The Effects of QE on Bank Lending Behavior

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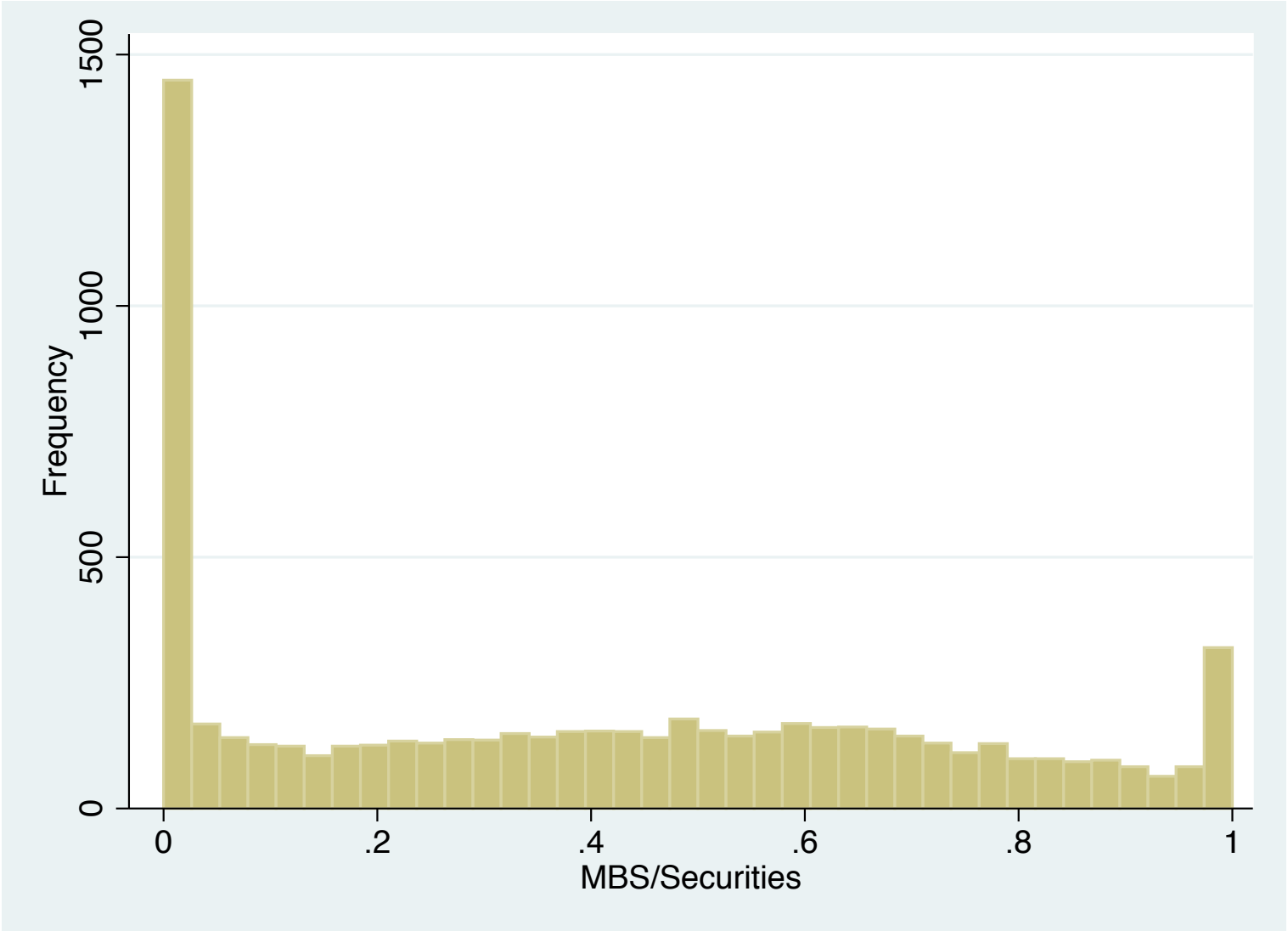
Motivation

