

# Unconventional Monetary Policy and Risk-Taking: Evidence from Agency Mortgage REITs

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- ▶ Federal Reserve reduced overnight interest rate (effectively) to zero lower bound and engaged in large-scale asset purchases
- ▶ These purchases lowered long-term interest rates as intended
- ▶ However, growing concern about the heightened potential for financial stability risks

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# Literature: Monetary Policy and Financial Stability Risks

- ▶ Theories about “reaching for yield” (Bernanke, 2013; Stein, 2013), exacerbated by agency problems  
Acharya and Naqvi (2015); Feroli, Kashyap, Schoenholtz, and Shin (2014); Morris and Shin (2016); Rajan (2005)
- ▶ Supported by empirical evidence on heightened risk-taking  
Chodorow-Reich (2014); Choi and Kronlund (2015); DiMaggio and Kacperczyk (2014)
- ▶ Risk taking channel of monetary policy  
Adrian and Shin (2010); Borio and Zhu (2012)

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# This Paper

- ▶ We study Agency Mortgage REITs

  - Hold long-term, mortgage-backed securities (MBS) guaranteed by U.S. government agencies

  - Finance assets with a combination of equity and short-term repurchase agreements: Maturity transformation

- ▶ Agency Mortgage REITs grew markedly during the Federal Reserve's balance sheet expansion

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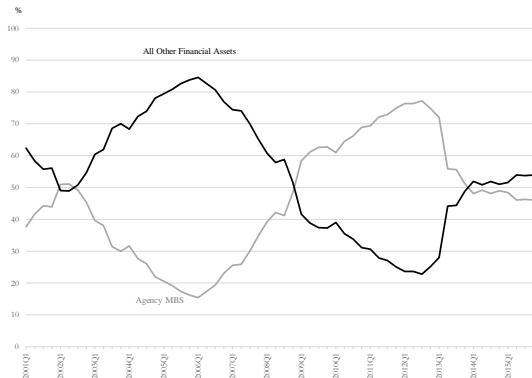
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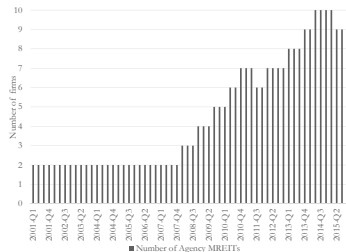
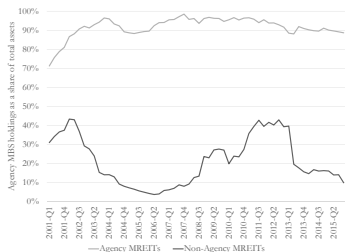
# Background: Mortgage REITs

- ▶ Invest in whole mortgage loans and/or mortgage-related securities backed by properties
- ▶ Since 2007, growing share of investment in Agency MBS



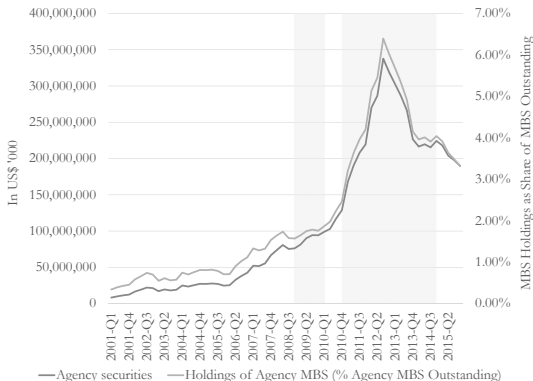
# Background: Agency Mortgage REITs

- ▶ MREIT investment in Agency MBS concentrated in a subset of institutions
- ▶ Following the onset of the financial crisis and through the Great Recession, as many as 10 were in operation



# Background: Agency Mortgage REITs in the Financial Crisis

- ▶ Between 2008:Q4 and 2012:Q3, Agency MREITs increased their holdings of Agency MBS from \$76.2 to \$337.6 billion



