Systemic Risk and Bank Business Models: Online Appendix[*]

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September 5, 2018

(forthcoming in the Journal of Applied Econometrics)

Table I: Descriptive statistics

Table I, panel (a) reports descriptive statistics on $\beta^T_{i;[t,t+15]}$ and its subcomponents. Table I, panels (b) – (d) report the descriptive statistics on the characteristics of bank business models.

Table II: Estimation results with a sectoral decomposition of the loan portfolio

Estimation results with a sectoral decomposition of the loan portfolio are presented in Table II. The coefficients report the effect relative to the impact of loans secured with real estate, which account on average for 64% of the loan portfolios. The results show that banks with relatively large exposures to agricultural loans, as a substitute for real estate loans, have a weaker systemic linkage. Exposures to commercial and industrial loans are associated with the strongest increase in β^T_i.

Table III: Estimation results based on rolling estimation horizons of 8 quarters

Our choice for the length of the estimation horizon is in line with common practice in the EVT literature to use a relatively long estimation horizon to achieve a relatively low estimation uncer-

[*]This online appendix provides supplementary results and the proof for Lemma 1 in our article "Systemic Risk and Bank Business Models" to appear in the *Journal of Applied Econometrics*. Views expressed do not necessarily reflect official positions of De Nederlandsche Bank or Bank of Canada.

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tainty (e.g., 4 or 5 years). Nevertheless, the results remain qualitatively unchanged when using an estimation window of two years instead. These results are provided in Table III.

Table IV and V: Using past subcomponents to predict realized systemic risk

Given the persistency of the systemic linkage component, it seems to suffer less from the "volatility paradox" compared to the bank tail risk component. Adrian and Brunnermeier (2016) describe the volatility paradox as "*contemporaneous volatility is low in booms, which relaxes risk management constraints on intermediaries, allowing them to increase risk-taking, and making them vulnerable to shocks.*" Consistent with this paradox, they observe that (forecasts) of bank tail risk has no predictive power for ΔCoVaR during the crisis, while forecasts of ΔCoVaR do have predictive power for the crisis levels of CoVaR (see their Table 7, p. 1731).

We observe a similar pattern for the subcomponents of β_i^T. Table IV shows predictive regressions for the realized levels of β_i^T during the financial crisis (2006Q1-2009Q4) using past levels of the subcomponents from non-overlapping estimation horizons (2002Q1-2005Q4, 1998Q1-2001Q4 and 1994Q1-1997Q4). Historical levels of bank tail risk do have (almost) no predictive power for the level of β_i^T, while the historical level of systemic linkage, even from a decade earlier (i.e., 1994Q1-1997Q4), does have significant predictive power of the level of β_i^T in the financial crisis. Table V shows that this pattern not only holds true for the recent financial crisis, but that it also holds true for an earlier period that covers the Asian Crisis.

Table VI: Estimation results with longer lags

Table VI presents the results when estimating the baseline model using bank characteristics in earlier quarters instead of bank characteristics in the quarter directly preceding the estimation horizon for β_i^T. The explanatory power of the model, as measured by the R-squared, decreases as the lag between the observed bank characteristics increases, as one may expect. What is somewhat remarkable is that the reduction in the explanatory power is relatively limited (the R-squared decreases from 0.303 for a 1-quarter lag to 0.295 for a 5-quarter lag).

Tables VII–IX: Estimation results for different levels of k

In our baseline results, we fix $k = 40$ using an estimation window of four years of daily returns. This corresponds to $k/n \approx 4\%$, which is similar to the level of k/n in other studies. Our results and the micro- and macroprudential implications are robust to equivalently realistic choices of k. More specifically, the estimation results do not change much when setting a level of k in the range from 20 to 80 instead (Tables VII–IX), but the explained variance and statistical significance of the regression models drop when setting k as low as 10 (such a low level of k results in a relatively high level of estimation uncertainty).

Table X: Other robustness checks

Table X provides further robustness checks for the specification in Table 1 in Van Oordt and Zhou (2018), Model (1) using several departures from our baseline methodology.

The relationship between systemic risk and lagged bank characteristics is expected to be weaker than the contemporaneous relationship. In Table X, Model (1) we replace the bank characteristics in the quarter preceding the estimation horizon by bank characteristics averaged over the four-year estimation horizon of β_i^T. One may be concerned that these contemporaneous explanatory variables could introduce correlation between the explanatory variables and the error terms, for example, due to simultaneity. To address this concern, we use bank characteristics in the quarter preceding the estimation horizon of β_i^T as instruments for the contemporaneous regressors. The instruments are the bank characteristics in Table 2 in Van Oordt and Zhou (2018). The model is estimated using GMM for efficiency purposes.[1] Over-identification is not rejected based on the Hansen J-test statistic, while under-identification is rejected based on the Kleibergen-Paap rk LM-statistic. The most notable changes in this specification are the larger impact of profitability and asset growth on β_i^T. A potential explanation is that the contemporaneous profitability and asset growth are associated with β_i^T, but that their past values are noisy proxies for their future values.

Model (2) includes bank fixed effects. The consequence is that some of the cross-sectional dispersion across the banks is captured by the fixed effects. This may be problematic for estimating the coefficients for the bank characteristics if the dependent variables have limited variation over

[1] The results look similar when using the instrumental variable two-stage least squares estimator.

time. Once fixed effects are included in the regression with $\hat{\beta}^T_{i;[t,t+15]}$ as the dependent variable, the main difference is that the coefficients for asset growth and return on equity become insignificant. Hence, although banks with structurally lower profitability and structurally higher growth are associated with a higher level of β^T_i, we do not find statistical evidence that changes in these bank characteristics result in changes in their systemic risk.

In the baseline analysis, we exclude observations corresponding to zero β^T_i estimates because we take the natural logarithm of this variable. Such estimates occur in practice for approximately 1.5% of the observations. Truncation of the dependent variable may theoretically bias the estimated coefficients towards zero. As a robustness check, we repeat the estimation of the model for $\hat{\beta}^T_{i;[t,t+15]}$ without taking logs while including the zero estimates in Model (3). Although the coefficient does not change much, the deposit funding gap changes to significant from weakly significant. Moreover, bank profit becomes insignificant, which suggests that caution is required when using high bank profit as an indicator of low systemic risk.

