

The Effect of Foreclosures on Owner-Occupied Housing Prices: Supply or Dis-Amenity?

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Motivating Question

How much of measured foreclosure spillover effects are due to added supply and how much are due to dis-amenity?

Mechanisms

Supply:

- Search model. Wheaton (1990), Turnbull and Dombrow (2006).

Dis-amenity:

- Crime. Immergluck and Smith (2006).
- Lack of upkeep.
- Danger. (Explosion in Cleveland)

Other Studies Measure Combined Spillover Effect

- Schuetz, Been, Ellen (2008)
- Campbell, Giglio, Pathak (2010)



Empirical Methodology

- Measure the effect of single family home foreclosures on nearby single family home prices (β_{SFR}).
- Measure the per unit effect of multi-family building foreclosures on nearby single family home prices (β_{MF}).

Assuming Market Segmentation:

- $\beta_{SF} = S + D$.
- $N\beta_{MF} = ND$.

Thus:

- $S = \beta_{SF} - \beta_{MF}$.
- $D = \beta_{MF}$.

Empirical Methodology

Assuming Market Integration but no quick condo conversion:
then only one unit of multi-family building can become
owner-occupied after a foreclosure.

- $\beta_{SF} = S + D.$
- $N\beta_{MF} = S + ND.$

Thus:

- $S = \frac{N}{N-1}(\beta_{SF} - \beta_{MF}).$
- $D = \frac{N}{N-1}\beta_{MF} - \frac{1}{N-1}\beta_{SF}.$

Necessary Assumptions

- Have to assume something about degree of segmentation between SFR and MF markets. (Consider two cases: MF buildings add no supply to SF market or MF buildings add one unit of supply)
- Disamenity is a function of the number of units in the building. (Assume linear)
- Multi-family building foreclosures actually create a dis-amenity. (Next Slide)

Relationship Between Newly Vacant Addresses and Foreclosure Auctions

| | # New Vac. Addr. in past 3 Months |
|--|--------------------------------------|
| Condo Units Scheduled for Auction | 1.76** (0.77) |
| Single Family Houses Scheduled for Auction | 0.93*** (0.16) |
| Multi Family Units (Owner on Premises) Scheduled for Auction | 0.49 (0.39) |
| Multi Family Units (All Rental) Scheduled for Auction | 0.77*** (0.10) |
| R^2 | 0.30 |
| N | 2,401 |

Note: Unit of observation is census tract - quarter. All Chicago census tracts are included. The time period is the 4 quarters of 2008. Eicker-White standard errors are reported in parentheses. Community Area effects and Quarter effects are included.

Empirical Specification

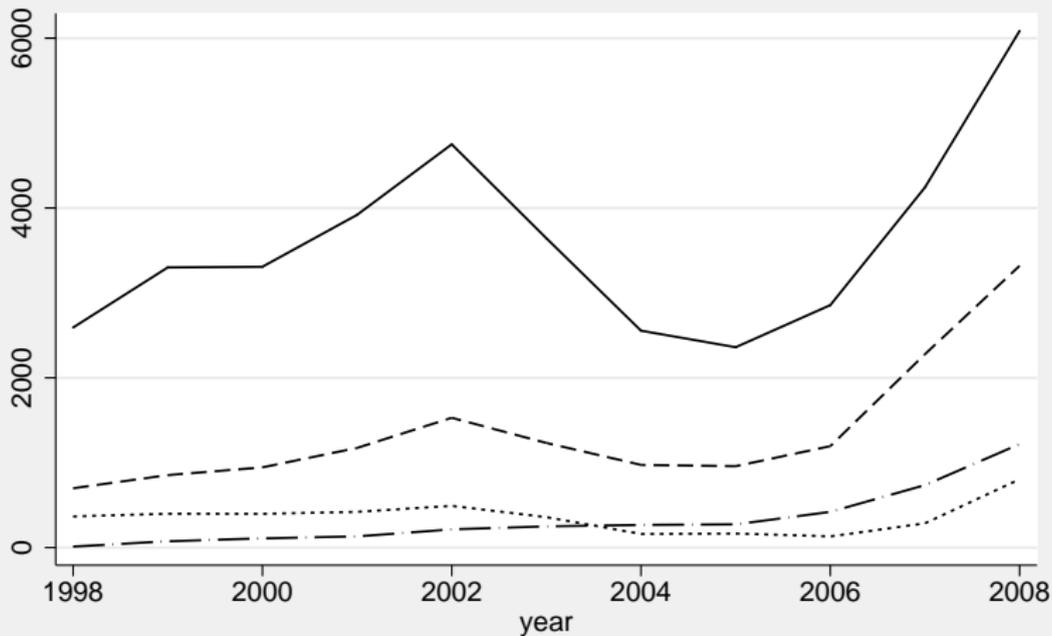
$$\ln P_{i,j,c,t} = \beta F_{i,j,c,t} + \Gamma X_i + \delta C_j + \xi N_{c,t} + \varepsilon_{i,j,c,t} \quad (1)$$