## This Paper (ctd.)

- ▶ Dramatic expansion coupled with risks inherent in Agency Mortgage REIT business model raised financial stability concerns (U.S. Financial Stability Oversight Council, 2013)
  - (1) We study the rapid growth of Agency MREITs in terms of total assets and equity issuance, explore performance  
Chodorow-Reich (2014)
  - (2) We examine the relationship between unconventional monetary policy and Agency MREIT risk-taking  
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# Data

- ▶ Firm data from SNL Financial from 2000:Q1 to 2015:Q4
- ▶ Interest rate data from FRED: Level (3m CMT) and slope of the term structure (10y–3m CMT), option-adjusted mortgage spread (Barclays US MBS Fixed Rate Average OAS)
- ▶ Timeline of the Federal Reserve's unconventional monetary policy actions from the Federal Open Market Committee
- ▶ Quarterly data from FRB NY about the central banks' purchases and holdings of Agency MBS as well as the total amounts of these securities issued and outstanding

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# Method

- ▶ Examine asset growth, equity issuance, equity performance, risk taking (equity to total assets, repo to total assets, cash to total assets, interest rate swaps and swaptions to total repo)

$$DepVar_{it} = \beta_1 Int_t + \beta_2 FirmCh_t + \beta_3 MPR_{it} + \beta_4 f_i + \epsilon_{it}$$

- ▶ Interest rate variables: Federal Reserve's policy rate, slope of the term structure, OAS
- ▶ Firm characteristics: Equity issuance, repurchase activity, capital structure characteristics (lagged)
- ▶ MPR: QE1, QE2, MEP, QE3, and Tapering (alternatively: Federal Reserve purchase shares of Agency MBS)
- ▶ Fixed effects panel model, standard errors clustered by firm

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# Results: Asset Growth

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3-Month CMT	0.026 (0.02)	0.009 (0.01)	0.024 (0.02)	-0.010 (0.01)	0.024 (0.02)	-0.015* (0.01)	0.064* (0.03)	0.020 (0.02)
CMT Term Structure	0.020 (0.04)	0.002 (0.01)	0.014 (0.03)	-0.043** (0.01)	0.014 (0.03)	-0.043*** (0.01)	0.088 (0.06)	0.016 (0.03)
Option-Adjusted Spread	-0.100 (0.07)	-0.022 (0.02)	-0.098 (0.07)	-0.021 (0.01)	-0.098 (0.08)	-0.027* (0.01)	-0.122 (0.08)	-0.031* (0.02)
Issued Equity	0.255** (0.09)		0.222** (0.08)		0.222** (0.08)		0.207** (0.08)	
Repurchased Shares	-0.099** (0.04)		-0.080* (0.04)		-0.080* (0.04)		-0.061 (0.04)	
Amount of Equity Issued		8.017*** (1.08)		7.739*** (1.08)		7.724*** (1.03)		7.592*** (1.01)
Number of Shares Repurchased		-1.617*** (0.47)		-1.211** (0.47)		-1.050** (0.47)		-0.899* (0.46)
QE1			-0.051 (0.10)	0.085** (0.03)	-0.052 (0.11)	0.145** (0.05)	-0.491 (0.30)	-0.144 (0.11)
QE2			0.189** (0.06)	0.118*** (0.03)	0.189*** (0.06)	0.099*** (0.02)	0.147** (0.05)	0.081*** (0.02)
MEP			0.048 (0.05)	0.015 (0.02)	0.048 (0.05)	0.019 (0.02)	0.106* (0.05)	0.053* (0.03)
QE3			-0.044 (0.03)	-0.034** (0.01)	-0.044 (0.04)	0.004 (0.02)	0.323** (0.12)	0.242*** (0.08)
Tapering			-0.028 (0.04)	-0.012 (0.01)	-0.029 (0.03)	0.024 (0.02)	-0.120 (0.09)	0.030 (0.05)
Fed Purchase Share					0.001 (0.11)	-0.126* (0.06)		
Fed Purchase Share QE1							0.607 (0.35)	0.280 (0.17)
Fed Purchase Share QE3							-0.744** (0.28)	-0.558*** (0.16)
Fed Purchase Share Taper							0.170 (0.21)	-0.106 (0.11)
Observations	238	238	238	238	238	238	238	238
R-squared	0.313	0.810	0.373	0.828	0.373	0.832	0.399	0.839
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm clusters	12	12	12	12	12	12	12	12