Systemic risk may be non-linearly related to bank size. This is somewhat suggested by the pattern in Van Oordt and Zhou (2018, Figure 1). Therefore, we separately estimate the relationship for smaller and larger banks. Model (4) is estimated based on bank-year observations for banks with total assets less than USD 10 billion, while Model (5) includes only bank-year observations for banks with total assets more than USD 10 billion. For most variables we observe a smaller impact on systemic risk among larger banks. For example, the positive relationship between size and systemic risk is insignificant and less pronounced among larger banks. This is in line with the non-linear relationship of size to bank risk documented by De Nicoló (2000), and that to systemic risk documented by Huang et al. (2012) and Moore and Zhou (2012). Similar observations hold true for bank capital, bank profitability, cost-to-income and asset growth.

As a further robustness check, we include the log of the number of full-time equivalent employees as an alternative measure for bank size in Model (6). Similarly, we estimate a specification while directly including log(Assets) (unreported). Both models change the interpretation of the coefficients of the other variables relative to the baseline specification. In the baseline specification, the coefficients show the relationship between bank characteristics and systemic risk if bank size is assumed to respond to changes in the other variables. Specifications with log(Number of Employees) and log(Assets) estimate the interrelationships with the other variables if bank size is assumed to be fixed. Most coefficients in the model do not change, although the magnitude of some coefficients change. Most notable are the smaller coefficients for the capital ratio, the deposit funding gap and non-interest income. This suggests that part of the relationship between systemic risk and these bank characteristics is due to the fact that banks with lower capital ratios, larger deposit funding gaps and a larger share of non-interest income tend to have a larger size. Nevertheless, except for the deposit funding gap, the coefficients remain significant. This shows that the relationships to bank size does not account completely for the relationships of the capital ratio and non-interest income to systemic risk.

Proof of Lemma 1 in Van Oordt and Zhou (2018)

Lemma 1 in Van Oordt and Zhou (2018) follows directly from the more general lemma below.

Lemma I *Assume that the linear tail model in Eq. (1) in Van Oordt and Zhou (2018) holds true for $R_s < -VaR_s(\bar{p})$. In addition, assume that, for $R_s < -VaR_s(\bar{p})$,*

$$R_i = f_i(R_s) + \varepsilon_i, \tag{1}$$

where the function f_i is defined on $[-VaR_s(\bar{p}), +\infty) \to \mathbb{R}$ and bounded away from $-\infty$, i.e., $f_i(x) > c_i$ for some constant c_i. Further, assume that both R_s and ε_i follow a heavy-tailed distribution with tail index ζ_s and $\lim_{p\to 0} \tau_i(p) = \tau_i$. Then, as $p \to 0$, we have

$$\text{Exposure CoVaR}_i(p) \sim \left(\tau_i^{1/\zeta_s} + (1-\tau_i)^{1/\zeta_s}\right) VaR_i(p) \sim \beta_i^T VaR_s(p) T(\tau_i, \zeta_s), \tag{2}$$

where

$$T(\tau_i, \zeta_s) = 1 + \left(\frac{1}{\tau_i} - 1\right)^{1/\zeta_s}. \tag{3}$$

Proof. Note that by definition, for all $p < \bar{p}$,

$$\text{Exposure CoVaR}_i(p) = \beta_i^T VaR_s(p) + VaR_\varepsilon(p),$$

where $VaR_\varepsilon(p)$ is the value-at-risk of ε_i. The limit relationship in Eq. (2) in Van Oordt and Zhou (2018) yields

$$\lim_{p\to 0} \frac{\beta_i^T VaR_s(p)}{VaR_i(p)} = \tau_i^{1/\zeta_s}.$$

Hence, what remains to be proved for Lemma I is that

$$\lim_{p\to 0} \frac{VaR_\varepsilon(p)}{VaR_i(p)} = (1-\tau_i)^{1/\zeta_s}. \tag{4}$$

To prove this, we first derive the tail expansion of the distribution of R_i as

$$\Pr(R_i < -t) \sim \Pr(\beta_i^T R_s < -t) + \Pr(\varepsilon_i < -t) \text{ as } t \to \infty. \tag{5}$$

Eq. (5) follows directly from Feller's convolution theorem (Feller, 1971, VIII.8) if the relationship $R_i = \beta_i^T R_s + \varepsilon_i$ holds true for all R_s (Van Oordt and Zhou, 2018, Lemma 1). Our goal is to draw the same conclusion under the weaker condition that the linear tail model in Eq. (1) in Van Oordt and Zhou (2018) holds true for $R_s < -VaR_s(\bar{p})$ and the relationship in Eq. (1) holds true for $R_s < -VaR_s(\bar{p})$ (Lemma I).

Write

$$\begin{aligned}\Pr(R_i < -t) &= \Pr(R_i < -t, R_s < -VaR_s(\bar{p})) + \Pr(R_i < -t, R_s \geq -VaR_s(\bar{p})) \\ &= \Pr(\beta_i^T R_s + \varepsilon_i < -t, R_s < -VaR_s(\bar{p})) + \Pr(f_i(R_s) + \varepsilon_i < -t, R_s \geq -VaR_s(\bar{p})) \\ &=: \Pr(C_0) + \Pr(D_0).\end{aligned}$$

We have the following set manipulation equations regarding C_0 and D_0: for any $0 < \delta < 1/2$, and eventually large t,

$$C_{11} \bigcup C_{12} \subset C_0 \subset C_{21} \bigcup C_{22} \bigcup C_{23} \text{ and } D_1 \subset D_0 \subset D_2.$$

Here for the sets regarding C_0, we define

$$\begin{aligned}&C_{11} = \left\{\beta_i^T R_s < -(1+\delta)t, \varepsilon_i < \delta t\right\}, C_{12} = \left\{\varepsilon_i < -(1+\delta)t + \beta_i^T VaR_s(\bar{p}), R_s < -VaR_s(\bar{p})\right\}, \\ &C_{21} = \left\{\beta_i^T R_s < -(1-\delta)t\right\}, C_{22} = \{\varepsilon_i < -(1-\delta)t, R_s < -VaR_s(\bar{p})\}, \text{ and} \\ &C_{23} = \left\{\beta_i^T R_s < -\delta t, \varepsilon_i < -\delta t\right\}.\end{aligned}$$

For the sets regarding D_0, we define $D_1 = \{\varepsilon_i < -(1+\delta)t, f_i(R_s) < \delta t, R_s \geq -VaR_s(\bar{p})\}$ and $D_2 = \{\varepsilon_i < -t - c_i, R_s \geq -VaR_s(\bar{p})\}$.

