

# Global Imbalances and Bank Risk-Taking

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# Motivation

- Financial crises often preceded by current account deficits (Gourinchas and Obstfeld, 2012; Reinhart and Rogoff, 2008)
- The channel that links capital imports and risks in the financial sector is not identified, yet  
=> We identify a bank risk-taking channel

## Questions

- How do international capital flows affect bank lending and risk-taking?
- Are the effects particularly important for poorly capitalized banks?
- Through which channels do international capital flows affect banks - through the quantity or the price of loanable funds?
- What role does market discipline play? Do private capital flows differ from public capital flows?

## Theoretical Foundations

- Numerous studies model the effect of a change in the quantity (e.g. Acharya and Naqvi, 2012) and price (e.g. Dell'Ariccia and Marquez, 2006) of loanable funds on bank risks
- This effect is usually amplified in poorly capitalized banks: Holmstrom and Tirole (1997) see bank capital as a measure for agency problems in banks
- However, the focus is mostly on monetary policy. Current account fluctuations have been overlooked

## Key Results

- Current account deficits lead to larger loan volumes, higher loan-to-asset ratios and more risk-taking
- Overproportional effect for banks with less capital
- Bank risks increase for two reasons: i) Banks replace safer assets with loans ii) Average loan quality deteriorates
- The effect is distinct from interest rate channel of monetary policy
- International capital flows seem to lead to a decrease in market discipline

⇒ The current account is a decisive variable for banks and should closely be observed by policy makers

# Data

- Bank level data for banks in the eleven founding members of the euro area (Bankscope database), observed from 2001-2012  
=> approx. 40,000 bank-year observations
- Macroeconomic data mostly extracted from the World Economic Outlook Database (10/2013)
- Euro area perfect for identification:
  - strong variation in current account balances that are exogenous to large extents
  - uniform monetary policy

# Methodology

- We estimate the following RE model:

$$\begin{aligned} \mathit{loans}_{it} = & \alpha_t + \alpha_j + \beta * CA_{j,t-1} + \gamma * (CA_{j,t-1} * \mathit{capital}_{i,t-1}) + \delta * \mathit{macro}_{j,t-1} \\ & + \theta * \mathit{bank}_{i,t-1} + \phi * (\mathit{macro}_{j,t-1} * \mathit{capital}_{i,t-1}) + (\epsilon_{it} + \alpha_i) \end{aligned}$$

$$\begin{aligned} \mathit{risk}_{it} = & \alpha_t + \alpha_j + \beta * CA_{j,t-2} + \gamma * (CA_{j,t-2} * \mathit{capital}_{i,t-2}) + \delta * \mathit{macro}_{j,t-2} \\ & + \theta * \mathit{bank}_{i,t-2} + \phi * (\mathit{macro}_{j,t-2} * \mathit{capital}_{i,t-2}) + (\epsilon_{it} + \alpha_i) \end{aligned}$$

## Methodology

- $Loans_{it}$  is the growth rate of the loan volume and the loan-to-asset ratio (serves as proxy for a bank's balance structure)
- $Risk_{it}$  is a vector of various z-score definitions, impaired loans to equity ("impaired loans"), loan loss provisions to net interest revenues ("loan loss provisions") and impaired loans to gross loans ("loan quality")
- $Macro_{j,t-1}$  is a vector of macroeconomic variables: the change in the EONIA, the change in the 10y sovereign bond yield, GDP growth, per capita GDP
- $Bank_{i,t-1}$  is a vector of bank level controls: profitability, bank capital, liquidity, size
- Dataset allows to include time and country dummies, standard errors are clustered at country level

## Identification

- Allows disentangling quantity and price effects
- Differentiate among various sources of capital flows
- Role of market discipline can be investigated
- A high number of observations increases efficiency