- property i , census tract j , community area c , year t .
- $\ln P_{i,j,c,t}$ is the log transaction price of single-family home.
- $F_{i,j,c,t}$ is a vector of variables indicating the number of initial foreclosure filings or foreclosure auctions within a certain time and distance of property i .
- X_i is a vector of property specific characteristics.
- C_j is a vector of census tract characteristics of dummies.
- $N_{c,t}$ is a vector of community area * year dummies.

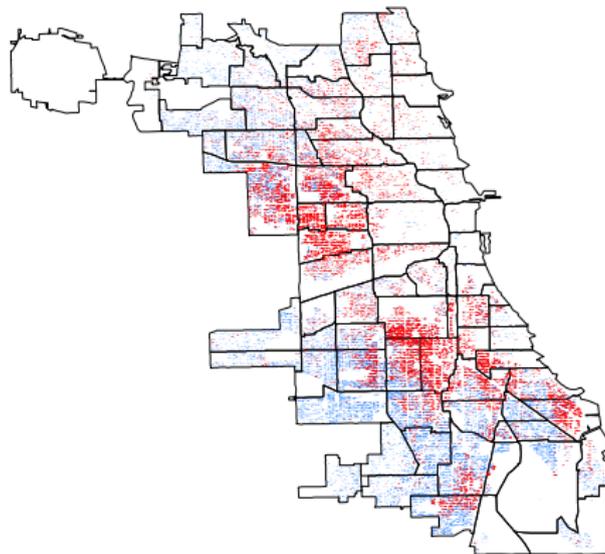
Data Sources

- Foreclosure data - all foreclosures for Chicago from 1998 - 2008 from private company called Record Information Services.
- Residential property sales data - from Chicago Tribune and Cook County Recorder of Deeds websites.
- Property characteristics data and tax exempt data - from Cook County Tax Assessor's Office website.
- Linked by parcel ID and geo-coded.

Foreclosures over Time



Foreclosures over Space



| | Mean | S.D. | Min | Max |
|---|---------|---------|-------|-----------|
| SFR Forcs 0 – 250 ft. | 0.13 | 0.40 | 0 | 5 |
| SFR Forcs 250 – 500 ft. | 0.30 | 0.69 | 0 | 9 |
| Units RO MF Forcs 0 – 250 ft. | 0.06 | 0.56 | 0 | 37 |
| Units RO MF Forcs 250 – 500 ft. | 0.17 | 0.97 | 0 | 40 |
| Units OO MF Forcs 0 – 250 ft. | 0.02 | 0.21 | 0 | 8 |
| Units OO MF Forcs 250 – 500 ft. | 0.04 | 0.34 | 0 | 8 |
| Condo Forcs 0 – 250 ft. | 0.00 | 0.07 | 0 | 5 |
| Condo Forcs 250 – 500 ft. | 0.01 | 0.13 | 0 | 8 |
| Price | 209,147 | 163,617 | 7,675 | 1,655,599 |
| Land Square Footage | 3,942 | 1,575 | 460 | 122,465 |
| Building Square Footage | 1,302 | 568 | 400 | 27,270 |
| Age of Structure | 68.9 | 30.4 | 1 | 148 |
| Tract Median Household Income in 2000 | 43,446 | 13,272 | 2,499 | 127,031 |
| Tract Poverty Rate in 2000 | 0.15 | 0.11 | 0.0 | 0.78 |
| Tract Fraction African American in 2000 | 0.38 | 0.43 | 0 | 1 |
| Tract Fraction Employed in 2000 | 0.54 | 0.10 | 0.01 | 0.95 |
| Community Area Pop. | 36K | | | |
| Census Tract Pop. | 3.2K | | | |

