

Table 1  
Variables description and descriptive statistics

Description		Unit	Obs	Mean	Std. Dev.	Min	Max
<b>Dependent variables</b>							
loan_growth	Change in the log of loan amount relative to the previous quarter (at firm-bank level)	%	8,667,766	-0.038	1.441	-46.010	46.212
loan_growth_cl	Change in the log of loan amount including unused credit lines relative to the previous quarter (at firm-bank level)	%	9,932,343	-0.031	0.985	-48.470	47.801
bad_hist	Dummy =1 if the borrower has overdue credit in the current and in the previous quarter; = 0 otherwise	{0,1}	11,772,002	0.112	0.316	0	1
new_bor	Dummy =1 if it is a first-time borrower; = 0 otherwise	{0,1}	11,772,002	0.018	0.133	0	1
D_default_bank	Dummy =1 if the borrower has overdue credit in the current quarter with the bank; = 0 otherwise	{0,1}	11,772,002	0.080	0.271	0	1
new_loan	Dummy =1 if there is an increase in loan amount or a new bank relationship is created; = 0 otherwise	{0,1}	11,772,002	0.305	0.461	0	1
new_loan_cl	Dummy =1 if there is an increase in loan amount including unused credit lines or a new bank relationship is created; = 0 otherwise	{0,1}	11,772,002	0.286	0.452	0	1
<b>Independent variables</b>							
<i>Monetary Policy Rates</i>							
i ECB eoq	ECB main refinancing rate at the end of the quarter	%	11,772,002	2.978	0.885	2	4.75
Taylor residual	Residuals for Portugal of a panel-data Taylor rule with 10 euro area countries (AT, BE, DE, ES, FI, FR, IE, IT, NL, PT) against contemporaneous GDP growth and inflation	p.p.	11,552,445	-0.108	0.665	-1.553	1.203
<i>Differences-in-differences</i>							
treatment	Dummy = 1 for firm-bank relationships with a new loan is granted between Jan-05 and Sep-05; = 0 for firm-bank relationships with a new loan granted between Oct-05 and Mar-06.	{0,1}	2,112,930	0.412	0.492	0	1
after t	Dummy =1 after the low interest rate period (from 2006Q1 onwards)	{0,1}	11,772,002	0.263	0.440	0	1
<i>Bank characteristics</i>							
ln(assets)	Logarithm of the total assets of the bank.	ln(EUR)	11,536,811	23.419	1.662	16.70	25.19
liq ratio	The amount of liquid assets over total assets. Included in liquid assets: cash, balances with the central bank, loans and advances to credit institutions, loans and advances to the public sector, gold and other precious metals for the old accounting standards; cash, loans and advances to credit institutions and other loans and advances for the IAS.	%	11,536,811	18.475	10.809	0.00	82.87
rel npl/assets	Difference between the bank ratio of non performing loans over total assets and the average ratio for all banks	%	11,536,811	-1.953	2.250	-3.79	22.55
capital_ratio	Equity capital over total assets	%	11,432,772	4.819	2.462	0.07	37.99
savings	Dummy = 1 if the bank is a saving bank; = 0 otherwise	{0,1}	11,772,002	0.033	0.179	0	1
CCAM	Dummy = 1 if the bank is a mutual agricultural credit bank; = 0 otherwise	{0,1}	11,772,002	0.023	0.150	0	1
ICUE	Dummy = 1 if the bank is a branch of a credit institution with head office in the EU; = 0 otherwise	{0,1}	11,772,002	0.037	0.189	0	1
M&A	Dummy = 1 if the bank is involved in a merger in that quarter; = 0 otherwise	{0,1}	11,772,002	0.051	0.220	0	1
IAS	Dummy = 1 for the quarter when the bank switched from the old accounting standards to the IAS	{0,1}	11,772,002	0.032	0.175	0	1
<i>Borrower characteristics</i>							
#rel	Number of bank relationships of the firm	integer	11,772,002	3.057	2.424	1	38
credit	The total amount of credit of the firm	EUR	11,772,002	1,040,303	12,800,000	0	4,520,000,000
age	Number of quarters that the firm has credit	integer	11,772,002	23.785	13.510	0	51
loan	Total credit granted by the bank to the borrower	EUR	11,772,002	234,358	4,398,536	0	4,520,000,000
loan_cl	Total credit including unused credit lines granted by the bank to the borrower	EUR	11,772,002	313,461	5,086,170	0	4,520,000,000
Cred_LT_prop	Share of long term credit on the sum of short and long-term credit	%	10,222,954	48.769	39.713	0	100
sectoral dummies	Dummies for economic sectors based on 2 digit NACE codes (66 sectors)	{0,1}					
<i>Macro controls</i>							
GDP PT	Portuguese real GDP y-o-y quarterly growth rate	%	11,772,002	1.612	1.592	-1.90	5.10
inflation PT	Quarterly inflation rate (HICP)	%	11,772,002	2.926	0.702	1.90	4.40
trend	Time trend	integer	11,772,002	20.191	10.101	1.00	36.00