=> The standard difference-in-differences estimation cannot achieve this

# Baseline Results

	(1)	(2)	(3)	(4)	(5)	(6)
	loans/assets	bankloans	z_score	impaired loans	loan loss provisions	loan quality
currentaccount	-0.429** (-1.97)	-0.576* (-1.82)	0.023*** (4.30)	-3.791* (-1.72)	-1.441*** (-4.68)	-0.065*** (-2.93)
capital*currentaccount	0.141 (1.04)	0.329** (2.13)	-0.008*** (-2.97)	1.624 (1.21)	0.466 (1.28)	0.009 (0.69)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	32117	32117	27005	8754	25770	6444
R-squared	0.009	0.019	0.163	0.064	0.062	0.151
Theta	0.470	0.521	0.913	0.400	0.668	0.768

t statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Results are from a RE model estimated using GLS. The displayed  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data. Theta = 1: RE estimator = FE estimator.

All variables and their sources are as defined in table 1.

## Baseline Results

- Current account deficits lead banks to increase loan volumes, loan-to-asset ratios as well as risk-taking
- Effect especially pronounced for banks with less capital
- In particular, a 1 pp decrease in the current account position leads poorly capitalized banks to 0.58 pp higher growth rates of the loan volume (0.25 pp for banks with much capital)
- A bank's z-score is 2.3% (poorly capitalized) and 1.5% (highly capitalized) lower if the current account drops by 1 pp

## Price vs Quantity: Motivation

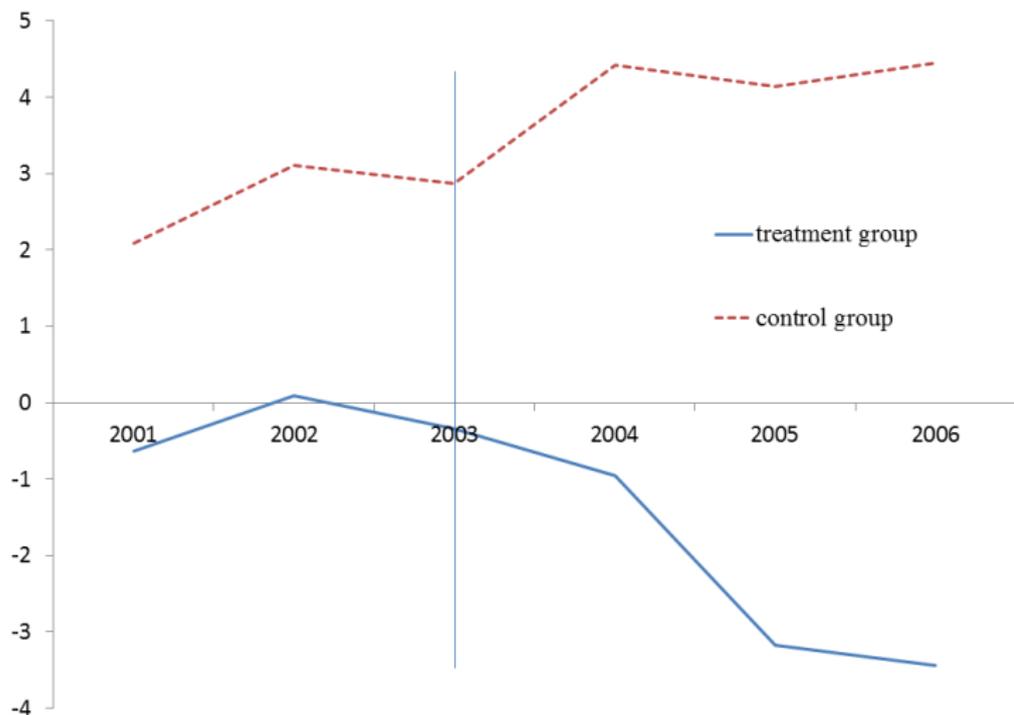
- Acharya and Naqvi (2012) emphasize quantity channel
- Dell´Ariccia and Marquez (2006) underline price channel
- The distinction is important for policy implications: Is the channel distinct from interest rate channel of monetary policy?

