

# "Banking Integration and House Price Comovement" by Landier, Sraer, and Thesmar

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- ▶ Pairwise correlation of future house price growth in US states increased between 1976 and 2000
- ▶ Paper proposes and tests one explanation: banks became contemporaneously more geographically integrated
  - ▶ Use staggered state-level deregulations to instrument for banking integration
- ▶ Mechanism?
  - ▶ Funding shocks affect bank credit supply (Peek and Rosengren 1997, Cetorelli and Golberg 2012, etc)
  - ▶ Bank operating in several states increases commonality in credit supply across these states
  - ▶ Credit supply affects house prices (Adelino, Schoar, Severino 2011, etc)
- ▶ This mechanism explains about one third of total increase in pairwise correlations

# Comments

- ▶ Interesting paper, made me think a lot about housing markets
  - ▶ How geographically diversified was the US housing market?

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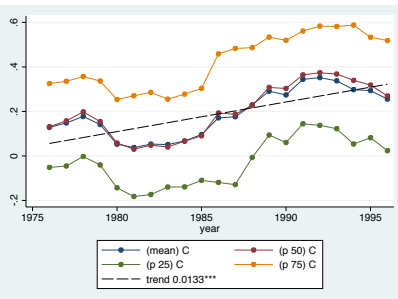
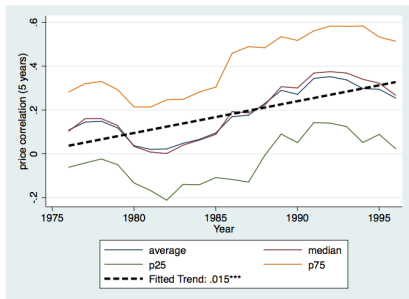
- ▶ Interesting paper, made me think a lot about housing markets
  - ▶ How geographically diversified was the US housing market?
- ▶ I think the mechanism is plausible
- ▶ Identification is hard: any attempt in this direction is always welcome
  - ▶ Use across-state deregulations as shocks to commonality in credit supply

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- ▶ Comments
  - ▶ Time series of the distribution of pairwise correlations
  - ▶ Identification

# Correlations

- ▶ I obtained data on house prices from the FHFA website
  - ▶ Timing of deregulations from St Louis Fed
- ▶ To make sure data is the same:





# Results

- ▶ Limit sample to 1976-1996
- ▶ For state  $i$  and state  $j$  at time  $t$ , run

$$\rho_{i,j,t} = \delta_{i,j} + \beta post_{i,j,t} + \delta_t + \alpha_{i,t} + \gamma_{j,t} + \epsilon_{i,j,t}$$

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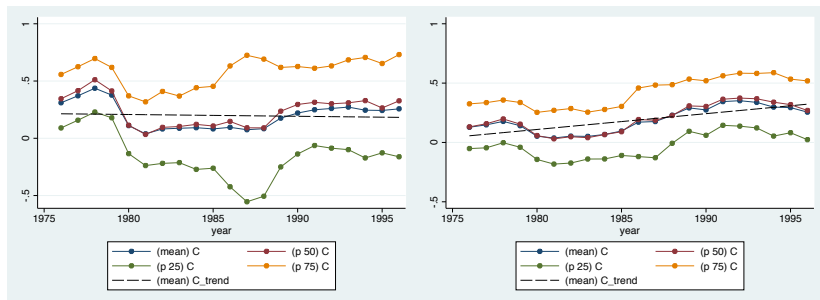
- ▶ I replicate paper's main results, i.e.  $post_{i,j,t}$  equals roughly 0.05-0.09 (depending on the fixed effects) and is statistically significant
- ▶ In particular, clustering at a more general level (i.e. state  $i$  or state  $j$ ) still works

## Yearly house price growth

- ▶ In the paper, trends are based on quarterly house price growth, i.e.  $pricegrowth_t = \ln(p_t) - \ln(p_{t-1})$
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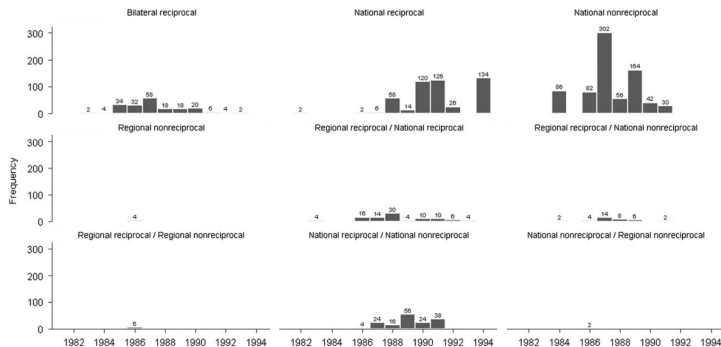
- ▶ Best linear fit is **-0.0023**, insignificant

