Corporate Relocation and Housing Market Spillovers

Presentation at the ASSA 2021

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Corporate Headquarters Relocation

- Corporate headquarters move for various reasons, notably for taxes, lower operating expenses, better resource or talent, or higher agglomeration economy (e.g., Evans 1973; Burns 1977; Lovely et al. 2005)
- Capital market generally responds positive to firms relocating their HQs for these reasons (Alli et al. 1991; Chan et al. 1995; Ghosh et al. 1995)
- However, literature has seldom looked into the externality effect of HQ relocation

Corporate Relocation & Local Economy

Google's move into its new HQ has translated the once very small town of Mountain View

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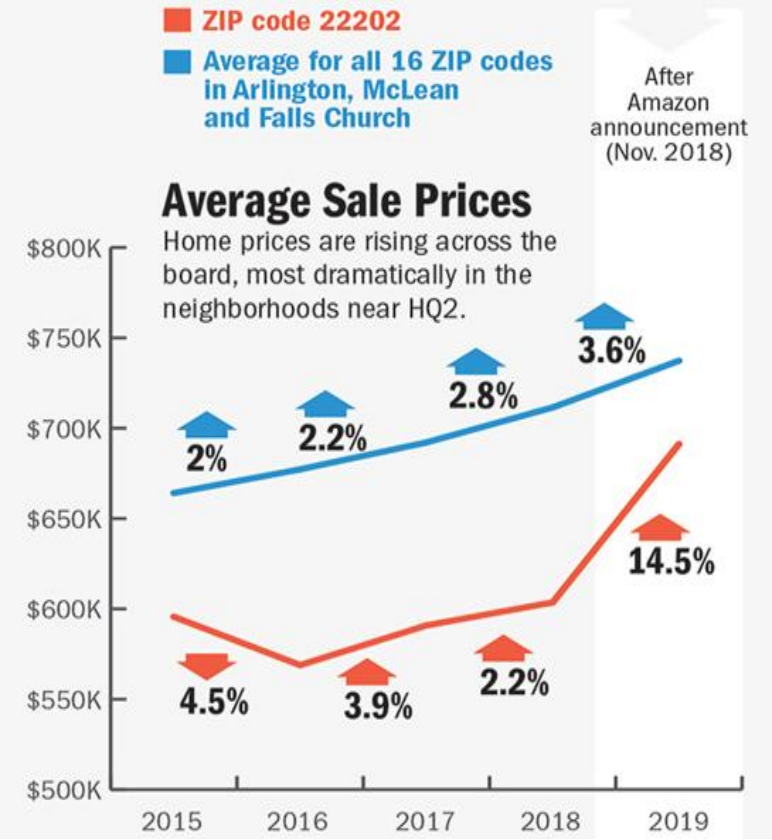
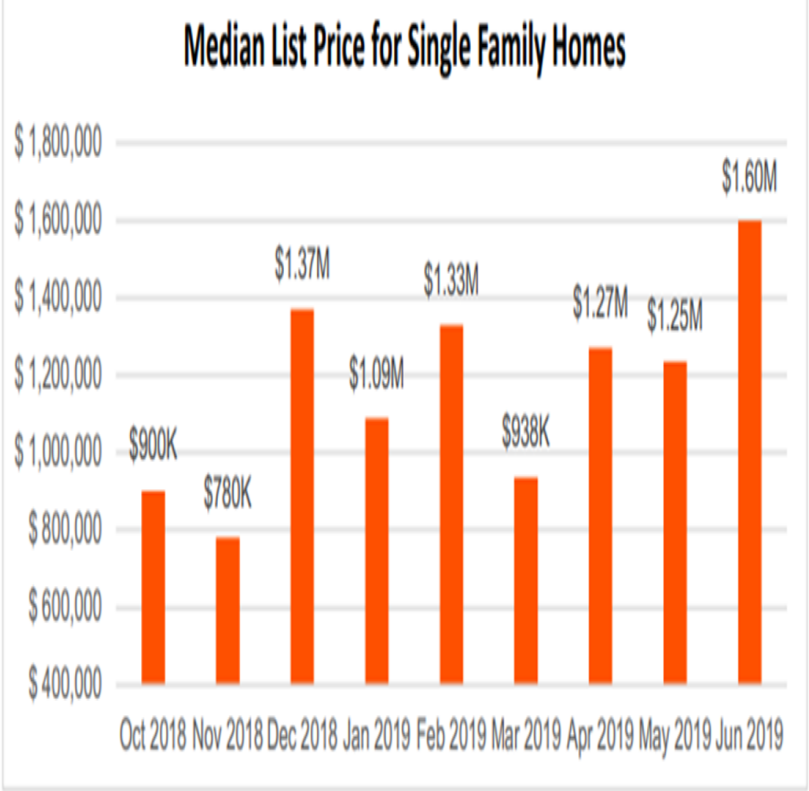
Mountain View median prices have doubled from 2007 to 2017

