



Does membership come with privileges? The effect of ETFs on firm value

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Introduction

What do we already know?

What makes ETFs **interesting**?

- Convenience (Passive investing)
- Low transaction costs (?)
- A sound investment (can you really beat the market?)
- Liquidity (Boehmer and Boehmer (2003); Hamm (2011))

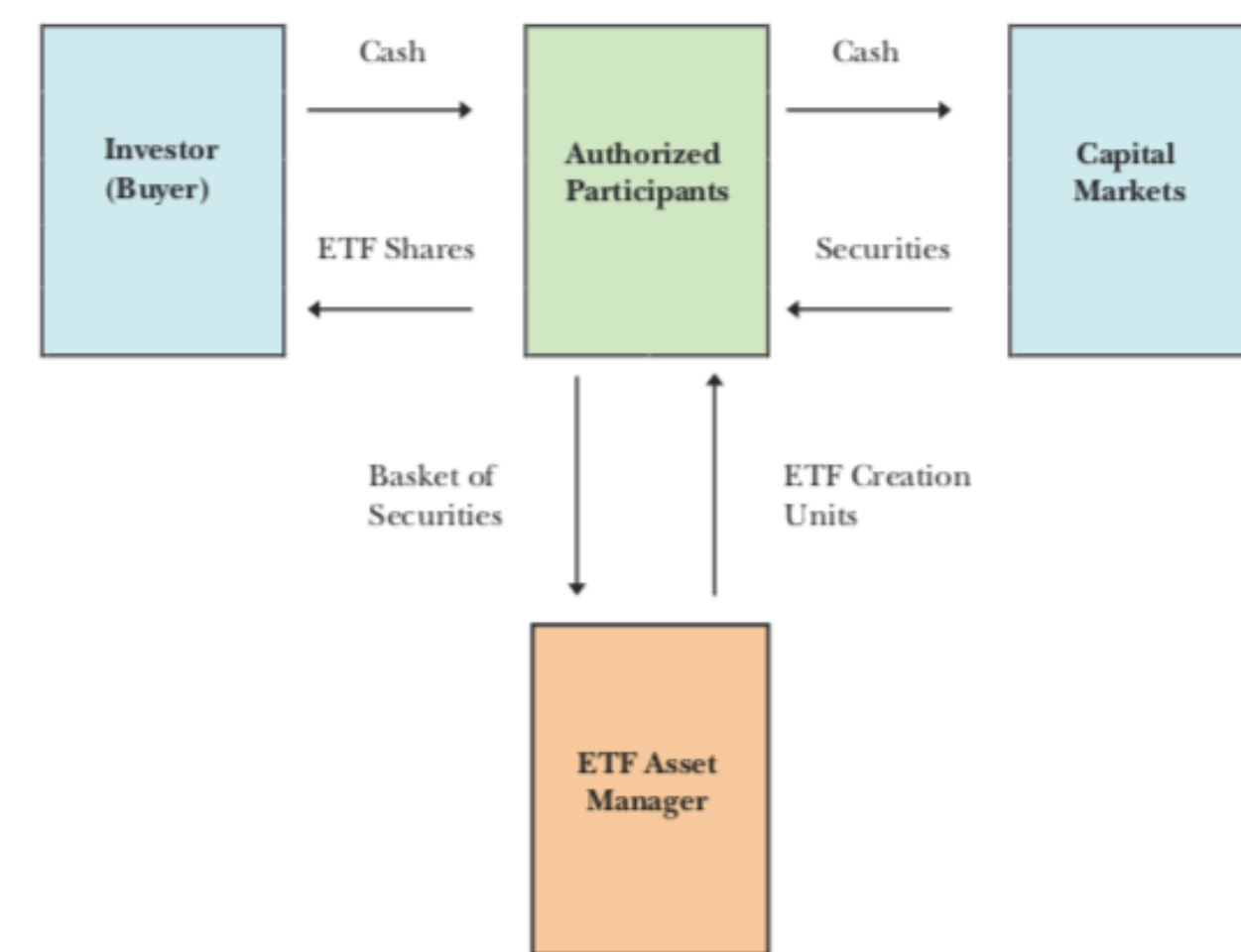
What makes them **worrisome**?