From now on we only deal with $\beta_i^T > 0$. If $\beta_i^T = 0$, then the proof is similar and simpler, and we simply define $C_{11} = C_{21} = C_{23} = \emptyset$.

Given the independence of R_s and ε_i, which are both heavy-tailed distributed with tail index ζ_s, it is straightforward to derive that, as $t \to \infty$,

$$\frac{\Pr(C_{11})}{\Pr(\beta_i^T R_s < -t)} \to (1+\delta)^{-\zeta_s}, \frac{\Pr(C_{12})}{\Pr(\varepsilon_i < -t)\bar{p}} \to (1+\delta)^{-\zeta_s}, \frac{\Pr(C_{11} \bigcap C_{12})}{\Pr(C_{11}) + \Pr(C_{12})} \to 0.$$

Therefore, we have that

$$\liminf_{t\to\infty} \frac{\Pr(C_0)}{\Pr(\beta_i^T R_s < -t) + \Pr(\varepsilon_i < -t)\bar{p}} \geq (1+\delta)^{-\zeta_s}.$$

By using similar limit relations for C_{21}, C_{22} and C_{23}, we derive an upper bound for $\Pr(C_0)$ as

$$\limsup_{t\to\infty} \frac{\Pr(C_0)}{\Pr(\beta_i^T R_s < -t) + \Pr(\varepsilon_i < -t)\bar{p}} \leq (1-\delta)^{-\zeta_s}.$$

Since the lower and upper bounds hold true for any $0 < \delta < 1/2$, by taking $\delta \to 0$ we have

$$\lim_{t\to\infty} \frac{\Pr(C_0)}{\Pr(\beta_i^T R_s < -t) + \Pr(\varepsilon_i < -t)\bar{p}} = 1.$$

By deriving similar, but simpler, lower and upper bounds of D_0, we obtain

$$\limsup_{t\to\infty} \frac{\Pr(D_0)}{\Pr(\varepsilon_i < -t)(1-\bar{p})} = 1.$$

The relation in Eq. (5) is proved by combining the limit relations for C_0 and D_0.

An immediate consequence of Eq. (5) is that the distribution of R_i is also heavy-tailed with tail index ζ_s. Moreover, by taking $t = -VaR_i(p)$, we derive from Eq. (5) that, as $p \to 0$,

$$p \sim \Pr(\beta_i^T R_s < -VaR_i(p)) + \Pr(\varepsilon_i < -VaR_i(p)). \tag{6}$$

The heavy-tailed property for R_s ensures that, as $p \to 0$,

$$\frac{\Pr(\beta_i^T R_s < -VaR_i(p))}{p} = \frac{\Pr(\beta_i^T R_s < -VaR_i(p))}{\Pr(R_s < -VaR_s(p))} \sim \left(\frac{VaR_i(p)}{\beta_i^T VaR_s(p)}\right)^{-\zeta_s} \to \tau_i. \tag{7}$$

Therefore, by using Eq. (6), it follows that, as $p \to 0$,

$$\frac{\Pr(\varepsilon_i < -VaR_i(p))}{\Pr(\varepsilon_i < -VaR_\varepsilon(p))} = \frac{\Pr(\varepsilon_i < -VaR_i(p))}{p} \to 1 - \tau_i$$

By using the heavy-tailed property of ε_i in the same manner as for R_s in Eq. (7), we obtain Eq. (4) immediately, which completes the proof of Lemma I. ■

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Table I: Descriptive Statistics

VARIABLES	Mean	Sd	Min	p10	p90	Max
PANEL A						
Systemic Risk						
Systemic Risk: $\hat{\beta}^T_{i;[t,t+15]}$	0.965	0.319	0.140	0.577	1.382	3.575
Systemic Linkage: $SL_{i;[t,t+15]}$	0.599	0.146	0.193	0.399	0.784	0.917
Bank Tail Risk: $IR_{i;[t,t+15]}$	1.648	0.552	0.512	1.116	2.268	7.716
PANEL B						
Main Characteristics						
ln(Total Assets$_{t-1}$)	14.838	1.464	13.150	13.354	17.054	19.668
Tangible Equity Ratio$_{t-1}$	7.367	2.083	2.922	4.873	9.907	14.252
Non-Performing-Loans Ratio$_{t-1}$	0.010	0.010	0.000	0.002	0.019	0.061
Cost-to-Income Ratio$_{t-1}$	0.626	0.105	0.368	0.498	0.752	0.972
Return on Equity$_{t-1}$	0.135	0.052	-0.058	0.077	0.194	0.269
Liquid Assets$_{t-1}$	0.069	0.061	0.011	0.022	0.151	0.337
Deposit Funding Gap$_{t-1}$	-0.111	0.138	-0.634	-0.290	0.050	0.377
Growth in Total Assets$_{t-1}$	0.033	0.064	-0.066	-0.015	0.087	0.392
PANEL C						
Non-Interest Income						
Non-Interest Income Share$_{t-1}$	0.260	0.138	0.052	0.123	0.429	0.763
Srvc Charges on Deposit Accounts Shr$_{t-1}$	0.076	0.038	0.000	0.028	0.125	0.192
Fiduciary Activities Income Share$_{t-1}$	0.039	0.066	0.000	0.000	0.085	0.470
Trading Revenue Share$_{t-1}$	0.006	0.018	-0.010	0.000	0.014	0.116
Other Non-Interest Income Share$_{t-1}$	0.138	0.117	0.014	0.044	0.260	0.702
PANEL D						
Loan Portfolio						
Loans to Total Assets$_{t-1}$	0.643	0.128	0.145	0.484	0.781	0.872
Real Estate Loan Share$_{t-1}$	0.640	0.184	0.033	0.407	0.856	0.986
Commercial and Industrial Loan Shr$_{t-1}$	0.186	0.116	0.000	0.068	0.338	0.642
Consumer Loan Share$_{t-1}$	0.119	0.103	0.001	0.013	0.252	0.514
Agricultural Loan Share$_{t-1}$	0.010	0.020	0.000	0.000	0.032	0.110
Other Loan Share$_{t-1}$	0.039	0.062	-0.009	0.000	0.095	0.439

Note: Descriptive statistics of the 13,498 bank-year observations used to estimate the baseline results.