Corporate Relocation & Housing



Source: Zillow.com



Source: Bright MLS

Research Questions

- Given there is little empirical support that documents these spillover effects
- In this study, we ask:
  1. What is the general impact of corporate relocation on the local residential housing market?
  2. What is the pattern of these spillover effects across time and across space?
  3. The impact of agglomeration economies on housing market spillover

Summary of Results

- Overall, we find:
  1. Corporate relocation generates 10% higher housing price growth for districts with new HQ
  2. This creates a temporal spillovers from the expectation and speculation effect a year before, and from the real boost to local economy to two years after the relocation. These spillovers accumulate to 30% higher growth over the period
  3. Spatial spillover is strongest within 5 miles with 20% higher growth, but impact is felt up to 15 miles
  4. Agglomeration economies of related firms in the same industry enhances housing price growth

Related Literature

- Corporate relocation is expected to influence the housing market, but we provide *first large-sample evidence* of such impact and document how spillovers occur *temporally* and *spatially*
  - Pope and Pope (2015): Opening of Walmart
  - Chen et al. (2020): Amazon!
- We show the impact of corporate relocation as well as its enhancement by the *agglomeration effect* on the housing market
  - Butler et al. (2019) and Hartman-Glaser et al. (2019): IPO location
  - Coulson et al. (2013) and Joslin and Konchitchki (2018): Local corporate earnings projections