**Table 2**  
**Risk-taking at the intensive margin: loan growth and interest rates**

Dependent variable: loan_growth												
	I	II	III	IV	V	VI	VII	VIII	Small firms	Large firms	Small banks	Large banks
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>
i*bad_hist <sub>t-1</sub>	-0.018**	-0.018	0.001	0.001	-0.001	-0.001	0.001	-0.002	0.005	0.004	-0.003	0.002
	<i>(0.009)</i>	<i>(0.014)</i>	<i>(0.005)</i>	<i>(0.005)</i>	<i>(0.005)</i>	<i>(0.006)</i>	<i>(0.007)</i>	<i>(0.016)</i>	<i>(0.007)</i>	<i>(0.006)</i>	<i>(0.006)</i>	<i>(0.007)</i>
i*bad_hist <sub>t-1</sub> * liq_ratio <sub>t-1</sub>						0.000						
						<i>(0.000)</i>						
i*bad_hist <sub>t-1</sub> * capital_ratio <sub>t-1</sub>							-0.000					
							<i>(0.001)</i>					
i*bad_hist <sub>t-1</sub> * ln(assets) <sub>t-1</sub>								0.000				
								<i>(0.001)</i>				
i ECB eq <sub>t-1</sub>	0.016	0.016	-0.006	-0.006	-0.008	-0.006	-0.006	-0.006	0.015	-0.019	0.024	-0.037
	<i>(0.014)</i>	<i>(0.018)</i>	<i>(0.030)</i>	<i>(0.030)</i>	<i>(0.025)</i>	<i>(0.030)</i>	<i>(0.031)</i>	<i>(0.030)</i>	<i>(0.044)</i>	<i>(0.019)</i>	<i>(0.045)</i>	<i>(0.038)</i>
bad_hist <sub>t-1</sub>	0.112***	0.112**	-0.026	-0.026	-0.023	-0.025	-0.026	-0.026	0.002	-0.055***	-0.015	-0.032
	<i>(0.026)</i>	<i>(0.051)</i>	<i>(0.016)</i>	<i>(0.016)</i>	<i>(0.014)</i>	<i>(0.016)</i>	<i>(0.015)</i>	<i>(0.016)</i>	<i>(0.021)</i>	<i>(0.013)</i>	<i>(0.018)</i>	<i>(0.023)</i>
liq_ratio <sub>t-1</sub>	-0.002***	-0.002	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	0.001
	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.001)</i>	<i>(0.002)</i>
capital_ratio <sub>t-1</sub>	0.003	0.003	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.001	0.001
	<i>(0.004)</i>	<i>(0.005)</i>	<i>(0.003)</i>	<i>(0.003)</i>	<i>(0.002)</i>	<i>(0.003)</i>	<i>(0.003)</i>	<i>(0.003)</i>	<i>(0.003)</i>	<i>(0.004)</i>	<i>(0.001)</i>	<i>(0.013)</i>
ln(assets) <sub>t-1</sub>	0.139***	0.139**	0.038	0.038	0.037	0.038	0.038	0.038	0.003	0.046	-0.038**	0.147
	<i>(0.043)</i>	<i>(0.060)</i>	<i>(0.042)</i>	<i>(0.042)</i>	<i>(0.037)</i>	<i>(0.042)</i>	<i>(0.042)</i>	<i>(0.042)</i>	<i>(0.039)</i>	<i>(0.048)</i>	<i>(0.017)</i>	<i>(0.073)</i>
bank variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
borrower variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
inc. unused credit lines	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
sectoral dummies	no	no	no	no	yes	no	no	no	no	no	no	no
macro variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
fixed effects	relationship	relationship	relationship	relationship	relationship	relationship	relationship	relationship	relationship	relationship	relationship	relationship
Clustered s.e.	quarter	quarter & bank	quarter & bank	quarter & bank & firm	quarter	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank
N <sup>o</sup> obs.	6,427,685	6,427,685	6,927,838	6,927,838	5,919,775	6,927,838	6,927,838	6,927,838	2,690,267	904,414	2,568,837	4,359,001