| | (1) | (2) | (3) | (4) |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|
| Any Forcs 0 – 250 ft. (before) | -0.041*** (0.005) | -0.031*** (0.005) | -0.029*** (0.005) | -0.019*** (0.005) |
| Any Forcs 0 – 250 ft. (after) | | | -0.013** (0.004) | -0.010** (0.004) |
| Any Forcs 250 – 500 ft. (before) | -0.026*** (0.003) | -0.003 (0.006) | -0.013*** (0.003) | -0.007** (0.003) |
| Any Forcs 250 – 500 ft. (after) | | | 0.000 (0.002) | 0.003 (0.003) |
| Community Area Price Index | | 0.67*** (0.01) | 0.67*** (0.01) | |
| Structure Characteristics | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | |
| Census Tract Characteristics | Yes | Yes | Yes | Yes |
| Year x Community Effects | | | | Yes |
| N | 54,952 | 54,952 | 54,952 | 54,952 |
| R ² | 0.62 | 0.68 | 0.68 | 0.70 |

| | (1) All | (2) 1999-2006 | (3) 2007-2008 |
|--|----------------------|-------------------|----------------------|
| SFR Forcs 0 – 250 ft. (before) | -0.018*** (0.005) | -0.005 (0.005) | -0.037*** (0.011) |
| SFR Forcs 0 – 250 ft. (after) | -0.001 (0.005) | 0.002 (0.005) | -0.000 (0.009) |
| Units RO MF Forcs 0 – 250 ft. (before) | -0.011* (0.006) | 0.002 (0.004) | -0.019* (0.011) |
| Units RO MF Forcs 0 – 250 ft. (after) | -0.012*** (0.004) | -0.008 (0.004) | -0.014 (0.016) |
| Structure Characteristics | Yes | Yes | Yes |
| Year x Community Effects | Yes | Yes | Yes |
| Census Tract Characteristics | Yes | Yes | Yes |
| N | 54,952 | 45,631 | 3,804 |
| R^2 | 0.70 | 0.71 | 0.63 |

Note: Sample limited to transactions within 1000 feet of a foreclosure filing or auction that occurred within the past year. Reported coefficients are for foreclosure auctions. Controls for foreclosure filings are also included.

Interpretation Assuming Full Segmentation

Probably correct interpretation since Tax records show that only 3.3% of MF buildings that experienced foreclosure switched from no owner-occ exemption to filing an owner-occ exemption.

- $S = (\beta_{SF}^{before} - \beta_{SF}^{after}) - (\beta_{MF}^{before} - \beta_{MF}^{after})$.
- $D = \beta_{MF}^{before} - \beta_{MF}^{after}$.
- Col 1: $S = (-1.8\% + 0.1\%) - (-1.1\% + 1.2\%) = -1.8\%$.
- Col 1: $D = (-1.1\% + 1.2\%) = 0.1\%$

Interpretation Assuming Substitutability

Mean number of units in multi-family building foreclosures:
 $N = 2.6$.

- $S = \frac{N}{N-1} ((\beta_{SF}^{before} - \beta_{SF}^{after}) - (\beta_{MF}^{before} - \beta_{MF}^{after}))$.
- $D = \frac{N}{N-1} (\beta_{MF}^{before} - \beta_{MF}^{after}) - \frac{1}{N-1} (\beta_{SF}^{before} - \beta_{SF}^{after})$.
- Col 1: $S = -3.0\%$.
- Col 1: $D = 1.2\%$

| | (1) All | (2) 1999-2006 | (3) 2007-2008 |
|---|--------------------|--------------------|--------------------|
| S | -0.018* (0.010) | -0.017* (0.010) | -0.032% (0.020) |
| D | 0.001 (0.008) | 0.010 (0.006) | -0.005 (0.014) |

Findings

- Supply effect is present in tighter housing markets (when prices are rising).
- Dis-amenity effect is close to zero when prices are rising.
- Neither effect is statistically discernable in 2007-2008 but both may be present (std errs are large).

Policy Implications

- If supply effect is present and large when prices are falling, banks or GSEs wishing to liquidate foreclosed properties may find it optimal to carry inventory from one period to the next if the depreciation rate is not too high (metering out properties to meet demand may make sense).
- However, if the dis-amenity effect is not equal to zero when prices are falling the optimal strategy would be to sell more quickly.