## Difference-in-Differences

- We make use of a difference-in-differences analysis to disentangle these channels
- Between 2002 and 2005, interest rates were virtually uniform across EMU countries
- However, the announcement of the EU finance ministers to stop any sanctions against Germany and France in November 2003 led to a divergence of current account balances

⇒ While prices remained constant, the quantity of loanable funds diverged. This exogenous announcement allows to estimate a difference-in-differences regression. Any significant effect can be affiliated to changes in the quantity

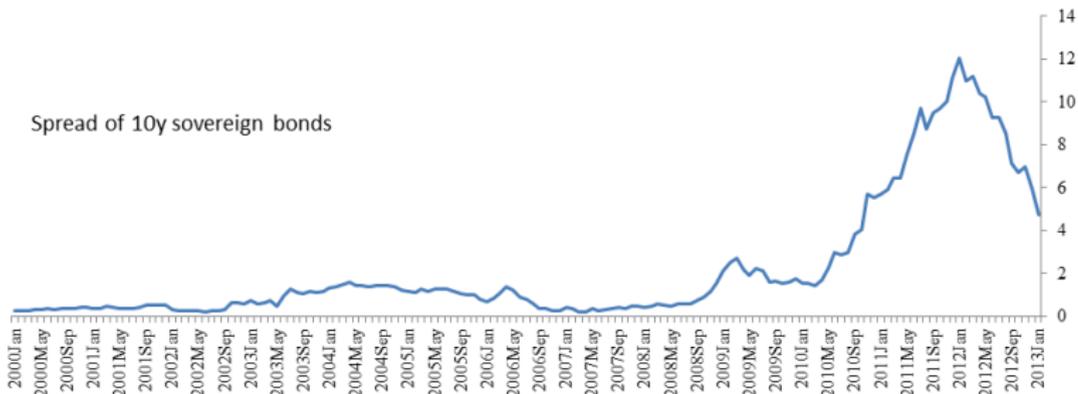
## Difference-in-Differences



This graph displays the evolution of current account balances over GDP across time

# Difference-in-Differences

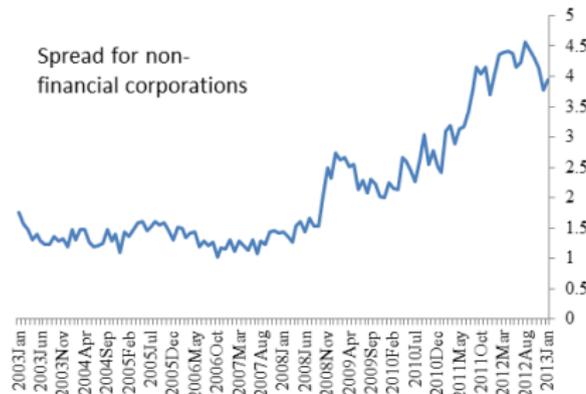
Spread of 10y sovereign bonds



Spread of lending margins for house purchases



Spread for non-financial corporations



## Difference-in-Differences

$$\begin{aligned} \mathit{loans}_{it} = & \alpha_t + \alpha_j + \beta * \mathit{macro}_{j,t-1} + \delta * \mathit{bank}_{i,t-1} \\ & + \gamma * (\mathit{affected} * \mathit{post})_{j,t-1} + (\epsilon_{it} + \alpha_i) \end{aligned}$$

$$\begin{aligned} \mathit{risk}_{it} = & \alpha_t + \alpha_j + \beta * \mathit{macro}_{j,t-2} + \delta * \mathit{bank}_{i,t-2} \\ & + \gamma * (\mathit{affected} * \mathit{post})_{j,t-2} + (\epsilon_{it} + \alpha_i) \end{aligned}$$

- “Post” equals 1 for the years 2004 and 2005, 0 otherwise
- “Affected” equals 1 for banks in Belgium, Finland, Ireland, Portugal, Spain (i.e. banks in countries whose current account balance dropped by more than 1 pp)