Table II: Systemic Risk and Different Loan Types

	(1)	(2)	(3)
VARIABLES	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$	$\log IR_{i;[t,t+15]}$
Bank Size (reslnTA$_{t-1}$)	0.071***	0.120***	-0.050***
	(0.013)	(0.007)	(0.011)
Tangible Equity Ratio$_{t-1}$	-0.028***	-0.026***	-0.002
	(0.005)	(0.003)	(0.004)
Non-Performing-Loans Ratio$_{t-1}$	3.160***	-0.179	3.339***
	(0.854)	(0.661)	(0.719)
Cost-to-Income Ratio$_{t-1}$	-0.578***	-0.667***	0.089
	(0.124)	(0.068)	(0.106)
Return on Equity$_{t-1}$	-0.416**	0.012	-0.428**
	(0.198)	(0.110)	(0.186)
Liquid Assets$_{t-1}$	-0.155	-0.022	-0.133
	(0.186)	(0.140)	(0.176)
Deposit Funding Gap$_{t-1}$	0.159	0.221***	-0.062
	(0.105)	(0.064)	(0.092)
Loans to Total Assets$_{t-1}$	-0.042	-0.162**	0.121
	(0.104)	(0.078)	(0.085)
Non-Interest Income Share$_{t-1}$	0.500***	0.552***	-0.052
	(0.090)	(0.054)	(0.080)
Growth in Total Assets$_{t-1}$	0.269***	0.073**	0.195***
	(0.060)	(0.037)	(0.048)
Agricultural Loan Share$_{t-1}$	-0.512	-0.829**	0.317
	(0.537)	(0.329)	(0.385)
Commercial and Industrial Loan Shr$_{t-1}$	0.228**	0.359***	-0.132*
	(0.090)	(0.050)	(0.073)
Consumer Loan Share$_{t-1}$	0.035	0.189***	-0.154
	(0.103)	(0.060)	(0.097)
Other Loan Share$_{t-1}$	0.289	0.266**	0.024
	(0.228)	(0.120)	(0.175)
Constant	0.654***	-0.176**	0.831***
	(0.150)	(0.089)	(0.125)
Observations	13,498	13,498	13,498
Number of Banks	510	510	510
R-squared	0.328	0.520	0.367
Partial R-squared	0.188	0.486	0.0892
Time Fixed Effects	Yes	Yes	Yes
Clustering at Bank Level	Yes	Yes	Yes
Clustering at Time Level	Yes	Yes	Yes

Note: The definitions of the dependent variables are provided in Eqs. (4) and (5) in Van Oordt and Zhou (2018). The dependent variables are calculated from 16 quarters of daily stock market returns, with a quarterly rolling window. The explanatory variables are observed in the quarter preceding the estimation horizon. They are all ratios, except bank size. Bank size is the residual from a regression of the logarithm of total assets on the other regressors. The "partial R-squared" is calculated as $1-(1-R^2)/(1-R^2_D)$, where R^2 is the R-squared in the table and where R^2_D is the R-squared from a regression with only dummies for the fixed effects. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table III: Estimation Results Based on Rolling Estimation Horizons of 8 Quarters

	(1)	(2)	(3)
VARIABLES	$\log \beta^T_{i;[t,t+7]}$	$\log SL_{i;[t,t+7]}$	$\log IR_{i;[t,t+7]}$
Bank Size (reslnTA$_{t-1}$)	0.066***	0.115***	-0.049***
	(0.013)	(0.007)	(0.011)
Tangible Equity Ratio$_{t-1}$	-0.030***	-0.024***	-0.005
	(0.005)	(0.003)	(0.004)
Non-Performing Loans Ratio$_{t-1}$	4.977***	-1.716***	6.693***
	(0.869)	(0.557)	(0.815)
Cost to Income Ratio$_{t-1}$	-0.509***	-0.635***	0.126
	(0.107)	(0.056)	(0.095)
Return on Equity$_{t-1}$	-0.761***	-0.079	-0.682***
	(0.192)	(0.101)	(0.166)
Liquid Assets$_{t-1}$	0.182	0.06	0.122
	(0.196)	(0.139)	(0.187)
Deposit Funding Gap$_{t-1}$	0.214**	0.251***	-0.036
	(0.101)	(0.063)	(0.086)
Loans to Total Assets$_{t-1}$	-0.086	-0.196***	0.11
	(0.102)	(0.075)	(0.080)
Non-Interest Income Share$_{t-1}$	0.453***	0.597***	-0.145*
	(0.089)	(0.048)	(0.079)
Growth in Total Assets$_{t-1}$	0.101*	0.014	0.086*
	(0.058)	(0.037)	(0.048)
Constant	0.604***	-0.206***	0.810***
	(0.125)	(0.072)	(0.108)
Observations	13,710	13,710	13,710
Number of Banks	518	518	518
R-squared	0.324	0.505	0.458
Partial R-squared	0.142	0.412	0.149
Time Fixed Effects	Yes	Yes	Yes
Clustering at Bank Level	Yes	Yes	Yes
Clustering at Time Level	Yes	Yes	Yes