# Results: Equity Issuance

VARIABLES	Issued Equity				Amount Issued			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
3-Month CMT	0.119** (0.04)	0.095*** (0.02)	0.078** (0.03)	0.163*** (0.05)	0.006* (0.00)	0.008** (0.00)	0.008** (0.00)	0.011* (0.01)
CMT Term Structure	0.166* (0.08)	0.084** (0.04)	0.085** (0.04)	0.220** (0.09)	0.008 (0.00)	0.010* (0.01)	0.010* (0.01)	0.016 (0.01)
Option-Adjusted Spread	0.271 (0.15)	0.255 (0.18)	0.241 (0.17)	0.291 (0.18)	-0.002 (0.01)	-0.004 (0.01)	-0.004 (0.01)	-0.005 (0.01)
L.Market-to-Book Value of Equity	1.143*** (0.26)	0.840*** (0.22)	0.737*** (0.20)	0.664*** (0.19)	0.049* (0.02)	0.036* (0.02)	0.037* (0.02)	0.029* (0.01)
QE1		0.273 (0.24)	0.506** (0.22)	0.179 (0.57)		-0.010 (0.01)	-0.010 (0.01)	-0.043 (0.04)
QE2		0.367*** (0.09)	0.309*** (0.10)	0.306*** (0.09)		0.019** (0.01)	0.019** (0.01)	0.016** (0.01)
MEP		0.262*** (0.08)	0.280*** (0.08)	0.350** (0.11)		0.013 (0.01)	0.013 (0.01)	0.018* (0.01)
QE3		-0.037 (0.03)	0.114* (0.06)	0.788* (0.36)		-0.004 (0.00)	-0.004 (0.01)	0.032 (0.02)
Tapering		-0.013 (0.11)	0.119 (0.10)	0.074 (0.09)		-0.002 (0.01)	-0.002 (0.00)	-0.015 (0.01)
Fed Purchase Share			-0.474** (0.16)				0.000 (0.02)	
Fed Purchase Share QE1				-0.015 (0.68)				0.045 (0.04)
Fed Purchase Share QE3				-1.653** (0.70)				-0.071 (0.04)
Fed Purchase Share Taper				-0.215** (0.08)				0.026 (0.04)
Observations	238	238	238	238	238	238	238	238
R-squared	0.249	0.318	0.333	0.342	0.114	0.192	0.192	0.214
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm clusters	12	12	12	12	12	12	12	12

