What are banks' actual capital targets?

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Columbia SIPA/BPI conference on Bank Regulation
01 March 2023

Motivation

- How firms choose their target capital structure and how they reach it are key questions in financial economics

- Critical issues for banks: (i) credit suppliers and (ii) capital regulation

- The Great Financial Crisis highlighted the need for larger and countercyclical bank capitalisation to avoid credit crisis

- Target capital ratios have long been undisclosed, forcing researchers to rely on noisy estimates

- **Need for observable targets analysis to revisit how targets are formed and how they affect banks' behavior**

This paper

- Introduces a manually collected dataset on target capital ratios European banks announce to their investors

- Assesses the determinants of those targets $\Rightarrow$ regulatory requirements and procyclical behavior affect targets

- Shows that banks take their targets seriously $\Rightarrow$ they converge to them, and way faster when initially below them

- Exhibits banks' balance-sheet adjustments to reach their targets $\Rightarrow$ mostly with the stock of capital, but also material impact on credit supply

Literature and contribution

- Determinants of banks' capital ratios: seminal Flannery and Rangan (2008), Gropp and Heider (2010)
- Impact of distance to target on balance-sheet adjustment: mostly macro (Mésonnier and Stevanovic (2017)), fewer micro (Berrospide et al. (2010); De Jonghe and Öztekin (2015))
- Impact of capital requirements on credit growth: Aiyar et al. (2016); Jacques and Nigro (1997); papers using target as a channel mostly on UK experience de Ramon et al. (2016); Francis and Osborne (2012)

This paper contributes to the literature with:

- Observed vs unobserved targets $\Rightarrow$ better estimates
- Impact of the different types of capital requirements
- Exploration of asymmetry

From implicit targets...

1. Target CET1 ratio depends on explanatory variables X:

$$CET1^*_{i,t+1} = \theta X_{i,t} \tag{1}$$

2. Sluggish Adjustment toward target

$$CET1_{i,t+1} = \lambda CET1^*_{i,t+1} + (1-\lambda)CET1_{i,t} \tag{2}$$

3. Injecting (1) in (2) and rearranging:

$$CET1_{i,t+1} = \alpha CET1_{i,t} + \beta X_t + u_{i,t},$$
$$\lambda = 1 - \alpha, \ \theta = \beta/(1-\alpha) \tag{3}$$

4. Giving: $\widehat{CET1}^*_{i,t+1} = \widehat{\beta}/(1-\widehat{\alpha})X_{i,t}$

5. Next, impact of distance to target estimated using

$$\Delta Y_{i,t} = \gamma(CET1_{i,t-1} - \widehat{CET1}^*_{i,t-1}) + \delta Z_{i,t-1} + \epsilon_{i,t}, \tag{4}$$

1. Target as variable of interest:

$$Target_{i,t+1} = \zeta X_{i,t} + \kappa_i + \eta_{i,t+1}, \qquad (5)$$

Elasticities recovered with direct regressions $\Rightarrow$ lower estimation uncertainty
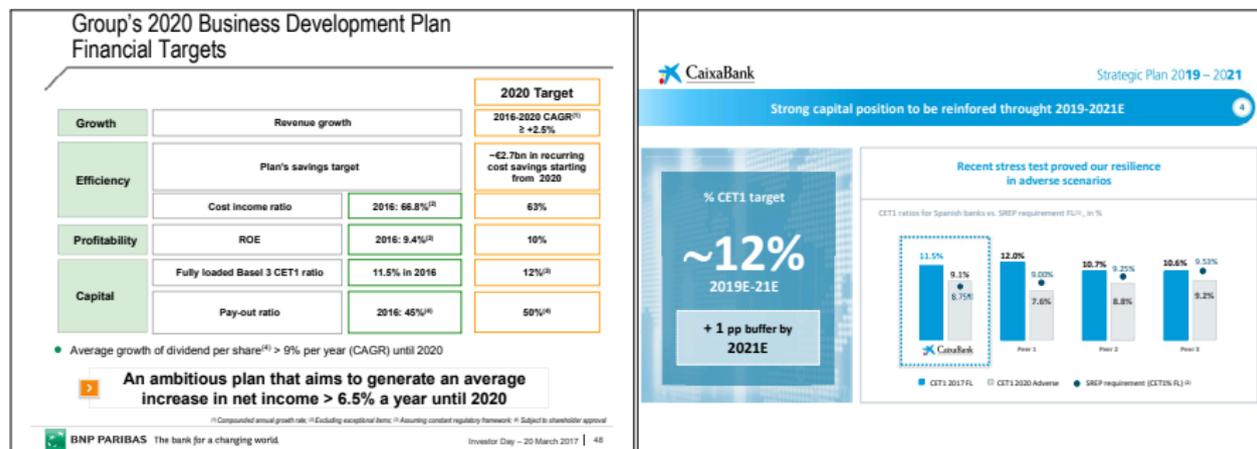
2. Target as an explanatory variable:

$$\Delta Y_{i,t} = \chi Gap_{i,t-1} + \psi Z_{i,t-1} + \iota_i + \epsilon_{i,t}, \qquad (6)$$

Explicitly announced targets $\Rightarrow$ no regressor uncertainty (model choice and estimation noise)

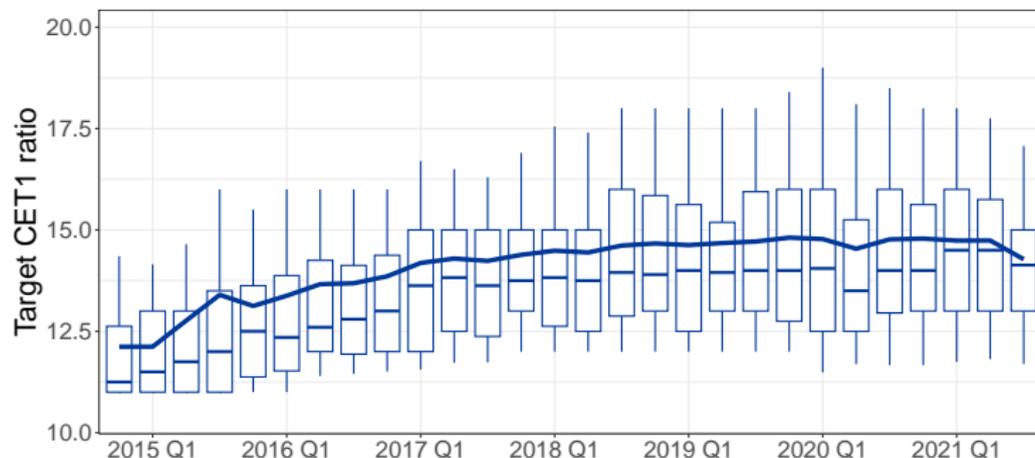Figure: Examples of announced target CET1 ratios

Source: Banks' websites

The collected dataset covers:

- 1346 quarterly observations of 74 banks over Q1 2014 - Q4 2021
- $\sim$ 66% of total assets of European banks since 2018 ($\sim$ 40% in 2014)

Announced targets CET1 ratios: levels

Figure: Banks' target CET1 ratios - %

Source: Banks' websites, author's calculations

- Targets' interval has stabilized since 2018
- They are largely concentrated in a 12.5% - 15% interval
- They have not strongly reacted to the Covid-19 crisis. . .
- . . . but some adjustment is visible in the tails