## Difference-in-Differences

	(1) loans/assets	(2) bankloans	(3) z_score	(4) impaired loans	(5) loan loss provisions	(6) loan quality
affected*post	3.248 (0.98)	6.949** (2.01)	-0.064*** (-2.98)	7.645* (1.66)	1.263 (0.17)	-0.462 (-0.81)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	10763	10763	10729	1766	6915	1554
R-squared	0.014	0.026	0.110	0.005	0.050	0.156
Theta	0.256	0.509	0.928	0.955	0.736	0.735

t statistics in parentheses

\*  $p < 0.10$  , \*\*  $p < 0.05$  , \*\*\*  $p < 0.01$

This table presents the results for a RE difference-in-differences regression estimated using GLS.

Theta is the median proportion of individual means subtracted from the data.

"Post" equals 1 for the years 2004 and 2005 and 0 for 2002 and 2003.

"Affected" is equal to 1 for banks in Belgium, Finland, Ireland, Spain and Portugal, 0 otherwise.

$R^2$  is calculated overall.

## Market Discipline

- Our findings suggest that investors were not efficiently monitoring bank risks
- Anecdotal evidence: Investors did not believe no-bailout clause => they disrespected downside risks
- Onset of financial crisis generated shifts in risk perception => we expect structural break in our coefficient
- We include a dummy in our analysis that is equal to 1 for the years 2008-2012, 0 else

## Market Discipline

	(1)	(2)	(3)	(4)
	z_score	impaired loans	loan loss provisions	loan quality
currentaccount	0.011** (2.06)	-1.585 (-0.98)	-0.768*** (-4.18)	-0.042*** (-3.03)
crisis*currentaccount	0.012*** (3.92)	-1.751 (-1.14)	-1.104*** (-2.92)	-0.035** (-2.31)
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Obs	31976	8754	25770	6444
R-squared	0.160	0.063	0.063	0.153
Theta	0.918	0.400	0.669	0.768

*t* statistics in parentheses

\*  $p < 0.10$  , \*\*  $p < 0.05$  , \*\*\*  $p < 0.01$

Results are from a RE model estimated using GLS.  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data.

All variables and their sources are as defined in table 1.

“Crisis” is equal to 1 for the years 2008-2012, 0 otherwise.

## Market Discipline

- Test suggests that bank risk-taking increased even further after 2007
- However, shift in risk perception led to drain of private capital which was replaced by risk-insensitive public capital
- We additionally interact *crisis* \* *currentaccount* with a measure for a country's dependence on public capital (proxied by its TARGET2 balances)
- Is a larger fraction of public capital financing external deficits responsible for the risk-increasing effect of capital flows after 2007?

## Market Discipline

	(1)	(2)	(3)	(4)
	z_score	impaired loans	loan loss provisions	loan quality
currentaccount	0.014*** (2.68)	-2.648 (-1.41)	-0.883*** (-5.41)	-0.041** (-2.56)
crisis*currentaccount	-0.010 (-1.07)	2.280 (0.62)	0.689 (0.65)	-0.020 (-0.95)
crisis*currentaccount*target	0.034*** (3.11)	-6.583* (-1.68)	-2.466** (-2.31)	-0.017 (-0.45)
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Obs	31976	8754	25770	6444
R-squared	0.160	0.066	0.066	0.156
Theta	0.919	0.401	0.669	0.768

*t* statistics in parentheses

\*  $p < 0.10$  , \*\*  $p < 0.05$  , \*\*\*  $p < 0.01$

Results are from a RE model,  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data.

All variables are as defined in table 1. The single components of the triple interaction term are included.

"Crisis" is equal to 1 for the years 2008-2012, 0 otherwise.

"Target" is equal to 1 if a country is overproportionally dependent on public capital flows.