# Results: Equity Price Return

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3-Month CMT	0.013 (0.01)	0.012 (0.01)	0.004 (0.01)	0.003 (0.01)	0.003 (0.01)	0.004 (0.01)	-0.005 (0.01)	-0.009 (0.01)
CMT Term Structure	0.012 (0.01)	0.010 (0.01)	-0.017 (0.01)	-0.016 (0.01)	-0.016 (0.01)	-0.016 (0.01)	-0.034* (0.02)	-0.040** (0.02)
Option-Adjusted Spread	0.028* (0.02)	0.021 (0.02)	0.041*** (0.01)	0.030** (0.01)	0.041*** (0.01)	0.031* (0.01)	0.077*** (0.01)	0.059*** (0.01)
L.Repo Debt (0-30 days) to Total Repo	0.041 (0.04)	0.035 (0.04)	0.039 (0.04)	0.035 (0.04)	0.038 (0.04)	0.035 (0.04)	0.027 (0.03)	0.025 (0.03)
L.Equity to Total Assets	0.252 (0.58)	0.305 (0.55)	0.076 (0.55)	0.063 (0.55)	0.064 (0.57)	0.068 (0.57)	0.147 (0.53)	0.145 (0.52)
L.Cash to Total Assets	0.110 (0.86)	0.012 (0.88)	-0.109 (0.74)	-0.167 (0.78)	-0.124 (0.76)	-0.158 (0.81)	-0.367 (0.87)	-0.399 (0.90)
L.Swaps and Swaptions to Total Repo	-0.070 (0.05)	-0.065 (0.05)	-0.070 (0.05)	-0.068 (0.05)	-0.066 (0.04)	-0.069 (0.04)	-0.063 (0.04)	-0.067 (0.04)
L.Issued Equity	-0.011 (0.02)		-0.023 (0.02)		-0.025 (0.02)		-0.032 (0.02)	
L.Repurchased Shares	0.035*** (0.01)		0.052*** (0.01)		0.054*** (0.01)		0.051*** (0.01)	
L.Amount of Equity Issued		0.089 (0.22)		-0.131 (0.25)		-0.125 (0.26)		-0.194 (0.29)
L.Number of Shares Repurchased		1.056** (0.36)		1.187** (0.54)		1.166** (0.50)		1.132** (0.42)
QE1			0.094*** (0.02)	0.077*** (0.02)	0.107*** (0.03)	0.071** (0.03)	0.468*** (0.13)	0.422*** (0.12)
QE2			0.087*** (0.03)	0.075** (0.03)	0.084** (0.03)	0.076** (0.03)	0.109*** (0.03)	0.099*** (0.03)
MEP			0.060** (0.02)	0.047** (0.02)	0.061** (0.02)	0.047** (0.02)	0.049* (0.03)	0.031 (0.02)
QE3			-0.013 (0.02)	-0.011 (0.02)	-0.006 (0.01)	-0.014 (0.01)	0.045 (0.07)	0.012 (0.05)
Tapering			0.069*** (0.01)	0.069*** (0.01)	0.075*** (0.02)	0.066*** (0.02)	-0.007 (0.04)	-0.021 (0.03)
Fed Purchase Share					-0.024 (0.06)	0.011 (0.05)		
Fed Purchase Share QE1							-0.552** (0.21)	-0.505** (0.18)
Fed Purchase Share QE3							-0.123 (0.16)	-0.051 (0.14)
Fed Purchase Share Taper							0.170** (0.06)	0.204*** (0.06)
Observations	238	238	238	238	238	238	238	238
R-squared	0.052	0.047	0.150	0.128	0.150	0.128	0.200	0.175
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm clusters	12	12	12	12	12	12	12	12