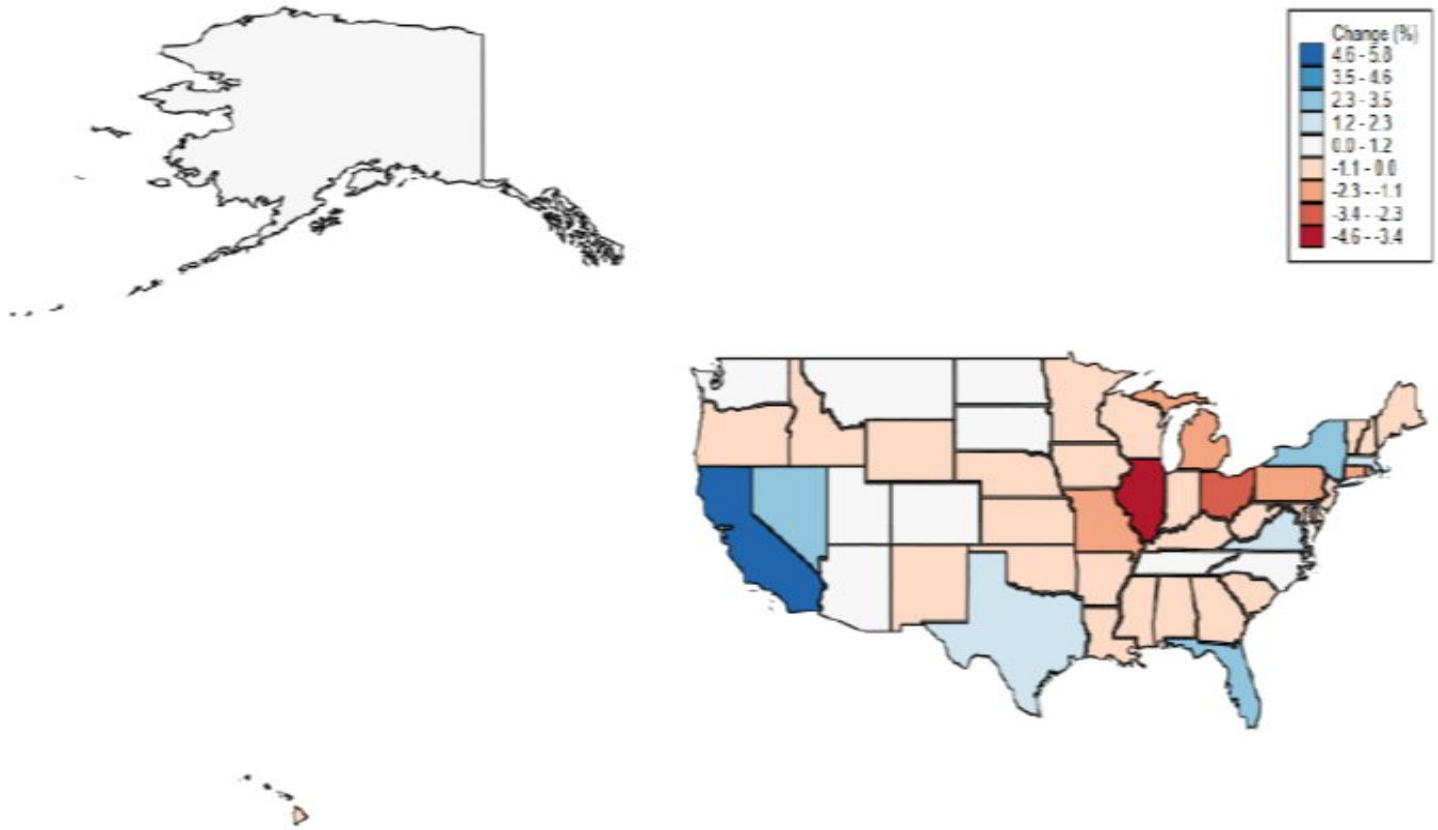
Sample Selection: Relocation Events

- Corporate Relocation
  - Compustat backdates all HQ locations
  - Augmented 10-X Header Data from 10K/Q SEC filings on EDGAR (Chow et al. 2018)
  - HQ locations from business address in the *first* filing of the year
  - We identify the change of business address from year *t-1* to *t* from the first 10K & Q filings
  - Sample period of 1994 to 2017
  - 204,373 firm-year observations from 29,183 firms

Summary Statistics HQ Relocation

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(7)	(8)
	Total	*Relocation Firm*		*State Relocation*		*City Relocation*		*District Relocation*	
Year	Obs.	Obs.	%	Obs.	%	Obs.	%	Obs.	%
1994	2,119	91	4.29%	28	1.32%	20	0.94%	43	2.03%
1995	5,605	253	4.52%	79	1.41%	76	1.36%	98	1.75%
1996	10,870	562	5.17%	195	1.79%	187	1.72%	180	1.66%
1997	11,251	1,070	9.51%	343	3.05%	403	3.58%	324	2.88%
1998	11,343	1,196	10.54%	403	3.55%	432	3.81%	361	3.18%
1999	11,395	1,165	10.23%	408	3.58%	443	3.89%	314	2.76%
2000	11,870	1,076	9.07%	384	3.24%	429	3.61%	263	2.22%
2001	11,164	780	6.99%	316	2.83%	269	2.41%	195	1.75%
2002	10,289	763	7.42%	299	2.91%	290	2.82%	174	1.69%
2003	9,750	848	8.70%	336	3.45%	303	3.11%	209	2.14%
2004	9,611	739	7.69%	319	3.32%	267	2.78%	153	1.59%
2005	9,189	705	7.67%	293	3.19%	239	2.60%	173	1.88%
2006	8,916	706	7.92%	313	3.51%	240	2.69%	153	1.72%
2007	9,043	698	7.71%	277	3.06%	256	2.83%	165	1.82%
2008	8,461	594	7.02%	255	3.01%	207	2.45%	132	1.56%
2009	7,955	587	7.38%	269	3.38%	214	2.69%	104	1.31%
2010	7,624	601	7.88%	261	3.42%	212	2.78%	128	1.68%
2011	7,364	559	7.59%	254	3.45%	208	2.82%	97	1.32%
2012	7,123	548	7.70%	205	2.88%	208	2.92%	135	1.90%
2013	7,018	605	8.63%	253	3.61%	209	2.98%	143	2.04%
2014	7,005	622	8.87%	267	3.81%	209	2.98%	146	2.08%
2015	6,747	525	7.77%	227	3.36%	181	2.68%	117	1.73%
2016	6,430	452	7.03%	176	2.74%	172	2.67%	104	1.62%
2017	6,231	446	7.17%	173	2.78%	148	2.38%	125	2.01%
Total	204,373	16,191	7.92%	6,333	3.10%	5,822	2.85%	4,036	1.97%