- Entail portfolio diversification (Da and Shive, 2017)
- Volatility (Ben-David et al. 2018)
- Lower price efficiency (Israeli, Lee, and Sridharan (2015))
- The next 2008? (Michael J. Burry)

Contribution:

- Study effects of ETFs beyond the market (firm's intrinsic value)
- Possible consequences of ETF ownership at the firm level (not only at the investor level)

The ETF architecture

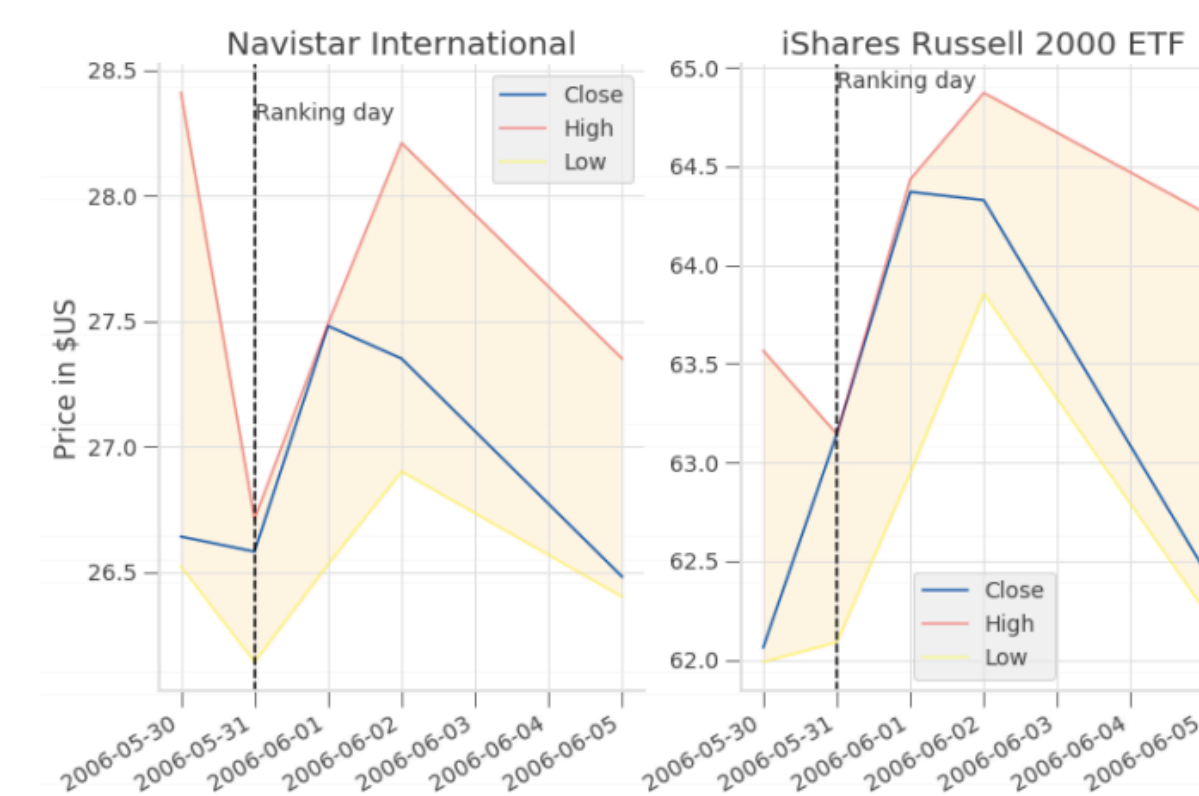


Summary statistics

Variable	Obs	Mean	Std Dev.	Min	Median	Max
CAPE	3296	44.022	325.959	-1753.700	23.674	10947.200
P/E	3272	13.350	102.668	-1660.001	16.973	600.540
P/B	3236	3.384	3.538	0.425	2.413	34.342
Price	3296	29.983	32.893	1.050	25.245	1312.000
Mkt Cap	3296	4496.436	17335.574	41.460	847.183	3.69e+05
Cumulative	3296	1.11e+07	4.28e+07	1923.720	3.57e+05	1.02e+09
Ownership	3296	4419.976	9075.218	7.114	175.636	1.22e+05
Ln(MktCap) _t	3296	7.020	1.371	3.725	6.742	12.817
1/Price	3296	0.057	0.056	0.001	0.040	0.952
Ln(Float) _t	3296	7.019	1.364	3.806	6.735	12.824
Ln(MktCap) _{t-1}	3296	7.026	1.374	3.322	6.742	12.859

Contribution: What is the effect of ETFs on firm value?