Note: All variables defined in Table 1. Results of panel data regressions on the dependent variable *loan\_growth* (or *loan\_growth\_cl*) defined as the quarterly growth (log difference) of the loan amount (or including unused credit lines) at the firm-bank level. Bank variables included and not reported: *rel npl/assets*, *M&A* and *IAS*. Borrower variables included and not reported: *ln(1+#rel)*, *ln(credit)*, *ln(2+age)*, *ln(1+loan)* and *Cred\_LT\_prop*. Macro variables included and not reported: *GDP PT* (4 lags) and *π PT*. A constant and a quadratic trend are also included but their coefficients are not reported. Columns IX to XII report the results of the regression for sub-samples according to criteria defined in the top of the column. Small (large) firms proxied by the size of the total credit of the firm: Small firms are below the median, large firms are in the top-10 percentile. Large banks are the 5 largest banks in Portugal, representing around half of the total corporate loan market; small banks are the remaining ones. Multi-way clustering computed using *reghdfe* (Correia, 2017). For each variable, we report the coefficient, the standard deviation (below in italics) and the significance level (\* significance at 10 per cent, \*\* significance at 5 per cent, \*\*\* significance at 1 per cent).

Table 3

Risk-taking at the intensive margin: loan growth and Taylor residuals

Dependent variable: loan_growth		
	I	II
	Coef.	Coef.
	<i>S.e.</i>	<i>S.e.</i>
Taylor*bad_hist <sub>t-1</sub>	-0.017	0.012
	<i>(0.019)</i>	<i>(0.011)</i>
Taylor residual <sub>t-1</sub>	0.008	0.001
	<i>(0.010)</i>	<i>(0.014)</i>
bad_hist <sub>t-1</sub>	0.058***	-0.023***
	<i>(0.018)</i>	<i>(0.005)</i>
liq_ratio <sub>t-1</sub>	-0.002	-0.000
	<i>(0.001)</i>	<i>(0.001)</i>
capital_ratio <sub>t-1</sub>	0.003	-0.000
	<i>(0.004)</i>	<i>(0.003)</i>
ln(assets) <sub>t-1</sub>	0.141**	0.035
	<i>(0.058)</i>	<i>(0.038)</i>
bank variables	yes	yes
borrower variables	yes	yes
inc. unused credit lines	no	yes
sectoral dummies	no	no
macro variables	yes	yes
fixed effects	relationship	relationship
Clustered s.e.	quarter & bank	quarter & bank
N <sup>o</sup> obs.	6,427,685	6,927,838

Note: All variables defined in Table 1. Results of panel data regressions on the dependent variable *loan\_growth* (or *loan\_growth\_cl*) defined as the quarterly growth (log difference) of the loan amount (or including unused credit lines) at the firm-bank level. Bank variables included and not reported: *rel npl/assets*, *M&A* and *IAS*. Borrower variables included and not reported: *ln(1+#rel)*, *ln(credit)*, *ln(2+age)*, *ln(1+loan)* and *Cred\_LT\_prop*. Macro variables included and not reported: *GDP PT* (4 lags) and  $\pi$  *PT*. A constant and a quadratic trend are also included but their coefficients are not reported. Multi-way clustering computed using *reghdfe* (Correia, 2017). For each variable, we report the coefficient, the standard deviation (below in italics) and the significance level (\* significance at 10 per cent, \*\* significance at 5 per cent, \*\*\* significance at 1 per cent).