Change in Distribution 1994 to 2018



Sample Selection: Local House Prices

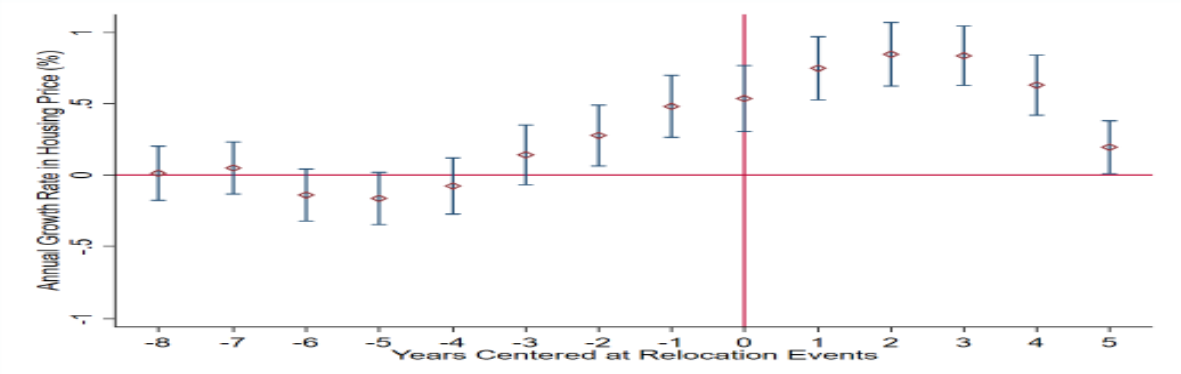
- Local residential housing price: Zillow Home Value Index (ZHVI) of All Homes
  - ZHVI has been used extensively to track local housing price (e.g., Anenberg and Kung 2020; Brown and Matsa 2019; Lang 2018; Raymond et al. 2016)
  - Sample period of 1996 to 2017
  - Monthly house price at the zip code level
  - Annual growth of house price is the change in logarithm term from year *t-1* to *t*
  - 315,137 district-year observations

Descriptive Statistics

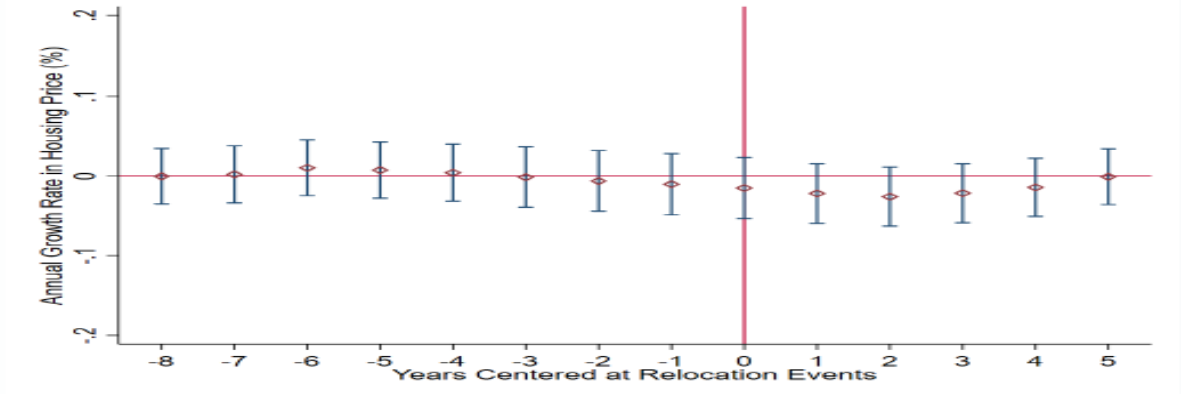
Variables	N	Mean	S.D.	P(25)	Median	P(75)
Price	315,137	0.198	0.184	0.097	0.145	0.231
$\Delta \log(Price_t)$	315,137	0.035	0.084	-0.009	0.036	0.081
Relocation District	315,137	0.031	0.172	0	0	0
Relocation Number	315,137	0.042	0.312	0	0	0
Personal Income	285,538	38.440	11.161	30.356	36.595	44.421
Population	315,137	11.683	9.557	5.250	8.493	16.689
Unemployment Rate	315,137	5.721	2.034	4.300	5.400	6.700
Relocated Employee	310,456	0.055	1.833	0	0	0
Relocated TA	310,807	0.036	3.446	0	0	0
Relocated MV	310,076	0.020	1.051	0	0	0
Existing HQ	315,137	0.184	0.387	0	0	0
Existing HQ Same Industry	313,119	0.008	0.087	0	0	0
Top 5 Major Industry	315,121	0.026	0.158	0	0	0
Relocation District_State	315,137	0.014	0.116	0	0	0
Relocation District_City	315,137	0.014	0.116	0	0	0
Relocation District_District	315,137	0.007	0.086	0	0	0
Relocation Districts 1 Mile	314,893	0.010	0.101	0	0	0
Relocation Districts 1-2 Miles	314,893	0.071	0.256	0	0	0
Relocation Districts 2-5 Miles	314,893	0.319	0.466	0	0	1