- Previous research suggested that ETF ownership has a **positive effect on stock volatility** (Ben-David et al. 2018)
- Hypothesis 1:** Passive investing could create distortions by tying large amounts of money to stocks that can't absorb it.
- Hypothesis 2:** The effect of passive investing is only short-termed and does not transfer to more intrinsic measures of firm value (Modigliani-Miller: firm value is independent from capital structure).



Data

- Databases:**
- Stock information
 - Compustat Capital IQ (Quarterly and Daily info)
 - Center for Research in Security Prices (CRSP) Daily Stock Files
 - Bloomberg (Russell 3000 composition)
 - Fund Holdings
 - CRSP Mutual Fund Summary
 - CRSP Mutual Fund Holdings
- Sample:**
- Components of the Russell 3000 index at the end of May
 - From 2005 to 2006
 - ETF Ownership of these stocks over this period
 - Measures of firm value:
 - Shiller's P/E (CAPE)
 - Price-to-Book ratio
 - P/E ratio

Data is queried through WRDS

Identification strategy

- Regression Discontinuity framework:**
- Every year (before 2006):** Russell 3000 index recomposition on the last trading day of June based on May market capitalisation
- Russell 3000 = Russell 1000 (1000 biggest market caps) and Russell 2000 (2000 smallest market caps)
- Discontinuity at the 1000th market cap rank (switching indexes)
- ETF ownership supposedly higher at the top of R2000 than the bottom of R1000 (value-weighted).
- Policy change after 2006: avoid excessive switches from year to year

Key variable definitions

- $Ownership_{i,t} = \frac{\sum_{j=1}^J H_{j,i,t} \times P_{i,t}}{MktCap_{i,t}}$
- $H_{j,i,t}$ = Number of shares of firm i held by ETF j at time t
- $P_{i,t}$ = Price of firm i at time t
- $MktCap_{i,t}$ = Market cap of firm i at time t
- $Cumulative_{i,t} = \sum_{j=1}^J H_{j,i,t} \times P_{i,t}$

Fuzzy RD design

Fuzzy RD design (ETFs):

Stage 1:

$$Ownership_{i,t} = \beta_0 + \beta_1 \tau_{i,t} + \sum_{n=1}^N \beta_{2,n} (Rank_{i,t})^n + \sum_{n=1}^N \beta_{3,n} \tau_{i,t} \times (Rank_{i,t})^n + u_{i,t}$$

Stage 2:

$$V_{i,t} = \theta_0 + \theta_1 Ownership_{i,t} + \sum_{n=1}^N \theta_{2,n} (Rank_{i,t})^n + \sum_{n=1}^N \theta_{3,n} \tau_{i,t} \times (Rank_{i,t})^n + e_{i,t}$$

> Coefficient of interest: θ_1 is the effect of ETF ownership on firm value (measured through its changes by switching indexes via the ranking variable)

Regression results: Fuzzy RD

ETF Ownership							R2000 Inclusion						
Panel A: CAPE							Panel A: CAPE						
	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)		
Bandwidth:	Optimal	±50	±100	±200	±300	Bandwidth:	Optimal	±50	±100	±200	±300		
Ownership _{i,t}	17.29	2.329	859.7	-13.13	-32.82	R2000 _{i,t}	23.14	61.16	52.78*	-5.283	15.31		
	[286.0]	[386.4]	[10229.2]	[65.71]	[326.8]		[19.27]	[49.99]	[31.77]	[24.80]	[19.48]		
N	3296	3296	3296	3296	3296	N	3296	3296	3296	3296	3296		
Panel B: P/E ratio							Panel B: P/E ratio						
	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)		
Bandwidth:	Optimal	±50	±100	±200	±300	Bandwidth:	Optimal	±50	±100	±200	±300		
Ownership _{i,t}	-12.11	47.39	-831.7	-39.55	5.787	R2000 _{i,t}	-15.38	57.57*	-8.334	-35.79	-13.48		
	[377.8]	[31.24]	[175468.7]	[65.70]	[195.2]		[16.01]	[30.75]	[16.59]	[38.87]	[36.58]		
N	3272	3272	3272	3272	3272	N	3272	3272	3272	3272	3272		
Panel C: P/B ratio							Panel C: P/B ratio						
	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)		
Bandwidth:	Optimal	±50	±100	±200	±300	Bandwidth:	Optimal	±50	±100	±200	±300		
Ownership _{i,t}	-2.982	2.962	8.350	-0.609	-2.063	R2000 _{i,t}	0.0158	-2.757*	-2.321**	-0.176	0.219		
	[14.29]	[16.80]	[25.00]	[4.434]	[19.99]		[0.609]	[1.562]	[1.141]	[0.922]	[0.762]		
N	3236	3236	3236	3236	3236	N	3236	3236	3236	3236	3236		
Panel D: Higher-order polynomials							Panel D: Higher-order polynomials						
Polynomial of order:	(2)	(2)	(2)	(3)	(3)	Polynomial of order:	(2)	(2)	(2)	(3)	(3)		
Dependent variable:	CAPE	P/E	P/B	CAPE	P/E	Dependent variable:	CAPE	P/E	P/B	CAPE	P/E		
Ownership _{i,t}	165.1	-79.84	187.7	42.40	-69.73	0.869	R2000 _{i,t}	13.31	-11.32	0.0568	8.474	-17.93	
	[1043.2]	[458.6]	[8411.7]	[217.8]	[167.9]	[8.615]		[19.01]	[22.87]	[0.738]	[26.68]	[15.82]	
N	3296	3272	3236	3296	3272	3236	N	3296	3272	3236	3296	3272	