Note: The definitions of the dependent variables are provided in Eqs. (4) and (5) in Van Oordt and Zhou (2018). The dependent variables are calculated from 8 quarters of daily stock market returns, with a quarterly rolling window. The explanatory variables are observed in the quarter preceding the estimation horizon. They are all ratios, except bank size. Bank size is the residual from a regression of the logarithm of total assets on the other regressors. The "partial R-squared" is calculated as $1 - (1 - R^2)/(1 - R^2_D)$, where R^2 is the R-squared in the table and where R^2_D is the R-squared from a regression with only dummies for the fixed effects. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table IV: Using Past Subcomponents to Predict Realized Systemic Risk during the Financial Crisis (2006Q1-2009Q4)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$\log \beta^T_{i;[2006Q1,2009Q4]}$	$\log \beta^T_{i;[2006Q1,2009Q4]}$	$\log \beta^T_{i;[2006Q1,2009Q4]}$	$\log \beta^T_{i;[2006Q1,2009Q4]}$	$\log \beta^T_{i;[2006Q1,2009Q4]}$	$\log \beta^T_{i;[2006Q1,2009Q4]}$
Bank tail risk:						
$\log IR_{i;[2002Q1,2005Q4]}$	0.0968					
	(0.128)					
$\log IR_{i;[1998Q1,2001Q4]}$		0.139				
		(0.125)				
$\log IR_{i;[1994Q1,1997Q4]}$			-0.167*			
			(0.090)			
Systemic linkage:						
$\log SL_{i;[2002Q1,2005Q4]}$				0.738***		
				(0.089)		
$\log SL_{i;[1998Q1,2001Q4]}$					0.547***	
					(0.136)	
$\log SL_{i;[1994Q1,1997Q4]}$						0.454***
						(0.114)
Constant	-0.240***	-0.218***	0.0477	0.282***	0.164*	0.280***
	(0.059)	(0.061)	(0.081)	(0.063)	(0.085)	(0.098)
Number of Banks	230	163	100	230	163	100
R-squared	0.002	0.008	0.034	0.231	0.092	0.14

Note: The definitions of the variables are provided in Eqs. (4) and (5) in Van Oordt and Zhou (2018). The variables are calculated from 16 quarters of daily stock market returns. The specific estimation horizon of each of the variables is listed in the subscripts of the variables. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table V: Using Past Subcomponents to Predict Realized Systemic Risk during the Asian Crisis (1996Q1-1999Q4)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$\log \beta^T_{i;[1996Q1,1999Q4]}$	$\log \beta^T_{i;[1996Q1,1999Q4]}$	$\log \beta^T_{i;[1996Q1,1999Q4]}$	$\log \beta^T_{i;[1996Q1,1999Q4]}$	$\log \beta^T_{i;[1996Q1,1999Q4]}$	$\log \beta^T_{i;[1996Q1,1999Q4]}$
Bank tail risk:						
$\log IR_{i;[1992Q1,1995Q4]}$	-0.00239					
	(0.053)					
$\log IR_{i;[1988Q1,1991Q4]}$		0.00831				
		(0.057)				
$\log IR_{i;[1984Q1,1987Q4]}$			-0.0227			
			(0.086)			
Systemic linkage:						
$\log SL_{i;[1992Q1,1995Q4]}$				0.372***		
				(0.083)		
$\log SL_{i;[1988Q1,1991Q4]}$					0.250***	
					(0.068)	
$\log SL_{i;[1984Q1,1987Q4]}$						0.404***
						(0.131)
Constant	-0.0812	-0.0871	-0.022	0.148***	0.127**	0.208**
	(0.057)	(0.059)	(0.066)	(0.055)	(0.060)	(0.083)
Number of Banks	121	98	68	121	98	68
R-squared	0.000	0.000	0.001	0.144	0.124	0.125

Note: The definitions of the variables are provided in Eqs. (4) and (5) in Van Oordt and Zhou (2018). The variables are calculated from 16 quarters of daily stock market returns. The specific estimation horizon of each of the variables is listed in the subscripts of the variables. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table VI: Estimation Results with Longer Lags

Lag of the estimation horizon	(1 qtr)	(2 qtrs)	(3 qtrs)	(4 qtrs)	(5 qtrs)
VARIABLES	$\log \beta^T_{i;[t,t+15]}$	$\log \beta^T_{i;[t+1,t+16]}$	$\log \beta^T_{i;[t+2,t+17]}$	$\log \beta^T_{i;[t+3,t+18]}$	$\log \beta^T_{i;[t+4,t+19]}$
Bank Size (reslnTA$_{t-1}$)	0.078***	0.076***	0.076***	0.076***	0.075***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Tangible Equity Ratio$_{t-1}$	-0.031***	-0.030***	-0.030***	-0.029***	-0.029***
	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Non-Performing Loans Ratio$_{t-1}$	2.584***	2.386***	2.253**	2.081**	1.972**
	(0.921)	(0.915)	(0.904)	(0.889)	(0.877)
Cost to Income Ratio$_{t-1}$	-0.671***	-0.662***	-0.644***	-0.619***	-0.610***
	(0.130)	(0.131)	(0.131)	(0.131)	(0.131)
Return on Equity$_{t-1}$	-0.405*	-0.312	-0.224	-0.169	-0.144
	(0.213)	(0.213)	(0.211)	(0.210)	(0.206)
Liquid Assets$_{t-1}$	-0.084	-0.104	-0.101	-0.103	-0.104
	(0.189)	(0.186)	(0.184)	(0.182)	(0.180)
Loans to Total Assets$_{t-1}$	0.191*	0.186*	0.188*	0.195*	0.192*
	(0.105)	(0.106)	(0.106)	(0.105)	(0.105)
Deposits to Total Assets$_{t-1}$	-0.102	-0.102	-0.101	-0.106	-0.096
	(0.107)	(0.107)	(0.106)	(0.106)	(0.105)
Non-Interest Income Share$_{t-1}$	0.580***	0.578***	0.566***	0.552***	0.549***
	(0.085)	(0.087)	(0.087)	(0.088)	(0.089)
Growth in Total Assets$_{t-1}$	0.261***	0.288***	0.301***	0.319***	0.323***
	(0.060)	(0.061)	(0.062)	(0.061)	(0.062)
Constant	0.524***	0.515***	0.501***	0.484***	0.477***
	(0.142)	(0.144)	(0.146)	(0.146)	(0.148)
Observations	12,482	12,482	12,482	12,482	12,482
Number of Banks	482	482	482	482	482
R-squared	0.303	0.301	0.3	0.298	0.295
Partial R-squared	0.189	0.187	0.186	0.183	0.18
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Clustering at Bank Level	Yes	Yes	Yes	Yes	Yes
Clustering at Time Level	Yes	Yes	Yes	Yes	Yes