Graphical Analysis:
Average Growth Rate with HQ Relocation

Panel A. Housing Price in Districts with HQ Relocation Events Happening at Time t



Panel B. Housing Price in Districts without HQ Relocation Events Happening at Time t



Empirical Design: Main Analysis

$$Y_t = \alpha + b_1\,(Relocation\ District)_t + b_2\,Log\,(Personal\ Income)_t + b_3\,Log\,(Popoulation)_t + b_4(Unemployment\ Rate)_t + e_{it} \quad \text{------ (I)}$$

- The dependent variable, Y, measures the local residential housing price changes $\Delta log(Price)$
- Key variables of interest: *Relocation District*
  - We also examine *Relocation Number*
- Control variables: *Log(Personal Income)*, *Log(Population)*, *Unemployment Rate*
- Includes time (year) and geographical (CBSA) fixed effects

Impact of HQ Relocation

	(1)	(2)	(3)	(4)
	Y: Δ *Log (Price$_t$)*			
Relocation$_t$	0.3560***	0.3520***		
	(0.0922)	(0.0916)		
Relocation Number$_t$			0.2008***	0.1997***
			(0.0673)	(0.0675)
Log (Personal Income$_t$)		7.0634***		7.0631***
		(0.8027)		(0.8028)
Log (Population$_t$)		0.2907		0.2893
		(0.2138)		(0.2125)
Unemployment Rate$_t$		-0.2350***		-0.2353***
		(0.0395)		(0.0394)
Constant	3.5245***	-72.0441***	3.5272***	-72.0244***
	(0.0245)	(8.4002)	(0.0240)	(8.4037)
Year Fixed Effect	Y	Y	Y	Y
CBSA Fixed Effect	Y	Y	Y	Y
Observations	288,464	285,538	288,464	285,538
R-squared	0.394	0.395	0.394	0.395

Temporal Spillovers

	(1)	(2)	(3)	(4)	(5)	(6)
	Y: Δ *Log (Price$_t$)*					
Relocation$_t$	0.2674***	0.2640***	0.2705***	0.2677***	0.2720***	0.2733***
	(0.0785)	(0.0781)	(0.0766)	(0.0762)	(0.0840)	(0.0835)
Relocation$_{t-1}$	0.2971***	0.2942***	0.3111***	0.3064***	0.2862***	0.2874***
	(0.0877)	(0.0878)	(0.0892)	(0.0892)	(0.0938)	(0.0938)
Relocation$_{t-1}$	0.3531***	0.3416***	0.3065***	0.2997***	0.3120***	0.3048***
	(0.0771)	(0.0770)	(0.0778)	(0.0776)	(0.0821)	(0.0825)
Relocation$_{t-2}$			0.0815	0.0822	0.0417	0.0412
			(0.0933)	(0.0934)	(0.0974)	(0.0974)
Relocation$_{t-2}$			0.2374***	0.2287***	0.2015**	0.1987**
			(0.0884)	(0.0883)	(0.0897)	(0.0895)
Relocation$_{t-3}$					0.1524	0.1434
					(0.1064)	(0.1067)
Relocation$_{t-3}$					0.1343	0.1255
					(0.0998)	(0.0999)
Log (Personal Income$_t$)		7.8236***		8.6403***		9.3083***
		(0.8001)		(0.9400)		(1.0486)
Log (Population$_t$)		0.3211		0.2859		0.1335
		(0.2267)		(0.2269)		(0.2058)
Unemployment Rate$_t$		-0.2471***		-0.2253***		-0.1972***
		(0.0440)		(0.0494)		(0.0527)
Constant	3.3653***	-80.2608***	3.1407***	-88.8737***	2.8550***	-94.9518***
	(0.0247)	(8.5408)	(0.0242)	(10.0283)	(0.0238)	(11.0812)
Year Fixed Effect	Y	Y	Y	Y	Y	Y
CBSA Fixed Effect	Y	Y	Y	Y	Y	Y
Observations	274,146	271,363	246,510	244,007	218,929	216,706
R-squared	0.398	0.400	0.413	0.415	0.429	0.430