Announced target CET1 ratios: distance to targets

Figure: Distance of banks CET1 ratios to targets
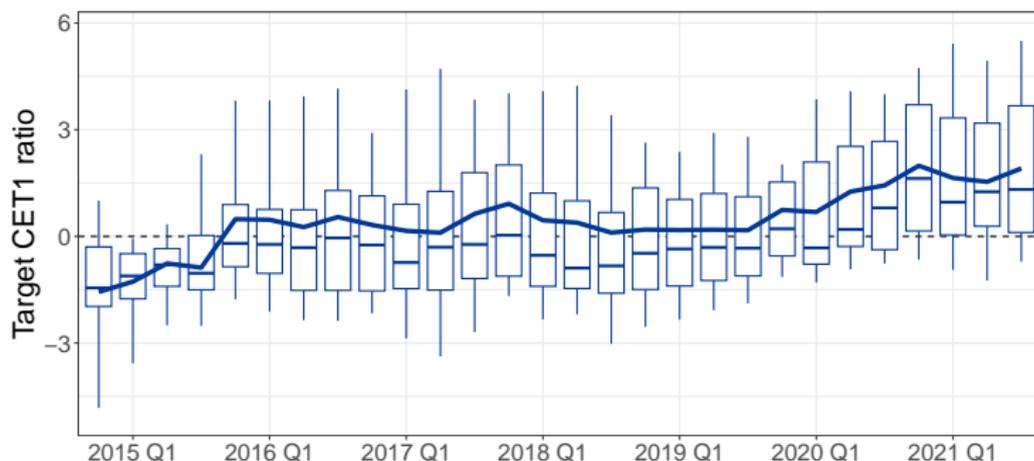
- 2014-2016: rebuild weakened balance-sheets
- 2017-2019: stabilisation
- since 2020: above targets (policy intervention), payouts expected

Announced targets CET1 ratios: impact of requirements

Figure: Overall Capital Requirements vs. Targets

- Targets increase with requirements
- Partial adjustment only

Announced targets CET1 ratios: convergence to the targets

Figure: Distance to the target since its announcement
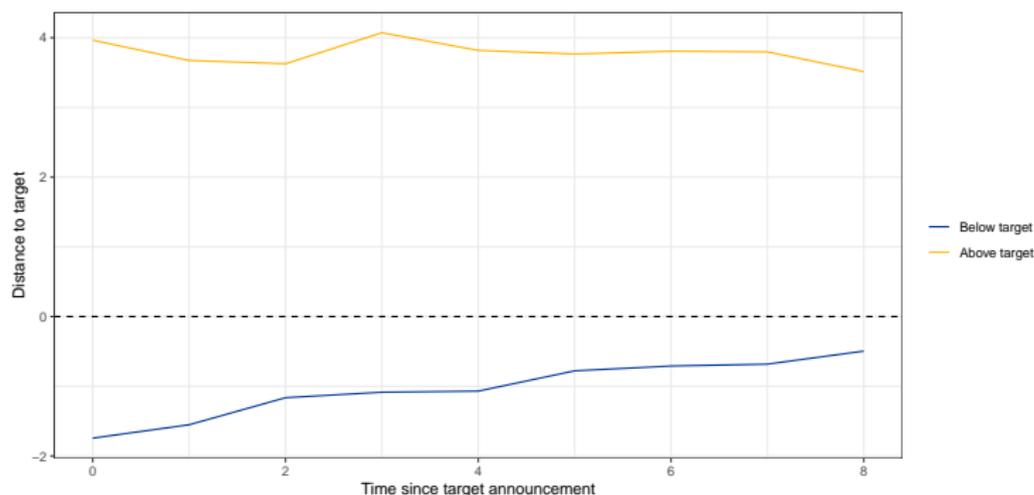
Source: Banks' websites, author's calculations

- Convergence on both sides...
- ... but much faster for banks below their targets

Specification: Econometric settings

1. Target determinants:

$$Target_{i,t+1} = \zeta X_{i,t} + \kappa_i + \eta_{i,t+1}, \tag{7}$$

2. Speed of adjustment:

$$Gap_{i,t} = \tau Gap_{i,t-1} + u_{i,t}, \tag{8}$$

3. Impact of distance to target: channels of adjustment

$$\Delta Y_{i,t} = \chi Gap_{i,t-1} + \psi Z_{i,t-1} + \iota_i + \epsilon_{i,t}, \tag{9}$$

4. Impact of distance to target: credit supply during COVID

$$\Delta y_{i,j} = \vartheta Gap_i + \varphi W_{i,j} + \upsilon_j + \nu_{i,j}, \tag{10}$$

Specification: Data

- Bank level data (COREP/FINREP: supervisory data)
  - CET1 regulatory requirement
  - Size: total asset (in log)
  - Profitability: return on asset
  - Liquidity: liquid assets ratio
  - Business model: diversification
  - Deposits: deposit ratio
  - Asset quality: risk weight density, impaired asset ratio, provision ratio