Note: The definitions of the dependent variables are provided in Eq. (4) in Van Oordt and Zhou (2018). The dependent variables are calculated from 16 quarters of daily stock market returns, with a quarterly rolling window. The explanatory variables are observed in quarter $t-1$. They are all ratios, except bank size. Bank size is the residual from a regression of the logarithm of total assets on the other regressors. The "partial R-squared" is calculated as $1-(1-R^2)/(1-R_D^2)$, where R^2 is the R-squared in the table and where R_D^2 is the R-squared from a regression with only dummies for the fixed effects. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table VII: Estimation Results for Different Levels of k: $\hat{\beta}^T_{i;[t,t+15]}$

	$k=10$	$k=20$	$k=30$	$k=40$	$k=50$	$k=60$	$k=70$	$k=80$
VARIABLES	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log \hat{\beta}^T_{i;[t,t+15]}$	$\log \hat{\beta}^T_{i;[t,t+15]}$
Bank Size (reslnTA$_{t-1}$)	0.012	0.055***	0.069***	0.072***	0.068***	0.068***	0.068***	0.070***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)
Tangible Equity Ratio$_{t-1}$	-0.014***	-0.025***	-0.030***	-0.029***	-0.027***	-0.026***	-0.026***	-0.026***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Non-Performing Loans Ratio$_{t-1}$	4.436***	3.375***	3.263***	3.223***	3.335***	3.165***	3.153***	3.004***
	(0.844)	(0.831)	(0.861)	(0.905)	(0.927)	(0.900)	(0.914)	(0.908)
Cost to Income Ratio$_{t-1}$	-0.182	-0.473***	-0.602***	-0.631***	-0.599***	-0.606***	-0.610***	-0.630***
	(0.127)	(0.122)	(0.124)	(0.126)	(0.122)	(0.122)	(0.121)	(0.124)
Return on Equity$_{t-1}$	-0.458**	-0.476**	-0.503***	-0.462**	-0.426**	-0.454**	-0.464**	-0.452**
	(0.215)	(0.198)	(0.194)	(0.197)	(0.194)	(0.196)	(0.196)	(0.200)
Liquid Assets$_{t-1}$	0.018	-0.125	-0.065	-0.054	-0.066	-0.059	-0.044	-0.037
	(0.187)	(0.173)	(0.183)	(0.185)	(0.183)	(0.183)	(0.186)	(0.187)
Deposit Funding Gap$_{t-1}$	0.205**	0.137	0.203**	0.190*	0.194*	0.184*	0.187*	0.178*
	(0.103)	(0.099)	(0.102)	(0.103)	(0.102)	(0.103)	(0.102)	(0.104)
Loans to Total Assets$_{t-1}$	-0.026	-0.058	-0.099	-0.091	-0.08	-0.067	-0.062	-0.064
	(0.086)	(0.096)	(0.102)	(0.103)	(0.103)	(0.103)	(0.101)	(0.101)
Non-Interest Income Share$_{t-1}$	0.225***	0.537***	0.570***	0.585***	0.561***	0.567***	0.569***	0.588***
	(0.084)	(0.080)	(0.082)	(0.084)	(0.083)	(0.082)	(0.081)	(0.081)
Growth in Total Assets$_{t-1}$	0.265***	0.244***	0.265***	0.264***	0.264***	0.266***	0.271***	0.262***
	(0.054)	(0.053)	(0.059)	(0.061)	(0.060)	(0.059)	(0.057)	(0.056)
Constant	0.307**	0.502***	0.759***	0.775***	0.443***	0.425***	0.402***	0.400***
	(0.139)	(0.140)	(0.146)	(0.146)	(0.135)	(0.134)	(0.133)	(0.135)
Observations	9,852	12,239	13,165	13,498	13,498	13,498	13,498	13,498
Number of Banks	462	495	505	510	510	510	510	510
R-squared	0.228	0.3	0.332	0.319	0.316	0.32	0.322	0.331
Partial R-squared	0.082	0.149	0.187	0.178	0.174	0.179	0.181	0.193
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at Bank Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at Time Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: The definition of the dependent variable is provided in Eq. (4) in Van Oordt and Zhou (2018). The dependent variable is calculated from 16 quarters of daily stock market returns, with a quarterly rolling window. Each column shows the results when the dependent variable is estimated with a different choice of k. The explanatory variables are observed in the quarter preceding the estimation horizon. They are all ratios, except bank size. Bank size is the residual from a regression of the logarithm of total assets on the other regressors. The "partial R-squared" is calculated as $1-(1-R^2)/(1-R^2_D)$, where R^2 is the R-squared in the table and where R^2_D is the R-squared from a regression with only dummies for the fixed effects. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table VIII: Estimation Results for Different Levels of k: $SL_{i;[t,t+15]}$