Table 4  
Risk-taking at the extensive margin: probability of granting a loan to a risky firm and interest rates

	Small firms    Large firms    Small banks    Large banks    LPM													
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	
	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	
i ECB eq <sub>t-1</sub>	-0.043**	-0.043**	-0.048***	-0.048	**	-0.029	0.028	-0.152***	-0.157	-0.025	-0.094***	-0.062***	-0.091	-0.008***
	(0.021)	(0.019)	(0.017)	0.017		(0.022)	(0.050)	(0.044)	(0.236)	(0.022)	(0.016)	(0.024)	(.)	(0.001)
i * liq_ratio <sub>t-1</sub>						-0.004*								
						(0.002)								
i * capital_ratio <sub>t-1</sub>							0.024***							
							(0.009)							
i * ln(assets) <sub>t-1</sub>								0.005						
								(0.010)						
liq_ratio <sub>t-1</sub>	-0.007***	-0.007**	-0.007**	-0.007	**	-0.007***	0.004	-0.007**	-0.007**	-0.012***	-0.003	-0.011***	0.001	0.001*
	(0.001)	(0.003)	(0.003)	0.003		(0.001)	(0.009)	(0.003)	(0.003)	(0.005)	(0.003)	(0.004)	(0.003)	(0.000)
capital_ratio <sub>t-1</sub>	0.021***	0.021	0.021	0.021		0.023***	0.021	-0.052	0.022	0.026*	0.016	0.023*	0.010	-0.004**
	(0.004)	(0.014)	(0.016)	0.016		(0.003)	(0.015)	(0.037)	(0.016)	(0.014)	(0.019)	(0.014)	(0.022)	(0.002)
ln(assets) <sub>t-1</sub>	-0.042***	-0.042	-0.040	-0.040		-0.042***	-0.040	-0.039	-0.055	-0.053	-0.017	-0.023	0.178*	0.026*
	(0.007)	(0.026)	(0.033)	0.033		(0.006)	(0.032)	(0.032)	(0.056)	(0.042)	(0.029)	(0.060)	(0.091)	(0.013)
bank variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
borrower variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
inc. unused credit lines	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
sectoral dummies	no	no	no	no	yes	no	no	no	no	no	no	no	no	no
macro variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
fixed effects	no	no	no	no	no	no	no	no	no	no	no	no	no	relationship
Clustered s.e.	quarter	quarter & bank	quarter & bank	quarter & bank & firm	quarter	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank
N <sup>o</sup> obs.	2,655,604	2,655,604	2,479,691	2,655,604	2,086,479	2,479,691	2,479,691	2,479,691	835,022	387,385	845,868	1,633,823	2,346,526	

Note: All variables defined in Table 1. Results of probit regressions (except column XIII, which is a linear probability model) on the dependent variable *bad\_hist* conditional on a new loan (or a new loan including unused credit lines) being granted. Bank variables included and not reported: *rel npl/assets*, *savings*, *CCAM*, *ICUE*, *M&A* and *IAS*. Borrower variables included and not reported: *ln(1+#rel)*, *ln(credit)*, *ln(2+age)*, *ln(1+loan)* and *Cred\_LT\_prop*. Macro variables included and not reported: *GDP PT* and *π PT*. A constant and a quadratic trend are also included but their coefficients are not reported. Columns IX to XII report the results of the regression for sub-samples according to criteria defined in the top of the column. Small (large) firms proxied by the size of the total credit by the firm: Small firms are below the median, large firms are in the top-10 percentile. Large banks are the 5 largest banks in Portugal, representing around half of the total corporate loan market; small banks are the remaining ones. Multi-way clustering computed following Cameron, Gelbach and Miller (2011) and Cameron and Miller (2015). For each variable, we report the coefficient, the standard deviation (below in italics) and the significance level (\* significance at 10 per cent, \*\* significance at 5 per cent, \*\*\* significance at 1 per cent).