# Results: Risk Measures

VARIABLES	Equity/Total Assets				Repo/Total Assets				Repo (0-30)/Total Repo				Cash/Total Assets			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
3-Month CMT	-0.004 (0.00)	-0.007** (0.00)	-0.007* (0.00)	-0.007 (0.01)	0.009 (0.01)	0.017 (0.01)	0.018* (0.01)	0.015 (0.01)	0.028 (0.07)	0.016 (0.06)	0.015 (0.06)	0.019 (0.06)	-0.004*** (0.00)	-0.004*** (0.00)	-0.004*** (0.00)	-0.003*** (0.00)
CMT Term Structure	0.007** (0.00)	0.004 (0.00)	0.004 (0.00)	0.003 (0.01)	-0.007 (0.01)	0.000 (0.02)	0.000 (0.02)	-0.004 (0.04)	0.041 (0.03)	0.025 (0.03)	0.025 (0.04)	0.032 (0.04)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
Option-Adjusted Spread	-0.008 (0.01)	-0.006 (0.01)	-0.007 (0.01)	-0.007 (0.01)	0.025** (0.01)	0.025* (0.01)	0.026** (0.01)	0.022 (0.01)	0.030 (0.06)	0.017 (0.07)	0.016 (0.06)	0.001 (0.07)	0.002 (0.00)	0.002 (0.00)	0.002 (0.00)	0.002 (0.00)
L.Swaps and Swaptions to Total Repo	0.003 (0.01)	-0.002 (0.01)	-0.002 (0.01)	-0.003 (0.01)	-0.001 (0.03)	-0.009 (0.04)	-0.018 (0.04)	-0.014 (0.04)	-0.093 (0.09)	-0.042 (0.09)	-0.034 (0.10)	-0.047 (0.10)	-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)
L.Equity to Total Assets									-0.586 (1.33)	-0.732 (1.41)	-0.760 (1.44)	-0.752 (1.44)	0.104*** (0.02)	0.094** (0.03)	0.094** (0.03)	0.096** (0.03)
L.Repo (0-30 days) to Total Repo	0.003 (0.02)	0.003 (0.02)	0.003 (0.02)	0.003 (0.02)	-0.001 (0.03)	0.006 (0.03)	0.008 (0.03)	0.008 (0.03)					0.006** (0.00)	0.006* (0.00)	0.006* (0.00)	0.006* (0.00)
L.Cash to Total Assets	0.472* (0.22)	0.386* (0.21)	0.381* (0.20)	0.402* (0.20)	-0.500 (0.99)	-0.378 (0.87)	-0.321 (0.84)	-0.313 (0.86)	2.293** (0.96)	2.135** (0.82)	2.098** (0.76)	2.299** (0.89)				
QE1		0.003 (0.01)	0.005 (0.01)	-0.004 (0.01)		0.000 (0.01)	-0.021 (0.01)	-0.022 (0.05)		0.021 (0.06)	0.039 (0.10)	-0.158 (0.12)		0.005*** (0.00)	0.005* (0.01)	0.006 (0.01)
QE2		-0.006* (0.00)	-0.007** (0.00)	-0.006* (0.00)		0.021 (0.02)	0.027 (0.02)	0.024 (0.02)		-0.008 (0.05)	-0.013 (0.05)	-0.015 (0.05)		-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)
MEP		-0.006 (0.01)	-0.006 (0.01)	-0.007 (0.01)		0.029* (0.02)	0.028** (0.02)	0.027 (0.02)		-0.017 (0.06)	-0.017 (0.06)	-0.012 (0.06)		0.002 (0.00)	0.002 (0.00)	0.002 (0.00)
QE3		-0.008 (0.01)	-0.007 (0.01)	-0.018 (0.02)		0.036** (0.01)	0.023* (0.01)	-0.008 (0.03)		-0.072 (0.05)	-0.061 (0.06)	-0.099 (0.19)		0.002 (0.00)	0.002 (0.00)	0.007 (0.00)
Tapering		0.007 (0.01)	0.008 (0.01)	0.011 (0.01)		0.031* (0.02)	0.020 (0.01)	0.043*** (0.01)		-0.083*** (0.03)	-0.074* (0.04)	-0.073 (0.05)		0.003 (0.00)	0.003 (0.00)	0.001 (0.00)
Fed Purchase Share			-0.004 (0.02)			0.042 (0.03)					-0.036 (0.11)				0.000 (0.00)	0.000 (0.00)
Fed Purchase Share QE1				0.011 (0.01)				0.039 (0.06)				0.269 (0.17)				-0.002 (0.01)
Fed Purchase Share QE3				0.021 (0.03)			0.091** (0.04)					0.058 (0.35)				-0.010 (0.01)
Fed Purchase Share Taper				-0.010 (0.01)			-0.024 (0.02)					-0.025 (0.11)				0.004 (0.00)
Observations	238	238	238	238	238	238	238	238	238	238	238	238	238	238	238	238
R-squared	0.405	0.456	0.456	0.460	0.148	0.216	0.225	0.225	0.057	0.098	0.098	0.102	0.377	0.411	0.411	0.414
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm clusters	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12