	$k=10$	$k=20$	$k=30$	$k=40$	$k=50$	$k=60$	$k=70$	$k=80$
VARIABLES	$\log SL_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$	$\log SL_{i;[t,t+15]}$
Bank Size (reslnTA$_{t-1}$)	0.048***	0.098***	0.118***	0.121***	0.118***	0.117***	0.116***	0.118***
	(0.004)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Tangible Equity Ratio$_{t-1}$	-0.012***	-0.021***	-0.027***	-0.028***	-0.026***	-0.026***	-0.025***	-0.024***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Non-Performing Loans Ratio$_{t-1}$	-0.48	-0.861	-0.361	-0.211	0.103	0.009	0.06	-0.069
	(0.421)	(0.590)	(0.678)	(0.746)	(0.752)	(0.706)	(0.720)	(0.712)
Cost to Income Ratio$_{t-1}$	-0.337***	-0.627***	-0.714***	-0.742***	-0.697***	-0.705***	-0.703***	-0.720***
	(0.046)	(0.063)	(0.068)	(0.069)	(0.063)	(0.061)	(0.059)	(0.060)
Return on Equity$_{t-1}$	-0.126*	-0.148	-0.074	-0.055	-0.016	-0.045	-0.049	-0.052
	(0.074)	(0.106)	(0.117)	(0.113)	(0.106)	(0.103)	(0.100)	(0.098)
Liquid Assets$_{t-1}$	0.036	0.056	0.086	0.114	0.106	0.112	0.125	0.123
	(0.075)	(0.112)	(0.139)	(0.151)	(0.144)	(0.129)	(0.125)	(0.122)
Deposit Funding Gap$_{t-1}$	0.074**	0.148***	0.238***	0.242***	0.251***	0.249***	0.258***	0.257***
	(0.036)	(0.057)	(0.066)	(0.068)	(0.066)	(0.063)	(0.062)	(0.061)
Loans to Total Assets$_{t-1}$	-0.047	-0.160**	-0.198**	-0.197**	-0.193**	-0.188**	-0.183**	-0.190**
	(0.043)	(0.069)	(0.081)	(0.082)	(0.079)	(0.076)	(0.074)	(0.074)
Non-Interest Income Share$_{t-1}$	0.328***	0.600***	0.648***	0.668***	0.643***	0.647***	0.647***	0.660***
	(0.032)	(0.046)	(0.052)	(0.055)	(0.053)	(0.050)	(0.048)	(0.048)
Growth in Total Assets$_{t-1}$	0.004	0.014	0.051	0.057	0.055	0.061	0.073**	0.073**
	(0.026)	(0.034)	(0.040)	(0.040)	(0.039)	(0.038)	(0.037)	(0.035)
Constant	-0.163***	0.025	0.057	-0.005	0.11	0.097	0.052	0.055
	(0.050)	(0.075)	(0.088)	(0.088)	(0.078)	(0.074)	(0.073)	(0.072)
Observations	9,852	12,239	13,165	13,498	13,498	13,498	13,498	13,498
Number of Banks	462	495	505	510	510	510	510	510
R-squared	0.487	0.456	0.48	0.491	0.545	0.565	0.587	0.593
Partial R-squared	0.458	0.424	0.446	0.454	0.513	0.534	0.558	0.564
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at Bank Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at Time Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: The definition of the dependent variable is provided in Eq. (5) in Van Oordt and Zhou (2018). The dependent variable is calculated from 16 quarters of daily stock market returns, with a quarterly rolling window. Each column shows the results when the dependent variable is estimated with a different choice of k. The explanatory variables are observed in the quarter preceding the estimation horizon. They are all ratios, except bank size. Bank size is the residual from a regression of the logarithm of total assets on the other regressors. The "partial R-squared" is calculated as $1-(1-R^2)/(1-R_D^2)$, where R^2 is the R-squared in the table and where R_D^2 is the R-squared from a regression with only dummies for the fixed effects. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table IX: Estimation Results for Different Levels of k: $IR_{i;[t,t+15]}$

	$k=10$	$k=20$	$k=30$	$k=40$	$k=50$	$k=60$	$k=70$	$k=80$
VARIABLES	$\log IR_{i;[t,t+15]}$	$\log IR_{i;[t,t+15]}$	$\log IR_{i;[t,t+15]}$	$\log IR_{i;[t,t+15]}$	$\log IR_{i;[t,t+15]}$	$\log IR_{i;[t,t+15]}$	$\log IR_{i;[t,t+15]}$	$\log IRS_{i;[t,t+15]}$
Bank Size (reslnTA$_{t-1}$)	-0.045***	-0.047***	-0.050***	-0.049***	-0.050***	-0.049***	-0.048***	-0.048***
	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Tangible Equity Ratio$_{t-1}$	-0.003	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Non-Performing Loans Ratio$_{t-1}$	4.219***	3.973***	3.616***	3.434***	3.233***	3.156***	3.093***	3.073***
	(0.752)	(0.746)	(0.728)	(0.721)	(0.719)	(0.723)	(0.723)	(0.726)
Cost to Income Ratio$_{t-1}$	0.133	0.113	0.116	0.111	0.099	0.098	0.093	0.09
	(0.107)	(0.107)	(0.107)	(0.107)	(0.108)	(0.107)	(0.107)	(0.108)
Return on Equity$_{t-1}$	-0.409**	-0.423**	-0.430**	-0.408**	-0.410**	-0.410**	-0.415**	-0.400**
	(0.179)	(0.181)	(0.184)	(0.185)	(0.186)	(0.185)	(0.185)	(0.187)
Liquid Assets$_{t-1}$	-0.066	-0.119	-0.147	-0.168	-0.172	-0.17	-0.169	-0.16
	(0.169)	(0.170)	(0.173)	(0.179)	(0.183)	(0.181)	(0.181)	(0.182)
Deposit Funding Gap$_{t-1}$	0.014	-0.033	-0.046	-0.052	-0.058	-0.064	-0.071	-0.079
	(0.095)	(0.095)	(0.093)	(0.093)	(0.092)	(0.092)	(0.093)	(0.093)
Loans to Total Assets$_{t-1}$	0.065	0.099	0.103	0.106	0.113	0.121	0.121	0.126
	(0.087)	(0.086)	(0.086)	(0.085)	(0.083)	(0.083)	(0.083)	(0.083)
Non-Interest Income Share$_{t-1}$	-0.109	-0.084	-0.09	-0.084	-0.082	-0.08	-0.077	-0.072
	(0.074)	(0.075)	(0.075)	(0.075)	(0.076)	(0.075)	(0.075)	(0.076)
Growth in Total Assets$_{t-1}$	0.250***	0.226***	0.208***	0.207***	0.209***	0.204***	0.198***	0.189***
	(0.053)	(0.050)	(0.049)	(0.048)	(0.047)	(0.046)	(0.045)	(0.045)
Constant	0.398***	0.359***	0.371***	0.780***	0.333***	0.328***	0.350***	0.345***
	(0.122)	(0.122)	(0.123)	(0.126)	(0.122)	(0.121)	(0.120)	(0.121)
Observations	13,498	13,498	13,498	13,498	13,498	13,498	13,498	13,498
Number of Banks	510	510	510	510	510	510	510	510
R-squared	0.425	0.379	0.362	0.363	0.419	0.432	0.454	0.458
Partial R-squared	0.172	0.107	0.082	0.083	0.164	0.183	0.215	0.221
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at Bank Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at Time Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: The definition of the dependent variable is provided in Eq. (5) in Van Oordt and Zhou (2018). The dependent variable is calculated from 16 quarters of daily stock market returns, with a quarterly rolling window. Each column shows the results when the dependent variable is estimated with a different choice of k. The explanatory variables are observed in the quarter preceding the estimation horizon. They are all ratios, except bank size. Bank size is the residual from a regression of the logarithm of total assets on the other regressors. The "partial R-squared" is calculated as $1-(1-R^2)/(1-R_D^2)$, where R^2 is the R-squared in the table and where R_D^2 is the R-squared from a regression with only dummies for the fixed effects. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Table X: Other Robustness Checks