Table 5

Risk-taking at the extensive margin: probability of granting a loan to a first time borrower and interest rates

	Small firms    Large firms    Small banks    Large banks    LPM												
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>
i ECB eq <sub>t-1</sub>	-0.045**	-0.045**	-0.047***	-0.047 **	-0.038	-0.010	-0.062*	-0.088	-0.062***	0.054	-0.034**	-0.086***	-0.008**
	(0.022)	(0.019)	(0.018)	0.018	(0.034)	(0.036)	(0.034)	(0.106)	(0.022)	(0.051)	(0.014)	(0.019)	(0.004)
i * liq_ratio <sub>t-1</sub>						-0.002							
						(0.001)							
i * capital_ratio <sub>t-1</sub>							0.003						
							(0.006)						
i * ln(assets) <sub>t-1</sub>								0.002					
								(0.005)					
liq_ratio <sub>t-1</sub>	-0.007***	-0.007***	-0.008***	-0.008 ***	-0.004***	-0.002	-0.008***	-0.008***	-0.007***	-0.001	-0.005*	-0.008***	-0.001***
	(0.001)	(0.002)	(0.002)	0.002	(0.001)	(0.006)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.000)
capital_ratio <sub>t-1</sub>	0.014***	0.014	0.015	0.015	0.010***	0.014	0.004	0.015	0.006	-0.002	0.020***	-0.027	0.002
	(0.002)	(0.011)	(0.010)	0.010	(0.003)	(0.010)	(0.026)	(0.010)	(0.008)	(0.014)	(0.007)	(0.020)	(0.001)
ln(assets) <sub>t-1</sub>	-0.003	-0.003	0.003	0.003	-0.030***	0.002	0.003	-0.003	-0.040*	0.074*	-0.044	0.079**	0.009
	(0.008)	(0.018)	(0.021)	0.021	(0.010)	(0.020)	(0.020)	(0.030)	(0.022)	(0.041)	(0.035)	(0.039)	(0.007)
bank variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
borrower variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
inc. unused credit lines	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
sectoral dummies	no	no	no	no	yes	no	no	no	no	no	no	no	no
macro variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
fixed effects	no	no	no	no	no	no	no	no	no	no	no	no	relationship
Clustered s.e.	quarter	quarter & bank	quarter & bank	quarter & bank & firm	quarter	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank	quarter & bank
N <sup>o</sup> obs.	3,432,579	3,432,579	3,287,338	3,432,579	2,743,953	3,287,338	3,287,338	3,287,338	1,388,318	421,775	1,166,743	2,120,595	2,990,903

Note: All variables defined in Table 1. Results of probit regressions (except column XIII, which is a linear probability model) on the dependent variable new\_borrower conditional on a new loan (or a new loan including unused credit lines) being granted. Bank variables included and not reported: rel npl/assets, savings, CCAM, ICUE, M&A and IAS. Macro variables included and not reported: GDP PT and  $\pi$  PT. A constant and a quadratic trend are also included but their coefficients are not reported. Columns IX to XII report the results of the regression for sub-samples according to criteria defined in the top of the column. Small (large) firms proxied by the size of the total credit by the firm: Small firms are below the median, large firms are in the top-10 percentile. Large banks are the 5 largest banks in Portugal, representing around half of the total corporate loan market; small banks are the remaining ones. Multi-way clustering computed following Cameron, Gelbach and Miller (2011) and Cameron and Miller (2015). For each variable, we report the coefficient, the standard deviation (below in italics) and the significance level (\* significance at 10 per cent, \*\* significance at 5 per cent, \*\*\* significance at 1 per cent).