# Results: Hedging

VARIABLES	Swaps/Total Repo				Swaps and Swaptions/Total Repo			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
3-Month CMT	-0.127*** (0.04)	-0.125** (0.05)	-0.107** (0.05)	-0.163*** (0.04)	-0.123** (0.04)	-0.103* (0.05)	-0.083 (0.05)	-0.150*** (0.05)
CMT Term Structure	-0.072** (0.03)	-0.041 (0.04)	-0.042 (0.04)	-0.122** (0.05)	-0.071* (0.03)	-0.017 (0.04)	-0.018 (0.04)	-0.117** (0.05)
Option-Adjusted Spread	-0.147*** (0.04)	-0.127*** (0.03)	-0.104*** (0.03)	-0.124*** (0.02)	-0.153*** (0.04)	-0.124*** (0.03)	-0.097** (0.04)	-0.120*** (0.03)
L.Repo Debt (0-30 days) to Total Repo	-0.056 (0.12)	-0.032 (0.10)	-0.009 (0.09)	-0.022 (0.09)	-0.155 (0.14)	-0.110 (0.12)	-0.083 (0.11)	-0.098 (0.11)
L.Equity to Total Assets	-0.830 (0.89)	-1.233* (0.60)	-0.955* (0.47)	-1.174** (0.52)	-0.698 (0.84)	-0.936 (0.54)	-0.607 (0.44)	-0.859* (0.44)
L.Cash to Total Assets	-0.724 (1.46)	-0.164 (1.26)	0.132 (1.10)	0.246 (1.32)	-0.105 (1.46)	0.540 (1.34)	0.890 (1.10)	1.046 (1.39)
QE1		-0.135*** (0.03)	-0.308*** (0.04)	0.038 (0.10)		-0.163*** (0.04)	-0.368*** (0.07)	0.051 (0.11)
QE2		-0.112*** (0.03)	-0.049* (0.03)	-0.050 (0.03)		-0.124*** (0.04)	-0.050* (0.03)	-0.047 (0.04)
MEP		-0.092** (0.04)	-0.094** (0.04)	-0.134*** (0.03)		-0.073* (0.04)	-0.076** (0.03)	-0.125*** (0.03)
QE3		-0.055 (0.05)	-0.160*** (0.04)	-0.473*** (0.10)		0.005 (0.06)	-0.120** (0.05)	-0.510*** (0.12)
Tapering		0.026 (0.06)	-0.074 (0.05)	-0.074 (0.06)		0.074 (0.07)	-0.044 (0.04)	-0.054 (0.07)
Fed Purchase Share			0.361*** (0.08)				0.426*** (0.12)	
Fed Purchase Share QE1				-0.160 (0.14)				-0.196 (0.17)
Fed Purchase Share QE3				0.851*** (0.22)				1.048*** (0.30)
Fed Purchase Share Taper				0.234** (0.10)				0.299** (0.10)
Observations	238	238	238	238	238	238	238	238
R-squared	0.310	0.367	0.417	0.406	0.283	0.359	0.415	0.408
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm clusters	12	12	12	12	12	12	12	12

# Robustness: Contrast to Non-Agency Mortgage REITs I

VARIABLES	(1) Asset growth	(2) Asset growth	(3) Asset growth	(4) Asset growth
3-Month CMT	-0.002 (0.03)	0.023* (0.01)	0.018 (0.01)	0.038** (0.02)
CMT Term Structure	-0.026 (0.04)	-0.005 (0.03)	-0.007 (0.03)	0.025 (0.05)
Option-Adjusted Spread	-0.084 (0.06)	-0.083 (0.06)	-0.093 (0.06)	-0.089 (0.06)
Amount of Equity Issued	2.054** (0.77)	1.966** (0.72)	1.962** (0.72)	1.954** (0.71)
Number of Shares Repurchased	-2.490** (0.57)	-1.705** (0.44)	-1.652** (0.40)	-1.457** (0.34)
Agency MREIT	0.005 (0.04)	0.014 (0.04)	0.013 (0.05)	0.013 (0.04)
QE1		-0.011 (0.03)	0.041 (0.05)	0.031 (0.20)
QE2		0.031 (0.05)	0.013 (0.05)	0.009 (0.06)
MEP		0.080 (0.06)	0.080 (0.06)	0.097 (0.06)
QE3		0.185 (0.18)	0.218 (0.18)	0.304 (0.40)
Tapening		0.054 (0.04)	0.085* (0.05)	0.101 (0.08)
Agency MREIT*QE1		0.065 (0.07)	0.061 (0.07)	-0.292 (0.22)
Agency MREIT*QE2		0.251** (0.11)	0.252** (0.11)	0.251** (0.12)
Agency MREIT*MEP		0.054 (0.08)	0.054 (0.08)	0.053 (0.08)
Agency MREIT*QE3		-0.197 (0.18)	-0.199 (0.19)	0.056 (0.36)
Agency MREIT*Taper		-0.047 (0.06)	-0.048 (0.05)	-0.136 (0.09)
Fed Purchase Share			-0.111 (0.07)	
Agency MREIT*Fed Purchase Share			0.005 (0.14)	
Fed Purchase Share QE1				-0.111 (0.27)
Fed Purchase Share QE3				-0.237 (0.49)
Fed Purchase Share Taper				-0.105 (0.11)
Agency MREIT*Fed Purchase Share QE1				0.573* (0.31)
Agency MREIT*Fed Purchase Share QE3				-0.537 (0.45)
Agency MREIT*Fed Purchase Share Taper				0.186 (0.15)
Constant	0.172* (0.10)	0.058 (0.09)	0.086 (0.09)	-0.013 (0.14)
Observations	925	925	925	925
R-squared	0.047	0.055	0.055	0.056
Firm clusters	41	41	41	41