## Market Discipline

- International investors seem to have neglected the downside risks of their investments before the financial crisis
- Obviously, the onset of the financial crisis led to a shift in risk perception => Investors intensified bank monitoring
- Overall, however, market discipline did not increase because public capital mostly replaced private capital
- This fits to Levine (2004) who stresses the importance of private agents for market discipline

## Conclusion

- Current account deficits are associated with more bank lending and higher bank risks
- Overproportional effect for poorly capitalized banks
- Bank risks increase because banks replace safer assets with riskier loans and because average loan quality deteriorates
- Effect is distinct from the typical interest rate channel of monetary policy

# Baseline Results

	(1)	(2)	(3)	(4)	(5)	(6)
	loans/assets	bankloans	z_score	impaired loans	loan loss provisions	loan quality
currentaccount	-0.316* (-1.96)	-0.312 (-1.45)	0.017*** (3.09)	-2.492 (-1.10)	-1.063*** (-3.87)	-0.058*** (-3.41)
capital	0.081 (0.22)	-2.608** (-2.51)	0.118*** (7.48)	-21.988*** (-3.89)	-2.343** (-2.48)	0.031 (1.52)
profitability	0.356 (0.72)	1.656* (1.95)	0.019*** (3.94)	-9.100*** (-5.71)	-1.275* (-1.83)	-0.056*** (-4.05)
size	0.029 (0.91)	0.085** (2.29)	-0.001*** (-4.81)	-0.338*** (-3.77)	-0.018 (-0.71)	-0.006*** (-6.35)
liquidity	6.240* (1.79)	5.180 (1.52)	0.005 (0.30)	8.300*** (3.32)	2.361 (1.35)	0.183*** (3.34)
balancestructure_level	-0.273*** (-4.30)					
growth	-0.056 (-0.17)	0.888** (2.19)	-0.010 (-0.70)	-2.505 (-0.74)	0.087 (0.09)	-0.033 (-1.19)
bondyield	-0.193*** (-3.25)	-0.176*** (-7.04)	-0.007** (-2.40)	0.833** (2.27)	1.347*** (6.37)	0.018*** (4.44)
percapitagdp	0.512 (1.43)	0.801 (1.59)	0.055*** (3.15)	-14.175* (-1.83)	-6.239*** (-3.62)	-0.152** (-2.36)
bankloans_level		-4.748*** (-3.75)				
constant	-1.452 (-0.13)	4.621 (0.24)	1.283** (2.45)	530.825** (2.35)	226.388*** (4.49)	1.807 (0.95)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	32117	32117	27005	8754	25770	6444
R-squared	0.009	0.018	0.162	0.063	0.062	0.151
Theta	0.471	0.522	0.913	0.400	0.668	0.768

t statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Results are from a RE model estimated using GLS. The displayed  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data. Theta = 1: RE estimator = FE estimator.

All variables and their sources are as defined in table 1.