Table 6

Risk-taking at the extensive margin: probability of granting a loan to a risky firm and interest rates

	Bad history		New borrower	
	I	II	III	IV
	Coef. <i>S.e.</i>	Coef. <i>S.e.</i>	Coef. <i>S.e.</i>	Coef. <i>S.e.</i>
Taylor residual $t-1$	-0.024 (0.026)	-0.030 (0.021)	-0.051* (0.029)	-0.043* (0.025)
liq_ratio $t-1$	-0.007** (0.003)	-0.007** (0.003)	-0.007*** (0.002)	-0.008*** (0.002)
capital_ratio $t-1$	0.022 (0.014)	0.022 (0.016)	0.014 (0.011)	0.015 (0.010)
ln(assets) $t-1$	-0.043* (0.026)	-0.041 (0.033)	-0.003 (0.018)	0.002 (0.020)
bank variables	yes	yes	yes	yes
borrower variables	yes	yes	yes	yes
inc. unused credit lines	no	yes	no	yes
sectoral dummies	no	no	no	no
macro variables	yes	yes	yes	yes
fixed effects	no	no	no	no
Clustered s.e.	quarter & bank	quarter & bank	quarter & bank	quarter & bank
N <sup>o</sup> obs.	2,597,851	2,424,200	3,355,783	3,212,352

Note: All variables defined in Table 1. Results of probit regressions on the dependent variable *bad\_hist* (columns I and II) or on the dependent variable *new\_borrower* (columns III and IV), conditional on a new loan (or a new loan including unused credit lines) being granted. Bank variables included and not reported: *rel\_npl/assets*, *savings*, *CCAM*, *ICUE*, *M&A* and *IAS*. Borrower variables included and not reported: *ln(1+#rel)*, *ln(credit)*, *ln(2+age)*, *ln(1+loan)* and *Cred\_LT\_prop*. Macro variables included and not reported: *GDP PT* and  *$\pi$  PT*. A constant and a quadratic trend are also included but their coefficients are not reported. Multi-way clustering computed following Cameron, Gelbach and Miller (2011) and Cameron and Miller (2015). For each variable, we report the coefficient, the standard deviation (below in italics) and the significance level (\* significance at 10 per cent, \*\* significance at 5 per cent, \*\*\* significance at 1 per cent).