- Key questions:
  - What are the effects of *unconventional* monetary policy?
  - How does its transmission mechanisms work?
- Background:
  - Credit market disruptions have devastating real effects.
  - So look at the effects of QE on bank lending behavior.
- Our Approach:
  - Diff-in-Diff identification strategy (bank-level)
  - Khwaja-Mian within-firm estimator (loan-level)

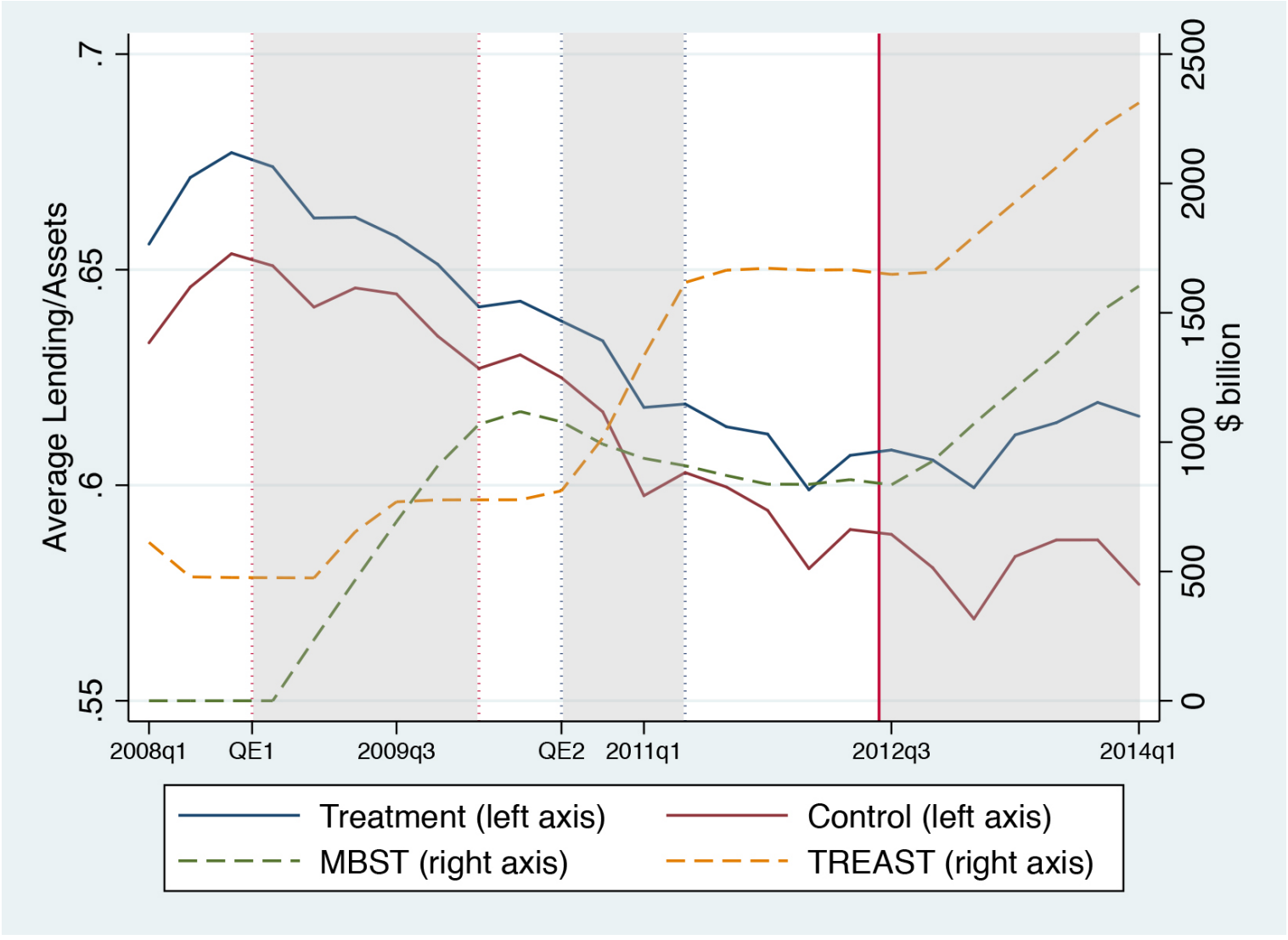
Preview of Findings

- QE3:
  - Treatment effect on total lending $\approx$ 2.8% – 3.3%
  - Real-estate and C&I lending significantly affected
  - Effects are stronger for smaller banks
- QE2: no significant impact (as expected)
- QE1:
  - Treatment effect on total lending $\approx$ 2.2% – 2.9%
  - Real-estate and C&I lending significantly affected
- Key takeaway: type of asset and not just quantity

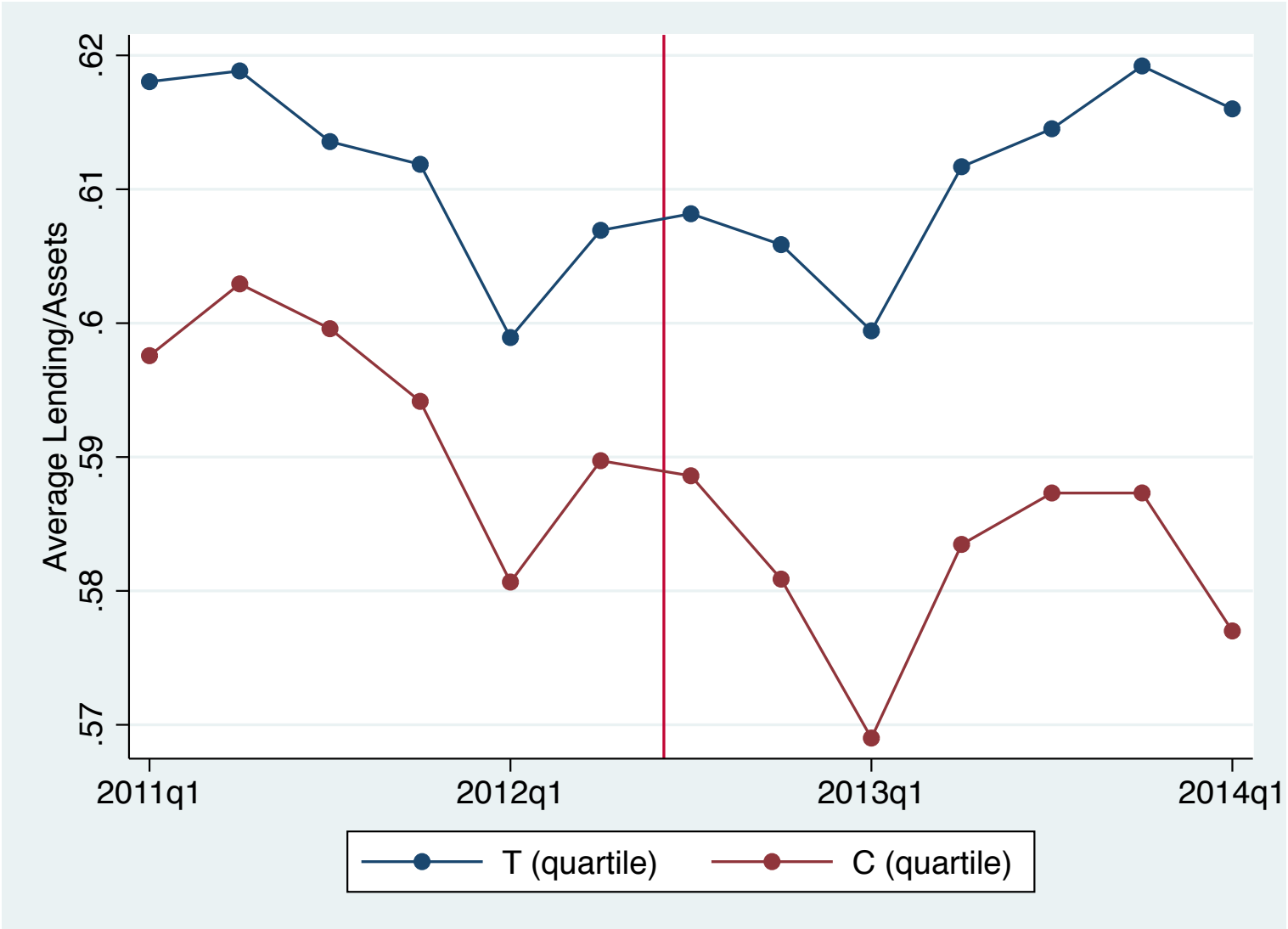
Cross-Sectional Variation in MBS Holdings (2012Q2)