# With Interaction

	(1)	(2)	(3)	(4)	(5)	(6)
	loans/assets	bankloans	z_score	impaired_loans	loan_loss_provisions	loan_quality
currentaccount	-0.429** (-1.97)	-0.576* (-1.82)	0.023*** (4.30)	-3.791* (-1.72)	-1.441*** (-4.68)	-0.065*** (-2.93)
capita l*currentaccount	0.141 (1.04)	0.329** (2.13)	-0.008*** (-2.97)	1.624 (1.21)	0.466 (1.28)	0.009 (0.69)
capita l	1.800 (1.02)	-5.871*** (-2.66)	0.055** (2.03)	-17.139 (-0.59)	2.469 (1.00)	0.020 (0.07)
profitability	0.364 (0.73)	1.666* (1.95)	0.019*** (3.95)	-9.181*** (-5.91)	-1.272* (-1.85)	-0.054*** (-3.83)
size	0.028 (0.89)	0.084** (2.28)	-0.001*** (-4.71)	-0.329*** (-3.85)	-0.021 (-0.87)	-0.006*** (-6.62)
liquidity	6.256* (1.80)	5.170 (1.52)	0.005 (0.32)	8.163*** (3.25)	2.350 (1.33)	0.183*** (3.35)
balancestructure_level	-0.272*** (-4.30)					
growth	-0.377 (-0.93)	0.769** (2.31)	-0.010 (-0.64)	-1.034 (-0.29)	0.024 (0.02)	-0.036 (-1.29)
bondyield	-0.095 (-1.11)	-0.082 (-1.47)	-0.006* (-1.86)	0.657 (1.38)	1.375*** (6.06)	0.022*** (5.22)
percapitagdp	0.576 (1.54)	0.738 (1.39)	0.053*** (3.01)	-14.430* (-1.91)	-6.049*** (-3.51)	-0.153** (-2.14)
capita l*percapitagdp	-0.104* (-1.80)	0.066 (1.12)	0.003*** (3.84)	0.084 (0.08)	-0.246** (-2.07)	0.001 (0.08)
capita l*eonis	-0.001 (-0.08)	0.002 (0.19)	0.001*** (2.80)	0.230 (1.26)	-0.057 (-1.23)	0.001 (0.84)
capita l*growth	0.402 (1.57)	0.142 (0.73)	-0.001 (-0.27)	-1.843 (-1.47)	0.060 (0.30)	0.003 (0.41)
capita l*bondyield	-0.122* (-1.85)	-0.116* (-1.82)	-0.001 (-0.77)	0.263 (0.36)	-0.043 (-0.34)	-0.004*** (-2.68)
bankloans_level		-4.752*** (-3.74)				
constant	-2.304 (-0.19)	7.543 (0.37)	1.324** (2.48)	532.153** (2.42)	223.098*** (4.42)	1.810 (0.87)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	32117	32117	27005	8754	25770	6444
R-squared	0.009	0.019	0.163	0.064	0.062	0.151
T heta	0.470	0.521	0.913	0.400	0.668	0.768

t statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Results are from a RE model estimated using GLS. The displayed  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data. Theta = 1: RE estimator = FE estimator.

All variables and their sources are as defined in table 1.

# Bankflows included

	(1) loans/assets	(2) bankloans	(3) z_score	(4) impaired loans	(5) loan loss provisions	(6) loan quality
currentaccount	-0.369** (-2.14)	-0.313 (-1.49)	0.016*** (2.83)	-2.539 (-1.07)	-1.178*** (-5.70)	-0.064*** (-3.26)
bankflows	0.062 (0.93)	0.001 (0.01)	0.000 (0.23)	0.036 (0.30)	0.148 (1.17)	0.003 (1.45)
capital	0.088 (0.23)	-2.608** (-2.51)	0.217*** (5.47)	-21.980*** (-3.87)	-2.329** (-2.48)	0.031 (1.55)
profitability	0.364 (0.73)	1.656* (1.94)	0.034*** (2.69)	-9.088*** (-5.77)	-1.274* (-1.83)	-0.054*** (-3.94)
size	0.029 (0.93)	0.085** (2.28)	-0.002*** (-4.17)	-0.338*** (-3.75)	-0.017 (-0.69)	-0.006*** (-6.47)
liquidity	6.238* (1.79)	5.180 (1.52)	0.022* (1.80)	8.309*** (3.30)	2.326 (1.34)	0.183*** (3.36)
balancestructure_level	-0.273*** (-4.30)					
growth	-0.093 (-0.31)	0.887** (2.35)	0.003 (0.23)	-2.452 (-0.75)	-0.131 (-0.16)	-0.034 (-1.32)
bondyield	-0.201*** (-3.59)	-0.176*** (-7.17)	-0.005*** (-3.96)	0.826** (2.13)	1.301*** (7.36)	0.018*** (4.06)
percapitagdp	0.784*** (3.22)	0.806*** (3.04)	0.036*** (2.70)	-14.120* (-1.79)	-5.538*** (-3.94)	-0.149** (-2.14)
bankloans_level		-4.748*** (-3.75)				
constant	-9.547 (-1.30)	4.462 (0.36)	1.749*** (4.72)	529.093** (2.29)	205.519*** (5.07)	1.727 (0.84)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	32117	32117	31976	8754	25770	6444
R-squared	0.009	0.018	0.159	0.063	0.062	0.152
Theta	0.471	0.522	0.918	0.400	0.668	0.768

t statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Results are from a RE model estimated using GLS. The displayed  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data. Theta = 1: RE estimator = FE estimator.

All variables and their sources are as defined in table 1.

# Difference-in-Differences

	(1)	(2)	(3)	(4)	(5)	(6)
	loans/assets	bankloans	z_score	impaired loans	loan loss provisions	loan quality
affected*post	3.248 (0.98)	6.949** (2.01)	-0.064*** (-2.98)	7.645* (1.66)	1.263 (0.17)	-0.462 (-0.81)
capital	1.428 (1.32)	-1.498 (-1.33)	0.076*** (3.29)	2.078 (0.40)	0.510 (0.37)	0.167*** (5.84)
profitability	0.197 (0.25)	1.183 (1.07)	0.022*** (4.66)	3.053 (0.90)	0.248 (0.62)	0.015 (1.59)
size	0.013 (0.21)	0.003 (0.05)	-0.001** (-1.98)	-0.020 (-0.64)	0.012 (0.35)	-0.003*** (-2.94)
liquidity	14.511* (1.67)	16.611* (1.68)	0.001 (0.14)	-2.009 (-0.84)	0.273 (0.09)	0.312*** (3.04)
balancestructure_level	-0.071 (-1.26)					
growth	0.586 (0.17)	0.876 (0.27)	0.006 (0.50)	-3.493** (-2.06)	2.983 (1.32)	0.015 (0.09)
bondyield	0.133 (0.48)	-0.121 (-0.42)	-0.005 (-0.85)	-0.867 (-0.45)	-1.626*** (-4.08)	-0.079 (-0.81)
percapitagdp	0.560 (0.52)	3.508*** (5.62)	-0.009 (-0.52)	-18.875** (-2.41)	-8.207*** (-3.69)	-0.822* (-1.69)
bankloans_level		-3.356*** (-2.75)				
constant	-16.226 (-0.57)	-79.804*** (-4.35)	3.202*** (6.44)	563.224** (2.55)	245.898*** (3.91)	19.701 (1.45)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	10763	10763	10729	1766	6915	1554
R-squared	0.014	0.026	0.110	0.005	0.050	0.156
Theta	0.256	0.509	0.928	0.955	0.736	0.735

t statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

This table presents the results for a RE difference-in-differences regression estimated using GLS.

Theta is the median proportion of individual means subtracted from the data.

"Post" equals 1 for the years 2004 and 2005 and 0 for 2002 and 2003.

"Affected" is equal to 1 for banks in Belgium, Finland, Ireland, Spain and Portugal, 0 otherwise.

R<sup>2</sup> is calculated overall.

# Market Discipline (1)

	(1)	(2)	(3)	(4)
	z_score	impaired loans	loan loss provisions	loan quality
currentaccount	0.011** (2.06)	-1.585 (-0.98)	-0.768*** (-4.18)	-0.042*** (-3.03)
crisis*currentaccount	0.012*** (3.92)	-1.751 (-1.14)	-1.104*** (-2.92)	-0.035** (-2.31)
capital	0.217*** (5.48)	-21.935*** (-3.87)	-2.379** (-2.48)	0.032 (1.55)
profitability	0.034*** (2.70)	-9.140*** (-5.81)	-1.283* (-1.82)	-0.056*** (-4.18)
size	-0.002*** (-4.18)	-0.336*** (-3.68)	-0.014 (-0.54)	-0.006*** (-6.15)
liquidity	0.023* (1.91)	8.299*** (3.26)	2.117 (1.19)	0.183*** (3.44)
growth	0.008 (0.81)	-2.818 (-0.78)	-0.304 (-0.33)	-0.046 (-1.59)
bondyield	-0.004*** (-2.69)	0.644 (1.56)	1.020*** (3.76)	0.015*** (4.32)
percapitagdp	0.019 (1.42)	-13.237 (-1.63)	-4.442** (-2.31)	-0.138** (-2.23)
constant	2.254*** (5.97)	501.145** (2.12)	172.166*** (3.06)	1.392 (0.78)
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Obs	31976	8754	25770	6444
R-squared	0.160	0.063	0.063	0.153
Theta	0.918	0.400	0.669	0.768