**Table 7**  
**Ex-post assessment of risk-taking: Survival analysis of default and interest rates**

	Dependent variable: hazard rate (loan level)														
											Small firms	Large firms	Small banks	Large banks	Taylor residuals
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>	<i>S.e.</i>
i ECB eoq <sub>t-1</sub>	0.019	0.021	0.023	0.030	0.016	0.523	0.032	0.012	0.520	-0.041**	0.012	0.070	0.106*	-0.115***	0.017
	(0.022)	(0.039)	(0.038)	(0.040)	(0.040)	(0.374)	(0.039)	(0.039)	(0.375)	(0.020)	(0.051)	(0.058)	(0.061)	(0.034)	(0.027)
bad_hist <sub>t-1</sub>	2.350***	1.770***	2.013***	1.806***	1.801***	1.822***	1.858***	1.682***	1.907***	2.192***	1.835***	1.869***	1.820***	1.834***	2.487***
	(0.059)	(0.096)	(0.339)	(0.098)	(0.100)	(0.093)	(0.084)	(0.142)	(0.326)	(0.022)	(0.098)	(0.126)	(0.122)	(0.100)	(0.071)
i*bad_hist <sub>t-1</sub>			-0.061												
			(0.102)												
i*liq_ratio <sub>t-1</sub>				0.001			0.001								
				(0.001)			(0.001)								
i*capital_ratio <sub>t-1</sub>					0.014**			0.014**							
					(0.006)			(0.006)							
i*ln(assets) <sub>t-1</sub>						-0.022			-0.021						
						(0.016)			(0.016)						
i*bad_hist <sub>t-1</sub> * liq_ratio <sub>t-1</sub>							-0.001								
							(0.001)								
i*bad_hist <sub>t-1</sub> * capital_ratio <sub>t-1</sub>								0.010							
								(0.007)							
i*bad_hist <sub>t-1</sub> * ln(assets) <sub>t-1</sub>									-0.001						
									(0.004)						
liq_ratio <sub>t-1</sub>	-0.004***	-0.008***	-0.007***	-0.008***	-0.005***	-0.007***	-0.008***	-0.005***	-0.007***	-0.012***	-0.005*	-0.013***	-0.004	0.005	-0.004**
	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.004)	(0.005)	(0.002)
capital_ratio <sub>t-1</sub>	0.106***	0.064***	0.067***	0.067***	0.044**	0.067***	0.067***	0.042**	0.067***	0.038***	0.089***	0.079***	0.056***	0.094**	0.138***
	(0.009)	(0.016)	(0.016)	(0.015)	(0.020)	(0.016)	(0.015)	(0.020)	(0.016)	(0.006)	(0.020)	(0.020)	(0.014)	(0.037)	(0.011)
ln(assets) <sub>t-1</sub>	0.080***	0.020	0.024	0.008	0.006	0.093*	0.008	0.007	0.092*	-0.040***	-0.024	0.050	0.017	0.399***	0.102***
	(0.016)	(0.027)	(0.024)	(0.022)	(0.023)	(0.054)	(0.022)	(0.023)	(0.054)	(0.015)	(0.027)	(0.037)	(0.039)	(0.101)	(0.019)
bank variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
borrower variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
sectoral dummies	no	yes	no	no	no	no	no	no	no	no	no	no	no	no	no
macro variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
time-variant	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no
shared frailty	firm	no	no	no	no	no	no	no	no	no	no	no	no	no	firm
Clustered s.e.		quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter	
N <sup>o</sup> obs.	1,384,696	1,053,493	1,384,696	1,339,370	1,339,340	1,384,696	1,339,370	1,339,340	1,384,696	5,833,210	489,228	206,849	397,071	987,625	906,317

Note: All variables defined in Table 1. Results of the estimation of a Weibull hazard function at the loan level, i.e., of the probability of default of the firm relative to the bank at each moment, given that there was no default observed since a new loan was granted.  $t$  refers to the moment when the loan is granted.  $i\ ECB\ eoq$  is fixed to the moment prior to the loan concession. Bank variables included and not reported:  $rel\ npl/assets$ ,  $savings$ ,  $CCAM$ ,  $ICUE$ ,  $M\&A$  and  $IAS$ . Borrower variables included and not reported:  $ln(1+\#rel)$ ,  $ln(credit)$ ,  $ln(2+age)$ ,  $ln(1+loan)$  and  $Cred\_LT\_prop$ . Macro variables included and not reported:  $GDP\ PT$  (GDP growth fixed at the moment the loan is granted),  $GDP\ PT\_tv$  (time-varying GDP growth) and  $\pi\ PT$ . A constant and a quadratic trend are also included but their coefficients are not reported. Columns XI to XIV report the results of the regression for sub-samples according to criteria defined in the top of the column. Small (large) firms proxied by the size of the total credit by the firm: Small firms are below the median, large firms are in the top-10 percentile. Large banks are the 5 largest banks in Portugal, representing around half of the total corporate loan market; small banks are the remaining ones. Column XV reports the results using Taylor residuals instead of interest rates. For each variable, we report the coefficient, the standard deviation (below in italics) and the significance level (\* significance at 10 per cent, \*\* significance at 5 per cent, \*\*\* significance at 1 per cent).

Table 8

Ex-post assessment of risk-taking: Differences-in-differences approach in a short sub-period (2005-2007)