- Macrofinancial environment
  - Economic forecast: 1-year ahead domestic real GDP growth and inflation forecast (Consensus Forecast)
  - Monetary policy: ECB policy rate (3-month Euribor) & TLTRO ov. total asset
  - 10-year sovereign rate

Banks' capital requirements

- After the GFC, banks' capital requirements were reformed (Basel III)
- Composed of three blocks of diminishing stringency Detailed stack
  - Minimum requirements (TSCR), to be met at all times
  - Buffers (CBR), in which banks can draw at the expense of dividends
  - P2G, which is a *demand* and not a *requirement* per se
- Less stringent requirements should affect less targets, as the cost of breach is lower
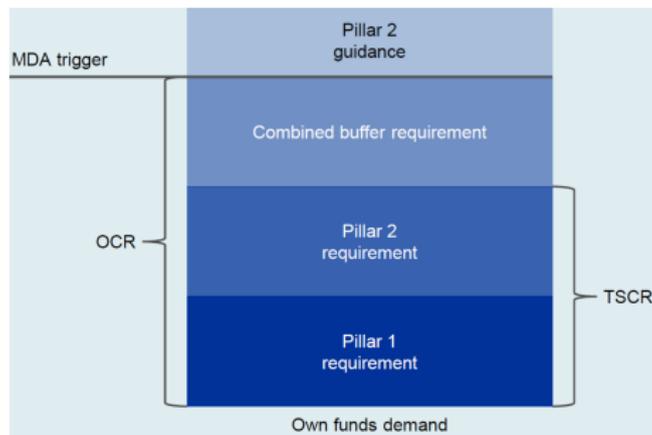
Results: Target determinants

	Dependent variable:			
	Target			
	(1)	(2)	(3)	(4)
OCR w. P2G	0.5669***	0.2565***		
	(0.1205)	(0.0812)		
Minimum req.			0.6729***	0.0386
			(0.1451)	(0.0920)
Buffers			0.7855***	0.5818***
			(0.2269)	(0.1494)
P2G			-0.2537	0.0110
			(0.2720)	(0.1533)
GDP growth forecast	−0.584**	−0.834***	−0.402	−0.866***
	(0.255)	(0.209)	(0.279)	(0.219)
Control variables	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes
Observations	1,071	1,071	1,071	1,071

Whole Table

- Significant but < 1 elasticity to requirement $\Rightarrow$ trade-off between expected cost of breach and (perceived) costly CET1

- Banks treat buffers like strict requirements $\Rightarrow$ failure of Basel III?

- Signs of procyclical adjustment $\Rightarrow$ consistent with market pressure

Figure: Goodness of fit
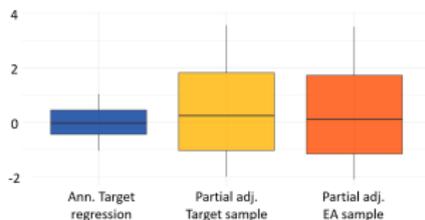
Figure: Comparison of estimated coefficients
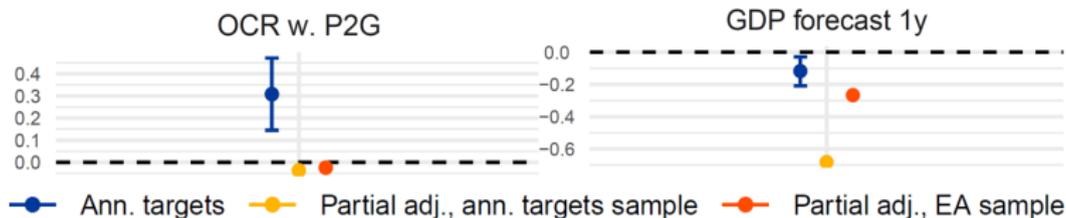
Observed targets provide material improvement over implicit targets:

- Credible point estimates
- Direct confidence intervals

Result: Speed of adjustment

	distance to Target	
	(1)	(2)
dist. Target	0.955***	
	(0.013)	
dist. Target pos.		0.980***
		(0.011)
dist. Target neg.		0.834***
		(0.030)
Wald test dist. = 1	11.63***	
Wald test pos. dist. = 1		3.71*
Wald test neg. dist. = 1		30.74***
Wald test pos. dist. = neg. dist.		21.75***