Standard errors in brackets
* p < 0.10, ** p < 0.05, *** p < 0.01

Key findings

- Despite fears of some investors, ETF ownership doesn't seem to affect significantly firm value
- Very noisy coefficients that tend to change signs as the bandwidth is raised
- Possible explanation:** Value-weighted nature of FTSE Russell indexes. The effect of ETF ownership is high closer to the cutoff because of higher weights attributed to the top R2000 stocks. As soon as we get farther from the cutoff, this effect fades away
- Answer to research question:** ETF ownership does not affect significantly firm value, good news for passive investors and managers! (Hypothesis 2)

Figure 1: ETF ownership and market cap rank

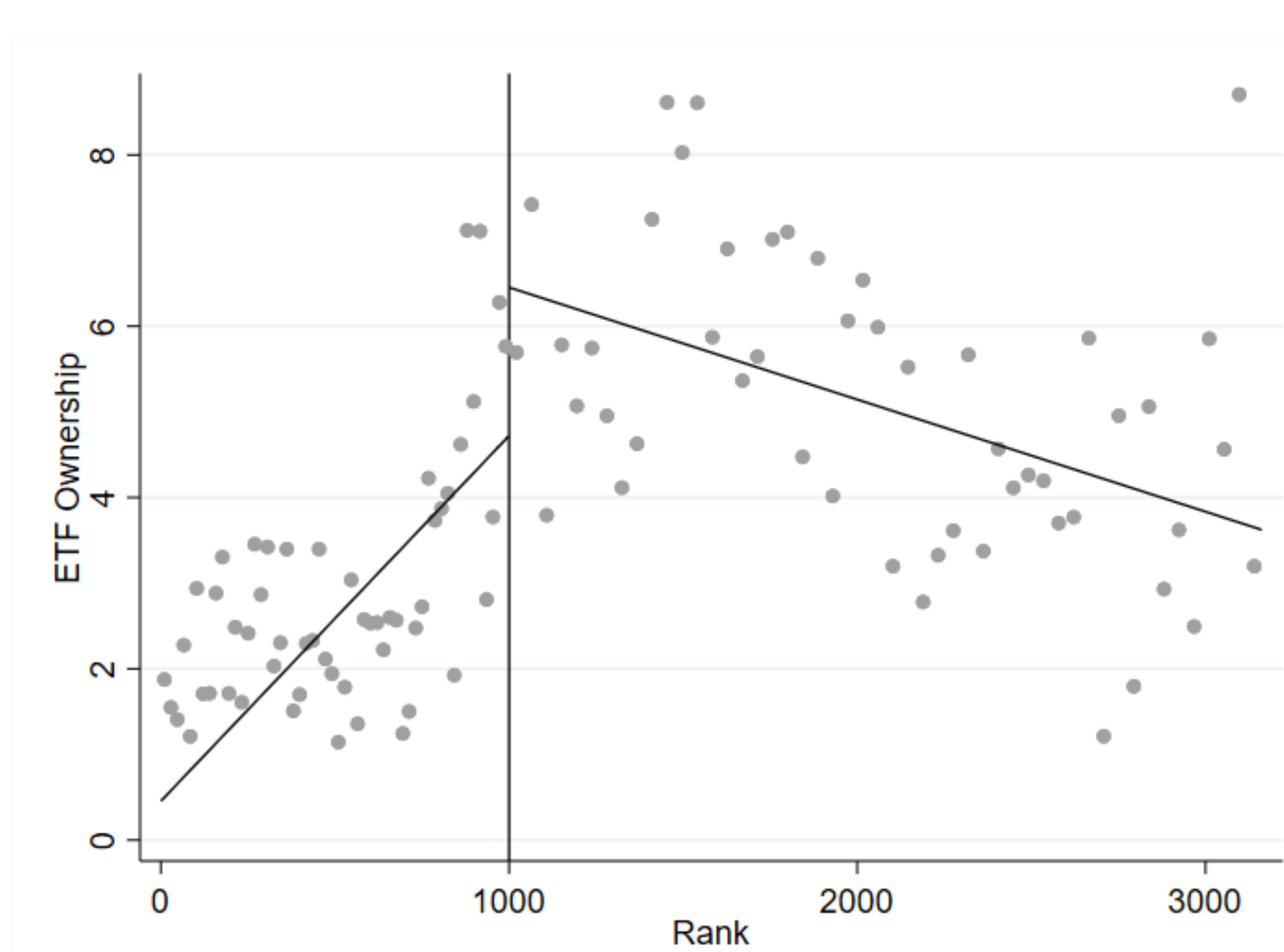
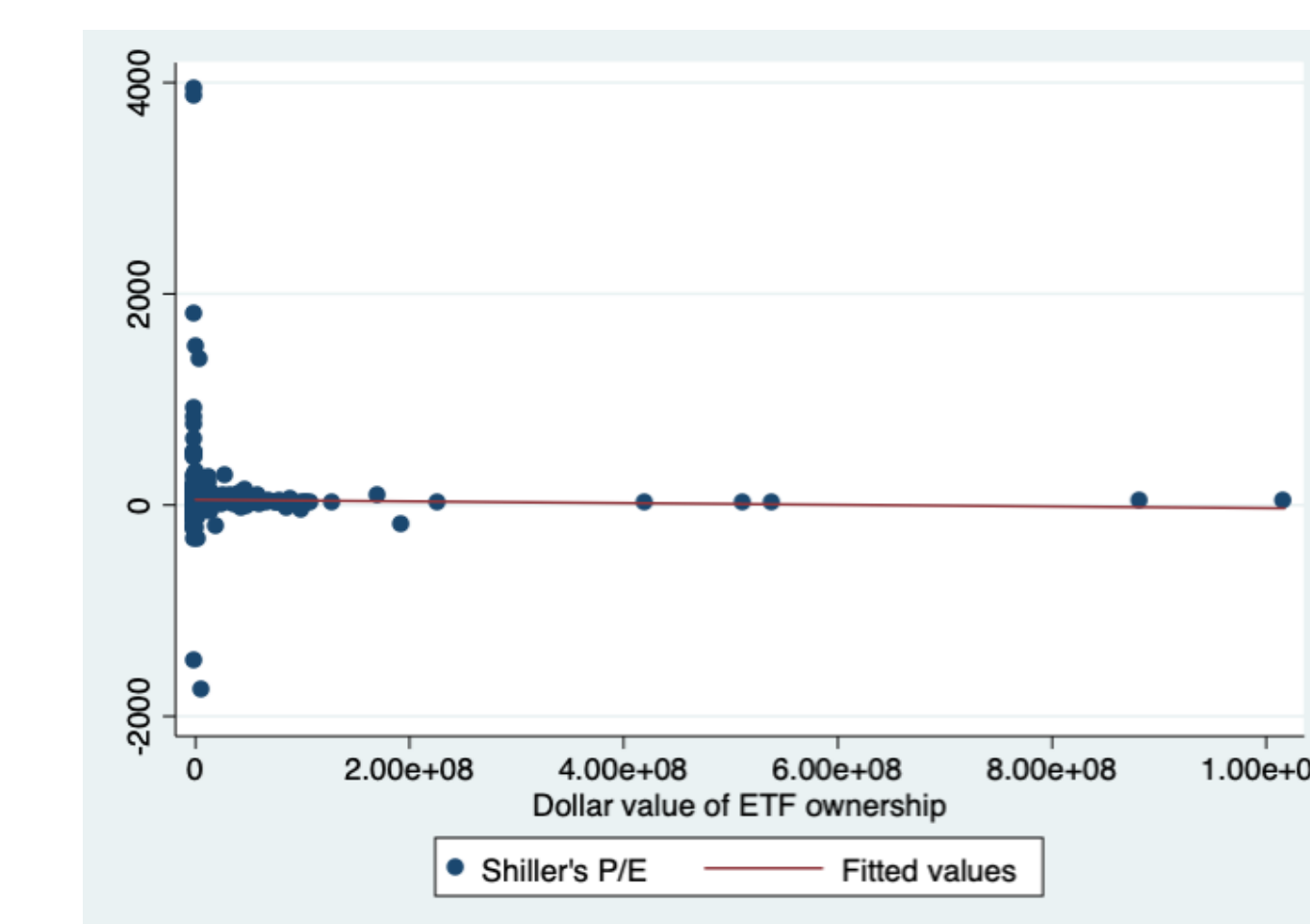
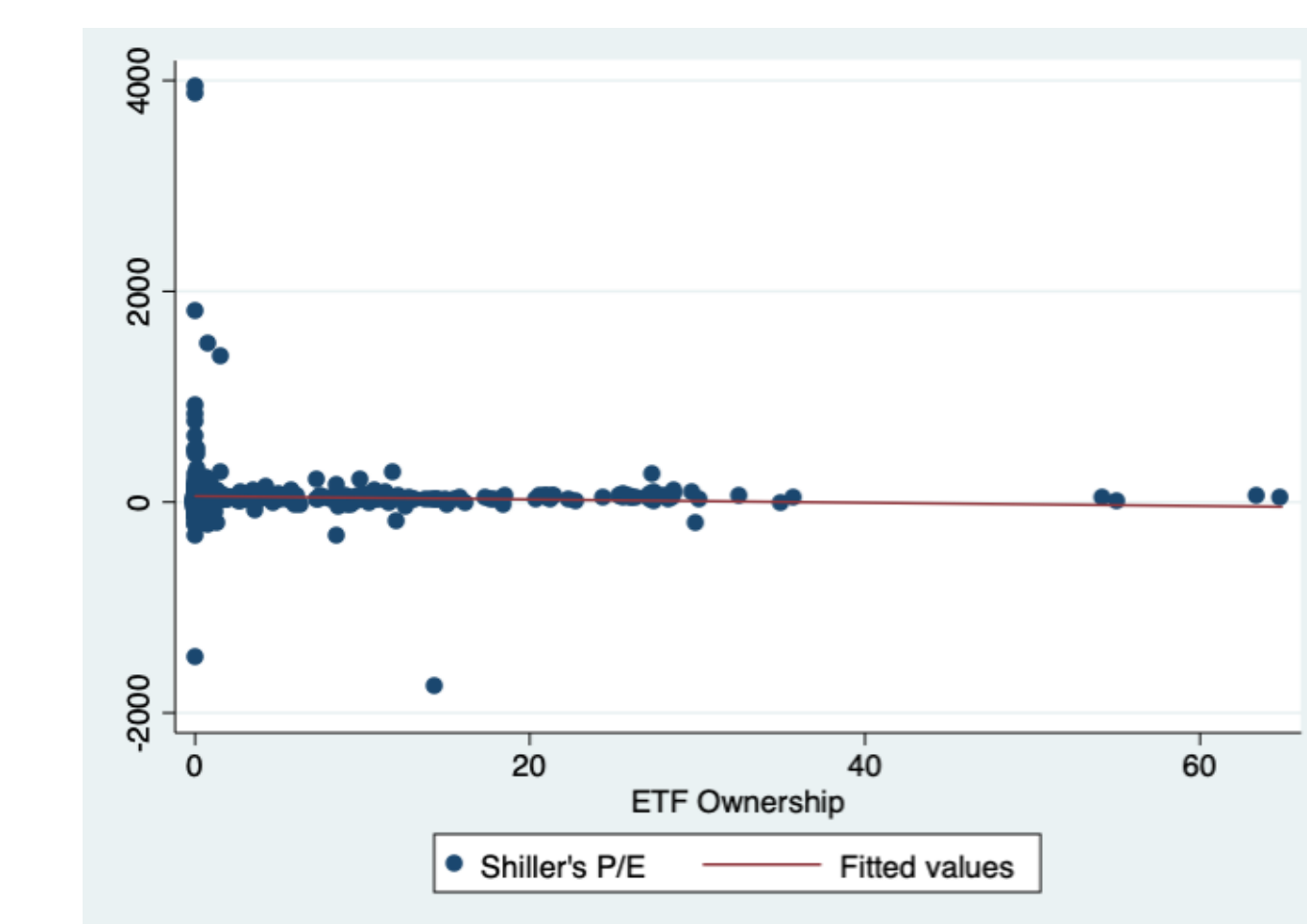


Figure 2: Effect of ownership on firm value



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