# Robustness: Contrast to Non-Agency Mortgage REITs II

VARIABLES	(1) Equity issued	(2) Equity issued	(3) Equity issued	(4) Equity issued
3-Month CMT	-0.003 (0.02)	0.004 (0.02)	-0.003 (0.02)	0.045 (0.03)
CMT Term Structure	0.033 (0.04)	-0.001 (0.03)	-0.001 (0.03)	0.080 (0.06)
Option-Adjusted Spread	0.063 (0.06)	0.067 (0.07)	0.050 (0.07)	0.041 (0.07)
LMarket-to-Book Value of Equity	0.028 (0.03)	0.022 (0.02)	0.021 (0.02)	0.021 (0.02)
Agency MREIT	0.089** (0.04)	0.108** (0.05)	0.197*** (0.06)	0.109** (0.05)
QE1		0.013 (0.05)	-0.007 (0.08)	-0.120 (0.21)
QE2		0.263*** (0.09)	0.248*** (0.08)	0.198** (0.08)
MEP		0.142* (0.08)	0.131* (0.08)	0.189** (0.08)
QE3		0.208*** (0.06)	0.190*** (0.06)	0.742*** (0.20)
Tapening		0.128** (0.05)	0.107*** (0.04)	-0.064 (0.09)
Agency MREIT*QE1		0.323 (0.20)	0.714*** (0.18)	0.054 (0.36)
Agency MREIT*QE2		0.248* (0.14)	0.159 (0.14)	0.247* (0.14)
Agency MREIT*MEP		0.134 (0.13)	0.174 (0.13)	0.133 (0.13)
Agency MREIT*QE3		-0.266*** (0.08)	0.015 (0.08)	-0.040 (0.28)
Agency MREIT*Taper		-0.228* (0.12)	0.050 (0.10)	-0.020 (0.13)
Fed Purchase Share			0.009 (0.14)	
Agency MREIT*Fed Purchase Share			-0.778*** (0.19)	
Fed Purchase Share QE1				0.085 (0.30)
Fed Purchase Share QE3				-1.088*** (0.38)
Fed Purchase Share Taper				0.385* (0.22)
Agency MREIT*Fed Purchase Share QE1				0.428 (0.54)
Agency MREIT*Fed Purchase Share QE3				-0.478 (0.52)
Agency MREIT * Fed Purchase Share Taper				-0.446** (0.20)
Constant	0.070 (0.14)	0.049 (0.10)	0.071 (0.09)	-0.132 (0.15)
Observations	925	925	925	925
R-squared	0.020	0.109	0.125	0.130
Firm clusters	41	41	41	41

# Conclusions

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- Agency Mortgage REIT growth (and equity issuance) inversely related to Federal Reserve's activity in MBS market
  - Equity returns also reflect growth opportunities in MBS market depending on Federal Reserve's posture

- ▶ Consistent with crowding out as per portfolio balance channel

- ▶ Risk taking

- Agency Mortgage REITs reduced interest rate hedging during initial stages of QE

- Trend reversed after Central Bank resumed Agency MBS purchases during QE and Tapering of such purchases

- ▶ Consistent with risk-taking channel

- ▶ First systematic examination of Agency Mortgage REITs in the context of unconventional monetary policy and risk taking, with a focus on capital structure risks

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