- Autocorrelation coef. in $(0,1)$: banks are serious about their targets
- Adjustment occurs for CET1 ratios both below and above targets...
- ...but is much faster for banks below targets $\Rightarrow$ higher market pressure

	CET1 ratio	CET1 €	Issued capital	Retained earnings	RWA	TA	NFC loans	HH loans
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target dist.	-0.2346***	-0.9964***	-0.1292**	-1.7163**	0.4666***	0.2621**	0.2622*	0.2004**
	(0.0220)	(0.1265)	(0.0618)	(0.8388)	(0.0922)	(0.1089)	(0.1425)	(0.0932)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects								
Bank	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country x Qtr	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

- CET1 ratio adj. occurs through both numerator and denominator
- 2/3 of the adjustment through the stock of capital
- 1/3 through assets, in particular corporate exposures

	CET1 ratio	CET1 €	Issued capital	Retained earnings	RWA	TA	NFC loans	HH loans
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target dist. pos	-0.1960**	-0.5968***	0.01920	-0.1347	0.4388***	0.2622*	0.0196	-0.0385
	(0.0304)	(0.1705)	(0.0866)	(1.1373)	(0.1245)	(0.1089)	(0.2121)	(0.1314)
Target dist. neg	-0.2310**	-1.2490***	-0.2061**	-2.6745**	0.3146**	0.2717*	0.4288**	0.3638***
	(0.0335)	(0.1883)	(0.0955)	(1.2617)	(0.1373)	(0.1642)	(0.1854)	(0.1449)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects								
Bank	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country × Qtr	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

- Adjustment again occurs both below and above targets
- Adjustment through credit to NFCs concentrated on banks below their target

Results: Robustness

Results are robust to the following settings:

- Control by the distance to the capital requirements $\Rightarrow$ targets matter on their own & capture most of the effect of the requirements
- Exclude 2020 from the sample period (Covid-19 crisis)
- Add time fixed effects
- Pooled regressions w/o intercept (no permanent drift)

Results: Credit supply during COVID

Dependent Variable: Model:	Δ credit	
	(1)	(2)
Target dist.	0.0175**	
	(0.0078)	
Target dist. pos.		-0.0050
		(0.0163)
Target dist. neg.		0.0288**
		(0.0126)
Firm FE	Yes	Yes
Fit statistics		
Observations	580,725	580,725
R^2	0.65335	0.65346

- The distance to target had a substantial impact on credit supply
- Stronger impact for banks below their target

Conclusion

- Target capital ratios are (increasingly) crucial in bank communication

- Targets are driven by capital requirements (trade-off, no distinction between buffers and strict requirements) and procyclical behaviour

- Banks take their target seriously, adjusting their balance-sheet, mainly through outstanding CET1 and portfolio rebalancing

- The distance to target strongly affects credit supply during crisis

- Important lessons for policymakers:
  - Monitoring targets to anticipate movements in credit supply
  - Banks do not consider regulatory buffers usable
  - Need for credible countercyclical buffers to offset banks' procyclical behaviour

Literature I

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Management buffer — Excess capital fully usable at the discretion of the bank

P2G (bank specific) — Use of this capital trigger "soft" supervisory actions

MDA restriction trigger

SyRB **O-SII** **G-SII**

CCyB (0% - 2.5%)

CCoB (2.5%)

Combined Buffer Requirement (CET1 only)

(usable capital but with restrictions e.g. to dividends distributions)

Minimum requirement

P2R (bank specific) — *Pillar II requirement is bank specific and results from Supervisory Review and Evaluation Process (SREP)*

Minimum requirement (8%)

CET1 4.5%
AT1 1.5%
T2 2%

Minimum own funds requirements (Pillar I)
Banks that cannot meet the minimum requirement are unviable