Fed's MBS and T-Bill Holdings



Total lending: treatment (T) vs. control (C)



QE3: DD Regression around 2012Q3

- Estimate following specification:

$$Y_{i,t} = \alpha + \beta T_i + \gamma QE_t + \delta (T_i \cdot QE_t) + \theta' X_{i,t} + \lambda' X_{i,t} QE_t + \nu_{i,t}$$

  where:
  - $Y_{i,t} = \log(lending_{i,t})$
  - $X_{i,t}$: size, equity/asset, $\overline{RE\ lending}$/assets (specialization), ROA

- Parameter of interest: δ (captures difference between T&C)

- Robust to re-defining the QE_t period indicator:
  - 1, 2, or 3 periods around QE shock
  - or 3-period averages around QE shock

- All standard errors are clustered at the bank-level

DD Regressions: 3-period-averages around 2012$Q3$

	$\log(Lending_{it})$				$\log(RE\ Lending_{it})$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
QE_t	-0.092	-0.046	-0.086**	-0.009	-0.009	0.030	0.027	0.097
	[0.059]	[0.031]	[0.042]	[0.063]	[0.046]	[0.050]	[0.042]	[0.069]
$Treat_i$	-0.051***				0.014			
	[0.011]				[0.012]			
$Treat_i \cdot QE_t$	0.028**	0.018***			0.024***	0.024***		
	[0.013]	[0.005]			[0.006]	[0.006]		
$\left(\frac{MBS}{Sec}\right)_i$			-0.062***				0.014	
			[0.011]				[0.014]	
$\left(\frac{MBS}{Sec}\right)_i \cdot QE_t$			0.033***	0.025***			0.033***	0.031***
			[0.011]	[0.006]			[0.008]	[0.007]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls $\cdot QE_t$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Observations	6,107	6,107	12,350	12,350	6,076	6,076	12,300	12,300
Number of banks	3,055	3,055	6,177	6,177	3,039	3,039	6,152	6,152
R^2	0.954	0.416	0.959	0.476	0.959	0.324	0.957	0.407

SEs [in brackets] are clustered at the bank-level

*** p<0.01, ** p<0.05, * p<0.1

Fixed-Effects Lead&Lags Specification

- Estimate following specification:

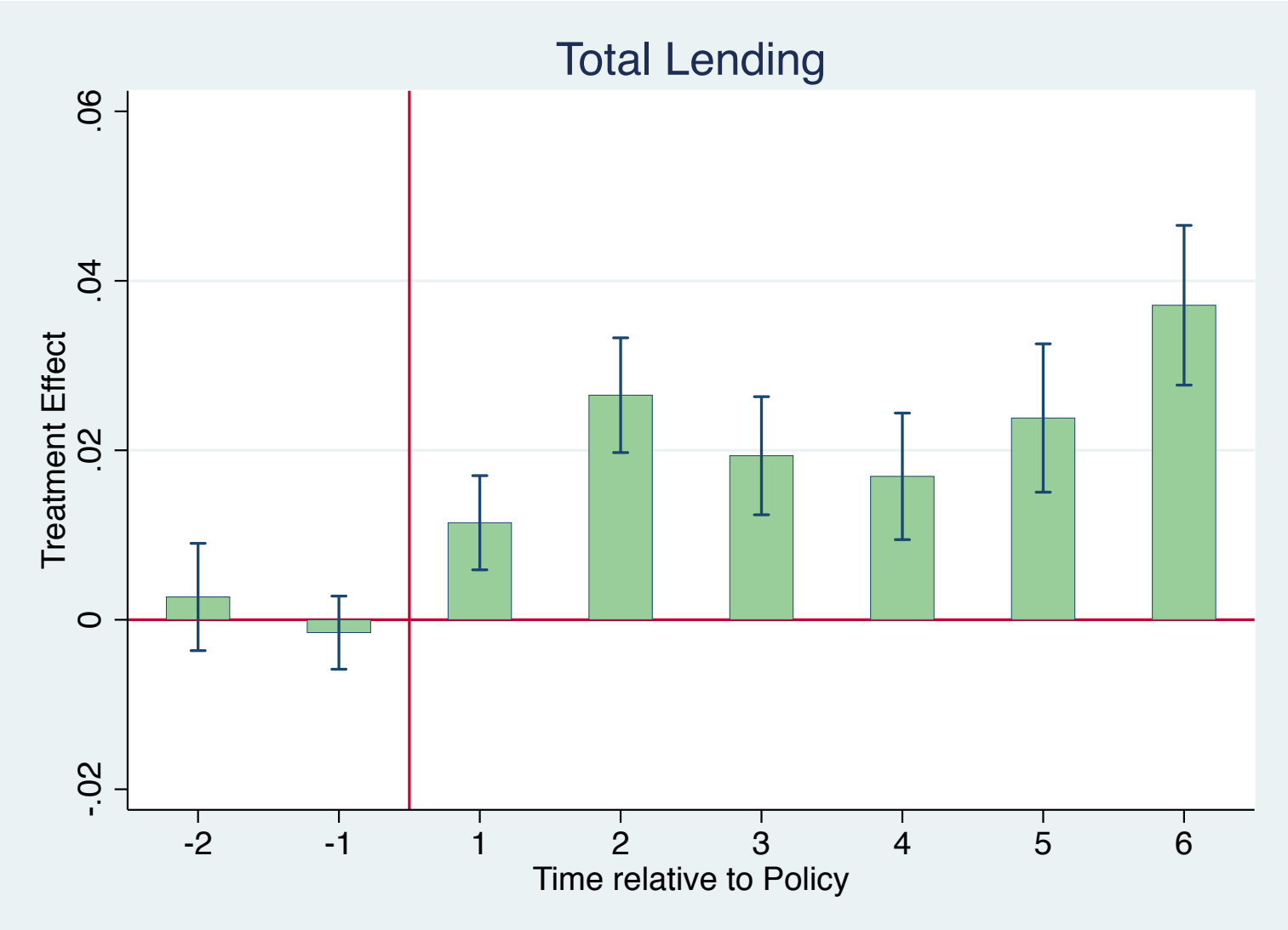
$$\log(Y_{it}) = \alpha_i + \sum_t \gamma_t \mathbf{D}_t + \sum_t \delta_t \left(\mathbf{D}_t \cdot Treat_i\right) + X_{it}'\theta + \epsilon_{it}$$
$$\forall i,\ \forall t \in \{2012Q1, \ldots, 2014Q1\} \setminus \{2012Q3\}$$

  where:
  - Y_{it} = lending
  - $X_{i,t}$: size, equity/asset, ROA

- Parameters of interest: δ_t (captures difference between T&C)

- All standard errors are clustered at the bank-level

FE coefficient plots: total lending



Conclusion

- QE1 & QE3 had large and significant effects on lending
- QE2 did not affect bank lending
- Type of asset and not just quantity is key for LSAPs