t statistics in parentheses

\*  $p < 0.10$  , \*\*  $p < 0.05$  , \*\*\*  $p < 0.01$

Results are from a RE model estimated using GLS.  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data.

All variables and their sources are as defined in table 1.

"Crisis" is equal to 1 for the years 2008-2012, 0 otherwise.

# Market Discipline (2)

	(1)	(2)	(3)	(4)
	z_score	impaired loans	loan loss provisions	loan quality
current account	0.014*** (2.68)	-2.648 (-1.41)	-0.883*** (-5.41)	-0.041** (-2.56)
crisis*current account	-0.010 (-1.07)	2.280 (0.62)	0.689 (0.65)	-0.020 (-0.95)
crisis*current account*target	0.034*** (3.11)	-6.583* (-1.68)	-2.466** (-2.31)	-0.017 (-0.45)
crisis*target	-0.013 (-0.37)	-17.390** (-2.11)	-3.445 (-0.87)	0.125* (1.73)
current account*target	-0.010*** (-4.51)	3.931 (1.60)	0.511 (1.52)	0.011 (0.43)
target	0.006 (0.59)	20.755*** (3.51)	4.546*** (4.25)	-0.004 (-0.10)
capital	0.216*** (5.46)	-22.047*** (-3.88)	-2.373** (-2.47)	0.032 (1.57)
profitability	0.034*** (2.70)	-8.966*** (-5.51)	-1.280* (-1.86)	-0.054*** (-3.73)
size	-0.002*** (-4.20)	-0.328*** (-3.46)	-0.011 (-0.41)	-0.006*** (-5.50)
liquidity	0.023* (1.82)	8.395*** (3.44)	2.361 (1.36)	0.184*** (3.40)
growth	0.008 (0.82)	-3.065 (-1.01)	-0.146 (-0.13)	-0.069** (-2.25)
bond yield	-0.003** (-2.22)	0.601** (2.07)	1.139*** (4.35)	0.015*** (4.89)
percentage p	0.022* (1.91)	-11.801* (-1.83)	-5.243*** (-2.75)	-0.119** (-2.07)
constant	2.176*** (6.53)	437.462** (2.37)	190.638*** (3.51)	0.859 (0.52)
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Obs	31976	8754	25770	6444
R-squared	0.160	0.066	0.066	0.156
Theta	0.919	0.401	0.669	0.768

t statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Results are from a RE model,  $R^2$  is calculated overall.

Theta is the median proportion of individual means subtracted from the data.

All variables are as defined in table 1. The single components of the triple interaction term are included.

'Crisis' is equal to 1 for the years 2008-2012, 0 otherwise.

'Target' is equal to 1 if a country is overproportionally dependent on public capital flows.

# Exogeneity Assumption

- **short-run determinants:**
  - domestic and foreign monetary as well as fiscal policy
  - Uribe and Schmitt- Grohé (2014): current account balance only lowly correlated with GDP
- **long-run determinants:**
  - Bluedorn (2013): risk-aversion of large international investors and global financing conditions
  - Bruno and Shin (2013): global factors dominate local factors
  - Rey (2013): describes a global capital flow cycle
- European current account balances firmly influenced by political decisions