Back

Results: target determinants - whole results

				Dependent variable:				
				Target				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OCR strict ann.	0.288***	0.444***	0.373***	0.138*	0.289***	0.313***		
	(0.083)	(0.107)	(0.133)	(0.078)	(0.085)	(0.088)		
TSCR strict ann.							0.037	0.505***
							(0.148)	(0.132)
CBR ann.							0.745***	0.355*
							(0.135)	(0.189)
AT1 and T2 shortfall	0.032	0.582***	0.268	−0.020	0.049	0.021	0.042	0.568***
	(0.121)	(0.173)	(0.214)	(0.091)	(0.121)	(0.119)	(0.122)	(0.176)
P2G	0.231**	0.499***	0.438*	0.190**	0.220**	0.219**	0.205**	0.501***
	(0.104)	(0.137)	(0.240)	(0.076)	(0.105)	(0.098)	(0.100)	(0.137)
Total Assets, log	−0.018	0.001	−0.003	0.002	−0.015	−0.015	−0.019	0.002
	(0.014)	(0.003)	(0.002)	(0.010)	(0.012)	(0.013)	(0.013)	(0.003)
Return on Asset	0.394	0.012	0.091	0.208	0.517*	0.236	0.421	0.004
	(0.286)	(0.380)	(0.644)	(0.248)	(0.288)	(0.279)	(0.292)	(0.377)
NIM	−0.159	0.034	0.196	0.412	−0.105	−0.155	−0.078	0.045
	(0.272)	(0.236)	(0.334)	(0.317)	(0.270)	(0.264)	(0.271)	(0.231)
Off Balance-sheet	0.013	−0.015	−0.009	−0.006	0.014	0.012	0.015	−0.017
Diversification	−0.005	−0.012	−0.008	−0.001	−0.006	−0.006	−0.007	−0.013
	(0.006)	(0.010)	(0.010)	(0.006)	(0.007)	(0.006)	(0.006)	(0.010)
Credit ratio	0.031*	0.054***	−0.001	0.050***	0.036**	0.025	0.029	0.054***
	(0.019)	(0.025)	(0.021)	(0.014)	(0.018)	(0.018)	(0.019)	(0.024)
RW	−0.025	−0.007	−0.002	−0.017	−0.033*	−0.008	−0.031*	−0.005
	(0.018)	(0.018)	(0.022)	(0.016)	(0.017)	(0.017)	(0.018)	(0.019)
Impairment ratio	−0.086*	−0.122***	−0.107*	−0.067*	−0.097***	−0.082**	−0.088*	−0.125***
	(0.044)	(0.040)	(0.054)	(0.033)	(0.046)	(0.041)	(0.046)	(0.039)
Provisions	0.699*	−0.758*	−0.187	0.258	0.611	0.732*	0.687*	−0.791*
	(0.408)	(0.459)	(0.534)	(0.324)	(0.409)	(0.441)	(0.393)	(0.448)
Deposit ratio	−0.013	−0.025*	0.001	−0.011	−0.012	−0.016*	−0.018*	−0.025*
	(0.009)	(0.014)	(0.016)	(0.007)	(0.010)	(0.009)	(0.010)	(0.014)
Cost of deposits	−1.381	−4.719***	−4.179***	−2.195**	−1.454	−1.266	−0.691	−4.903***
	(1.268)	(1.407)	(1.583)	(1.044)	(1.283)	(1.139)	(1.157)	(1.292)
TLTRO	−0.018	−0.082***	−0.120***	−0.062*** −0.020	−0.012	−0.013	−0.085***	
	(0.022)	(0.028)	(0.037)	(0.021)	(0.022)	(0.021)	(0.022)	(0.028)
GDP growth for. 5y, dom.	−0.584**	−0.834***	−0.475	−0.666***		−0.610**	−0.402	−0.866***
	(0.255)	(0.209)	(0.321)	(0.211)		(0.246)	(0.279)	(0.219)
GDP growth for. 5y, EA					−0.769**			
					(0.309)			
EURIBOR	−0.017***	−0.011	0.011	−0.029***	−0.017***	−0.017***	−0.009	−0.013
	(0.006)	(0.009)	(0.015)	(0.007)	(0.006)	(0.006)	(0.007)	(0.010)
10-year sov. yield	0.282*	0.169	0.407***	0.286***	0.351**	0.333**	0.282	0.160
	(0.166)	(0.187)	(0.147)	(0.108)	(0.173)	(0.155)	(0.174)	(0.189)