Spatial Spillovers

	(1)	(2)	(3)	(4)	(5)	(6)
			Y: Δ *Log (Price$_t$)*			
Relocation$_t$	0.1968**	0.1946**	0.1634**	0.1642**	0.1630**	0.1636**
	(0.0778)	(0.0773)	(0.0763)	(0.0760)	(0.0765)	(0.0762)
Relocation 5 Miles$_t$	0.6954***	0.6884***	0.6022***	0.6042***	0.6024***	0.6047***
	(0.1020)	(0.1035)	(0.0952)	(0.0963)	(0.0954)	(0.0965)
Relocation 5-10 Miles$_t$			0.2023***	0.1916***	0.2058***	0.1984***
			(0.0529)	(0.0548)	(0.0527)	(0.0545)
Relocation 10-15 Miles$_t$			0.1281***	0.1041**	0.1372***	0.1208***
			(0.0440)	(0.0457)	(0.0427)	(0.0438)
Relocation 15-20 Miles$_t$					-0.0234	-0.0493
					(0.0444)	(0.0455)
Relocation 20-25 Miles$_t$					-0.0363	-0.0565
					(0.0460)	(0.0469)
Log (Personal Income$_t$)		7.1147***		7.0959***		7.1028***
		(0.8000)		(0.8011)		(0.8019)
Log (Population$_t$)		0.2739		0.2620		0.2664
		(0.2015)		(0.1945)		(0.1961)
Unemployment Rate$_t$		-0.2313***		-0.2293***		-0.2302***
		(0.0383)		(0.0381)		(0.0384)
Constant	3.4314***	-72.5453***	3.3553***	-72.3200***	3.3707***	-72.4005***
	(0.0154)	(8.3748)	(0.0179)	(8.3798)	(0.0266)	(8.3900)
Year Fixed Effect	Y	Y	Y	Y	Y	Y
CBSA Fixed Effect	Y	Y	Y	Y	Y	Y
Observations	288,241	285,336	288,241	285,336	288,241	285,336
R-squared	0.394	0.396	0.394	0.396	0.394	0.396

Agglomeration Economies

	(1)	(2)	(3)	(4)
	Y: Δ *Log (Price$_t$)*			
Relocation$_t$	0.3409**	0.3280**	0.0424	0.0533
	(0.1494)	(0.1489)	(0.1545)	(0.1537)
Existing HQ$_{t-1}$	0.0700**	0.0581*		
	(0.0342)	(0.0344)		
*Relocation$_t$ * Existing HQ$_{t-1}$*	-0.2256	-0.2086		
	(0.1892)	(0.1881)		
*Relocation$_t$ * Existing HQ Same Industry$_{t-1}$*	0.3093*	0.3200*		
	(0.1684)	(0.1664)		
*Relocation$_t$ * Top 5 Major Industry$_{t-1}$*			0.3737**	0.3561*
			(0.1824)	(0.1828)
Log (Personal Income$_t$)		7.0930***		7.0615***
		(0.7875)		(0.8029)
Log (Population$_t$)		0.2716		0.2908
		(0.2092)		(0.2138)
Unemployment Rate$_t$		-0.2409***		-0.2349***
		(0.0383)		(0.0395)
Constant	3.5016***	-72.1642***	3.5243***	-72.0253***
	(0.0254)	(8.2409)	(0.0245)	(8.4018)
Year Fixed Effect	Y	Y	Y	Y
CBSA Fixed Effect	Y	Y	Y	Y
Observations	286,447	283,522	288,449	285,523
R-squared	0.393	0.395	0.394	0.395

Robustness & Heterogeneous Analyses

- Robustness Checks
  - Propensity score matching with location fundamentals and tax changes (Heider and Ljungqvist 2015)
  - Instrumental variable regressions with Bartik shift-share predictor of number of relocated firms
  - Alternative state and state*year fixed effects
  - Additional location controls (population density and urbanization)
  - Alternative identification of relocation event dates
- Heterogenous Analyses
  - Firm size by employee bases and total assets/market values
  - Relocation distance
  - Impact of moving out

Concluding Remarks

- We document significant spillover effects from the corporate to the housing market via corporate spatial decisions
- The relocation induces expectation and speculation effect ex-ante and prolonged economic impact ex-post
- Spatial effect reaches up to 15 miles of the HQ location
- Agglomeration matters: Spillovers do not result solely from the relocated HQs
- Implications of corporate entry and exit on housing market forecasts
- As for policymakers, is HQ relocation always a good thing?