	IV-GMM	FE	Zero β^Ts	Small	Large	FTEs
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$\log\hat{\beta}^T_{i;[t,t+15]}$	$\log\hat{\beta}^T_{i;[t,t+15]}$	$\hat{\beta}^T_{i;[t,t+15]}$	$\log\hat{\beta}^T_{i;[t,t+15]}$	$\log\hat{\beta}^T_{i;[t,t+15]}$	$\log\hat{\beta}^T_{i;[t,t+15]}$
Bank Size (reslnTA$_{t-1}$)	0.065***	0.051**	0.061***	0.110***	0.028	
	(0.012)	(0.020)	(0.011)	(0.021)	(0.020)	
Log(Number of Employees$_{t-1}$)						0.063***
						(0.011)
Tangible Equity Ratio$_{t-1}$	-0.018***	-0.019***	-0.026***	-0.036***	-0.011	-0.019***
	(0.006)	(0.006)	(0.005)	(0.006)	(0.011)	(0.005)
Non-Performing-Loans Ratio$_{t-1}$	3.533**	7.111***	3.499***	3.865***	3.205**	3.190***
	(1.683)	(1.362)	(1.196)	(1.068)	(1.330)	(0.896)
Cost-to-Income Ratio$_{t-1}$	-0.573***	-0.303**	-0.440***	-0.786***	-0.157	-0.431***
	(0.198)	(0.146)	(0.116)	(0.152)	(0.178)	(0.115)
Return on Equity$_{t-1}$	-1.001**	-0.120	-0.249	-0.544**	-0.252	-0.382**
	(0.471)	(0.170)	(0.195)	(0.218)	(0.246)	(0.194)
Liquid Assets$_{t-1}$	0.225	0.261	-0.122	-0.090	0.042	-0.188
	(0.221)	(0.234)	(0.192)	(0.213)	(0.334)	(0.182)
Deposit Funding Gap$_{t-1}$	0.218*	0.223	0.209**	0.314**	0.413**	-0.000
	(0.126)	(0.164)	(0.097)	(0.135)	(0.180)	(0.101)
Loans to Total Assets$_{t-1}$	-0.161	-0.445**	-0.125	-0.152	-0.237	0.023
	(0.114)	(0.206)	(0.097)	(0.131)	(0.147)	(0.101)
Non-Interest Income Share$_{t-1}$	0.489***	0.356**	0.545***	0.706***	0.506***	0.229**
	(0.117)	(0.157)	(0.082)	(0.120)	(0.146)	(0.098)
Growth in Total Assets$_{t-1}$	3.275**	0.019	0.239***	0.301***	0.147**	0.287***
	(1.330)	(0.044)	(0.062)	(0.069)	(0.066)	(0.061)
$\log\hat{\beta}^T_{i;[t-16,t-1]}$	0.286***					
	(0.033)					
Constant	0.186	0.069	1.403***	0.895***	0.208	0.089
	(0.180)	(0.176)	(0.134)	(0.183)	(0.170)	(0.146)
Hansen J Statistic (p value)	1.7 (0.65)					
Kleibergen-Paap LM (p value)	46.1 (0.00)					
Observations	9,799	13,498	13,704	11,138	2,360	13,498
Number of Banks	428	510	511	464	96	510
R-squared	0.379	0.577	0.288	0.318	0.281	0.315
Partial R-squared	0.256	0.051	0.161	0.134	0.216	0.173
Time Fixed Effects	Yes	No	Yes	Yes	Yes	Yes
Clustering at Bank Level	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at Time Level	No	Yes	Yes	Yes	Yes	Yes

Note: Estimates after several departures from our baseline methodology. Model (1) provides estimated coefficients for contemporaneous bank characteristics, measured as the average over the 16 quarterly observations within the four-year estimation window of $\hat{\beta}^T_{i;[t,t+15]}$. Model (1) is estimated using GMM with instrumental variables. The instruments are the explanatory variables in Table 2 in Van Oordt and Zhou (2018) observed in the quarter preceding the four-year estimation window. Model (2) includes bank fixed effects. Model (3) provides the estimation results if the left-hand side variable $\log\hat{\beta}^T_{i;[t,t+15]}$ is replaced by $\hat{\beta}^T_{i;[t,t+15]}$, while including observations with $\hat{\beta}^T_{i;[t,t+15]} = 0$ (in the baseline methodology these observations are removed due to the natural logarithm). Model (4) only includes bank-year observations for banks with total assets smaller than USD 10 billion. Model (5) is estimated with bank-year observations for banks with total assets larger USD 10 billion. In Model (6), we replace the original variable for bank size by 'log(Number of Employees)'. The "partial R-squared" is calculated as $1-(1-R^2)/(1-R^2_D)$, where R^2 is the R-squared in the table and where R^2_D is the R-squared from a regression with only dummies for the fixed effects. Significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.