								Small firms	Large firms	Small banks	Large banks
	I Coef. <i>S.e.</i>	II Coef. <i>S.e.</i>	III Coef. <i>S.e.</i>	IV Coef. <i>S.e.</i>	V Coef. <i>S.e.</i>	VI Coef. <i>S.e.</i>	VII Coef. <i>S.e.</i>	VIII Coef. <i>S.e.</i>	IX Coef. <i>S.e.</i>	X Coef. <i>S.e.</i>	XI Coef. <i>S.e.</i>
treatment t	-0.273*** (0.051)	-0.273*** (0.040)	-0.273 *** (0.040)	-0.261*** (0.050)	-0.273*** (0.051)	-0.273*** (0.051)	-0.273*** (0.051)	-0.413*** (0.060)	-0.107** (0.054)	-0.294*** (0.050)	-0.282*** (0.040)
after t	-0.164*** (0.022)	-0.164 (.)	-0.164 (0.000)	-0.189*** (0.023)	-0.164*** (0.022)	-0.164*** (0.022)	-0.165*** (0.022)	-0.251*** (0.020)	-0.072*** (0.021)	-0.193*** (0.039)	-0.205*** (0.034)
treatment * after t	0.242*** (0.058)	0.242*** (0.041)	0.242 *** (0.041)	0.225*** (0.056)	0.199*** (0.053)	0.253*** (0.068)	-0.062 (0.133)	0.337*** (0.066)	0.101* (0.061)	0.256*** (0.058)	0.267*** (0.046)
treatment * after t * liq_ratio <sub>t-1</sub>					0.003*** (0.001)						
treatment * after t * capital_ratio <sub>t-1</sub>						-0.002 (0.002)					
treatment * after t * ln(assets) <sub>t-1</sub>							0.013* (0.007)				
liq_ratio <sub>t-1</sub>	0.003*** (0.001)	0.003 (0.002)	0.003 (0.002)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.002 (0.001)	0.003*** (0.001)	0.002** (0.001)	-0.001 (0.002)
capital_ratio <sub>t-1</sub>	-0.002 (0.002)	-0.002 (0.008)	-0.002 (0.008)	-0.003** (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.001)	0.001 (0.002)	0.000 (0.004)	0.002 (0.002)	0.043*** (0.010)
ln(assets) <sub>t-1</sub>	-0.027*** (0.009)	-0.027 (0.022)	-0.027 (0.023)	-0.021** (0.009)	-0.027*** (0.009)	-0.027*** (0.009)	-0.029*** (0.009)	-0.028** (0.011)	-0.030*** (0.004)	0.062*** (0.023)	-0.044 (0.041)
bank variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
borrower variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
sectoral dummies	no	no	no	yes	no	no	no	no	no	no	no
macro variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
fixed effects	no	no	no	no	no	no	no	no	no	no	no
Clustered s.e.	quarter	quarter & bank	quarter & bank&firm	quarter	quarter	quarter	quarter	quarter	quarter	quarter	quarter
Nº obs.	1,640,137	1,640,137	1,640,137	1,509,658	1,640,137	1,640,137	1,640,137	692,727	189,480	605,002	1,035,135

Note: All variables defined in Table 1. Results of a probit estimation on the dependent variable *bad\_hist*. *Treatment* equals 1 for firm-bank relationships with a new loan was granted between Jan-05 to Sep-05 and equals 0 for firm-bank relationships with a new loan granted between Oct-05 and Mar-06. *After* equals 1 for the period when interest rates began to rise (from Jan-06 onwards). Bank variables included and not reported: *rel npl/assets*, *savings*, *CCAM*, *ICUE*, *M&A* and *IAS*. Borrower variables included and not reported: *ln(1+#rel)*, *ln(credit)*, *ln(2+age)*, *ln(1+loan)* and *Cred\_LT\_prop*. Macro variables included and not reported: *GDP PT* and *π PT*. A constant and a quadratic trend are also included but their coefficients are not reported. Columns VIII to XI report the results of the regression for sub-samples according to criteria defined in the top of the column. Small (large) firms proxied by the size of the total credit by the firm: Small firms are below the median, large firms are in the top-10 percentile. Large banks are the 5 largest banks in Portugal, representing around half of the total corporate loan market; small banks are the remaining ones. Multi-way clustering computed following Cameron, Gelbach and Miller (2011) and Cameron and Miller (2015). For each variable, we report the coefficient, the standard deviation (below in italics) and the significance level (\* significance at 10 per cent, \*\* significance at 5 per cent, \*\*\* significance at 1 per cent).