

Robustness checks- Focus on weaker banks

Table : Estimation of yoy lending growth - Weaker banks

VARIABLES	Full sample- without NSFR (1)	(2)	(3)
MB*Leverage*d_low_MB	0.20		
	(0.16)		
MB*LCR*d_low_MB		0.01	
		(0.01)	
Leverage*LCR*d_low_Leverage			-0.01
			(0.02)
d_low_MB	-5.81*	-2.00	
	(3.01)	(2.80)	
d_low_Leverage	14.02**		13.02**
	(6.40)		(6.46)
d_low_LCR		12.90**	5.61
		(5.74)	(5.24)
MB*d_low_MB	-0.13	-0.37	
	(0.30)	(0.56)	
Leverage*d_low_Leverage	-2.63**		-1.84
	(1.24)		(2.20)
LCR*d_low_LCR		-0.10**	-0.04
		(0.05)	(0.04)
RWA (% chge)	-0.03	-0.05	-0.01
	(0.07)	(0.07)	(0.06)
Macro controls	Yes	Yes	Yes
Squared terms	Yes	Yes	Yes
Bank-specific controls	Yes	Yes	Yes
Bank Fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
Observations	511	511	511
R-squared	0.20	0.22	0.19
Number of banks	54	54	54

Robustness checks- Focus on weaker banks

Table : Estimation of yoy lending growth - Weaker banks

VARIABLES	Sample of 6 largest banks - with NSFR (4)	(5)	(6)	(7)	(8)	(9)
MB*Leverage*d_low_MB	0.30					
	(0.37)					
MB*LCR*d_low_MB		0.01				
		(0.01)				
Leverage*LCR*d_low_Leverage			-0.04			
			(0.03)			
MB*NSFR*d_low_MB				0.01		
				(0.02)		
Leverage*NSFR*d_low_Leverage					-0.18*	
					(0.07)	
LCR*NSFR*d_low_LCR						-0.00
						(0.01)
d_low_MB	-0.71	-1.19		-3.62		
	(3.29)	(2.67)		(4.18)		
d_low_Leverage	3.15		20.92		61.79**	
	(14.30)		(12.51)		(22.09)	
d_low_LCR		3.52	3.36			-42.80**
		(12.53)	(12.21)			(15.96)
d_low_NSFR				10.68	-5.30	-2.30
				(17.96)	(15.26)	(9.72)
MB*d_low_MB	-0.91	-0.40		-0.49		
	(1.01)	(0.45)		(1.31)		
Leverage*d_low_Leverage	-0.76		-0.81		-0.15	
	(2.66)		(0.93)		(2.29)	
LCR*d_low_LCR		-0.02	-0.01			0.62
		(0.10)	(0.10)			(0.38)
NSFR*d_low_NSFR				-0.09	0.07	0.03
				(0.18)	(0.15)	(0.10)
RWA (% chge)	-0.06	-0.04	-0.08	-0.12	-0.13	-0.09
	(0.15)	(0.11)	(0.10)	(0.15)	(0.08)	(0.09)

Robustness checks- Focus on high risk aversion periods

- Regulatory ratios supposed to be more binding in periods of high risk aversion as they are usually associated with financial stress;
- Periods corresponding to values of the V2X index above the 75th percentile of the distribution; i.e. a value of 26.8 when taking the whole period of observation
- Regulatory ratios found to interact more in periods of financial instability and to act as partial substitutes with regard to their effects on lending growth, and partial confirmation of the baseline results:
  - 3 pairwise interactions showing a significant effect on lending growth, all in the full sample: MB/leverage ratio (column 1), MB/LCR (column 2) and leverage ratio/LCR (column 3), when interacted with the high V2X dummy (coefficients of 0.64, 0.05 and -0.06, respectively);
  - Opposite signs between the coefficient on the interaction term and the coefficients on the individual ratios indicating a substitutability relationship;
  - Specification involving the interaction between the leverage ratio and the LCR in the full sample (column 3): the only one displaying all the expected signs $\Leftrightarrow$ Potential dampening effect of the interaction on lending growth.

Robustness checks- Focus on high risk aversion periods

Table : Estimation of yoy lending growth - Periods of high V2X

VARIABLES	Full sample- without NSFR (1)	(2)	(3)
MB*Leverage*d_high_V2X	0.64***		
	(0.15)		
MB*LCR*d_high_V2X		0.05***	
		(0.02)	
Leverage*LCR*d_high_V2X			-0.06*
			(0.03)
d_high_V2X	28.38	48.08	-26.13
	(21.11)	(36.50)	(38.09)
MB*d_high_V2X	-2.59**	-7.44***	
	(1.10)	(2.76)	
Leverage*d_high_V2X	-5.45***		7.54
	(1.82)		(4.55)
LCR*d_high_V2X		-0.32	0.41
		(0.22)	(0.30)
RWA (% chge)	-0.02	-0.07	-0.02
	(0.06)	(0.06)	(0.06)
Macro controls	Yes	Yes	Yes
Squared terms	Yes	Yes	Yes
Bank-specific controls	Yes	Yes	Yes
Bank Fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
Observations	511	511	511
R-squared	0.24	0.23	0.20
Number of banks	54	54	54

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robustness checks- Focus on high risk aversion periods

Table : Estimation of yoy lending growth - Periods of high V2X

VARIABLES	Sample of 6 largest banks - with NSFR (4)	(5)	(6)	(7)	(8)	(9)
MB*Leverage*d_high_V2X	-10.92					
	(6.61)					
MB*LCR*d_high_V2X		0.35				
		(0.25)				
Leverage*LCR*d_high_V2X			1.65			
			(0.94)			
MB*NSFR*d_high_V2X				-0.76		
				(0.43)		
Leverage*NSFR*d_high_V2X					0.42	
					(2.89)	
LCR*NSFR*d_high_V2X						-0.09
						(0.11)
d_high_V2X	-29.80	-244.28*	516.97	-572.44	92.39	-832.85
	(39.55)	(107.26)	(375.40)	(493.76)	(837.29)	(1,228.26)
MB*d_high_V2X	37.36	-51.31		78.19		
	(22.04)	(36.02)		(44.57)		
Leverage*d_high_V2X	-13.22		-241.26		-48.32	
	(29.14)		(133.65)		(310.61)	
LCR*d_high_V2X		3.72**	-3.15			11.98
		(1.32)	(3.41)			(12.15)
NSFR*d_high_V2X				9.26	-0.28	6.36
				(8.11)	(9.85)	(14.20)
RWA (% chge)	-0.05	-0.00	-0.03	-0.04	-0.07	-0.04
	(0.14)	(0.13)	(0.13)	(0.13)	(0.13)	(0.12)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes
Squared terms	Yes	Yes	Yes	Yes	Yes	Yes
Bank-specific controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Robustness checks- Focus on weaker banks in high risk aversion periods

- Triple interaction estimated to identify situations in which regulatory ratios are supposed to be most binding;
- 2 pairwise interactions showing a significant effect on lending growth, both in the full sample: MB/leverage ratio (column 1) and MB/LCR (column 2), for weaker banks in periods of financial stress (coefficients of -0.58 and -0.04, respectively);
- Opposite signs between the coefficient on the interaction term and the coefficients on the individual buffers indicating a substitutability relationship, with a positive effect of MB on lending growth, as expected;
- Confirm that regulatory ratios seem to interact more and to act as partial substitutes with regard to their effects on lending growth for weaker banks in periods of high stress

Robustness checks- Focus on weaker banks in high risk aversion periods

Table : Estimation of yoy lending growth - Focus on weaker banks in high risk aversion periods

VARIABLES	Full sample- without NSFR (1)	(2)	(3)
MB*Leverage*d_low_MB*d_high_V2X	-0.58***		
	(0.12)		
MB*LCR*d_low_MB*d_high_V2X		-0.04***	
		(0.01)	
Leverage*LCR*d_low_Leverage*d_high_V2X			-0.01
			(0.01)
MB*d_low_MB*d_high_V2X	3.22***	5.57***	
	(0.83)	(1.62)	
Leverage*d_low_Leverage*d_high_V2X	0.05		1.83
	(0.26)		(1.12)
LCR*d_low_LCR*d_high_V2X		-0.01	0.00
		(0.01)	(0.01)
d_high_V2X	-4.59	11.09	6.32
	(23.38)	(24.20)	(23.63)
d_low_MB	-1.21	-1.37	
	(1.26)	(1.52)	
d_low_Leverage	0.73		2.27
	(1.33)		(1.93)
d_low_LCR		0.86	0.72
		(0.63)	(0.58)
RWA (% chge)	-0.01	-0.03	-0.02
	(0.06)	(0.07)	(0.06)
Macro controls	Yes	Yes	Yes
Squared terms	Yes	Yes	Yes

Robustness checks- Focus on weaker banks in high risk aversion periods

Table : Estimation of yoy lending growth - Focus on weaker banks in high risk aversion periods

	Sample of 6 largest banks - with NSFR					
VARIABLES	(4)	(5)	(6)	(7)	(8)	(9)
MB*Leverage*d_low_MB*d_high_V2X	-1.01					
	(0.62)					
MB*LCR*d_low_MB*d_high_V2X		0.02				
		(0.01)				
Leverage*LCR*d_low_Leverage*d_high_V2X			0.02			
			(0.01)			
MB*NSFR*d_low_MB*d_high_V2X				-0.05		
				(0.04)		
Leverage*NSFR*d_low_Leverage*d_high_V2X					-0.03	
					(0.03)	
LCR*NSFR*d_low_LCR*d_high_V2X						-0.00
						(0.01)
MB*d_low_MB*d_high_V2X	5.03	-2.15		6.01		
	(3.35)	(1.85)		(4.43)		
Leverage*d_low_Leverage*d_high_V2X	0.32		-1.89		3.83	
	(0.19)		(1.84)		(3.66)	
LCR*d_low_LCR*d_high_V2X		0.00	0.01			0.13
		(0.02)	(0.01)			(0.95)
NSFR*d_low_NSFR*d_high_V2X				-0.03	-0.03	-0.02
				(0.02)	(0.03)	(0.02)
d_high_V2X	9.29	-7.19	30.50	31.43	51.93	44.19
	(47.16)	(44.51)	(45.23)	(53.38)	(52.63)	(39.35)
d_low_MB	3.39	0.10		-0.54		
	(2.45)	(2.51)		(2.63)		