# Timing

- Hard to say which way distribution of correlation moves (using yearly price growth) when states start to deregulate: decrease is actually consistent with an internal capital markets story

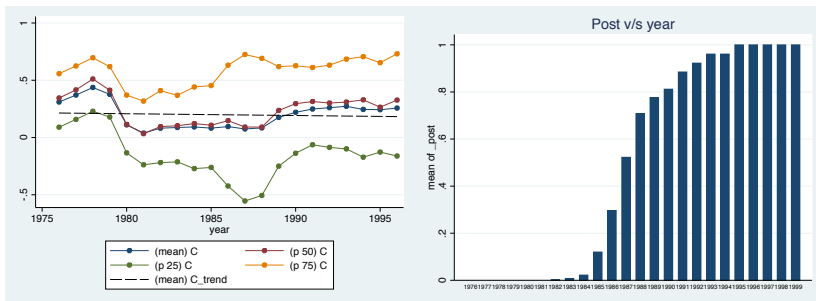
T. Michalski, E. Ors / *Journal of Financial Economics* 104 (2012) 89–117

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**Fig. 1.** Frequency distributions of state-pair bank-entry deregulations. This figure presents the frequency distribution of state-pair bank-entry deregulation types given the year in which they came into effect, using data available in Amel (2000). In bilateral reciprocal deregulation, both states in the state pair would have to allow entry to the banks of the other state for the deregulation to become effective. In national (regional) reciprocal deregulation, the origin-state allows entry by banks of all the other states of the Union (region) conditional on the fact that these states also allow entry to the banks of the origin-state: deregulation becomes effective as other states pass legislation that also allows entry. In national (regional) nonreciprocal deregulation no such reciprocity requirements are imposed. The figure also presents combinations in which the origin- and destination-state followed different types of interstate bank-entry deregulation.

## Timing (2)



Source:

<http://www.stlouisfed.org/publications/re/2007/b/pdf/dereg.pdf>

# Interpretation

- ▶ Distribution of pairwise correlations in house price growth across states increased between 1976 and 1996 when price growth is measured relative to last quarter
- ▶ Less clear pattern when price growth is measured relative to last year
  - ▶ What can explain this?

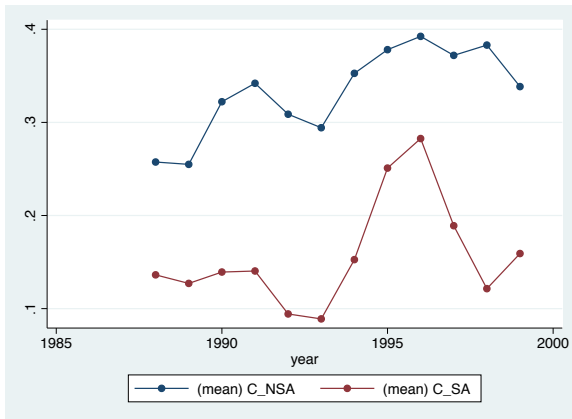
# Seasonality?

- ▶ Housing market is very seasonal
  - ▶ *"In the spring and summer months this propensity is higher because, for example, of the school calendar: families with school-age children may prefer to move in the summer, before their children start in new schools"* Ngai, Tenreyro (2014 AER forthcoming)
  - ▶ *"Even in normal times house prices tend to be stronger in the spring and early summer than in the fall and winter."* (From Calculated Risk)
  - ▶ Weather, geography, market for second-homes, could also explain this pattern
- ▶ FHFA data pre-1991 is not seasonally adjusted
- ▶ Reversion to mean?



# Case-Shiller data

- ▶ Case-Shiller index provides both raw and seasonally adjusted data at the monthly level, though only from 1987 onwards
- ▶ Similar analysis using 60 months ahead, monthly growth rates:



## Identification: reduced form

$$\rho_{i,j,t} = \delta_{i,j} + \beta post_{i,j,t} + \delta_t + \alpha_{i,t} + \omega_{j,t} + \epsilon_{i,j,t}$$

	$\rho_{i,j,t}$	$\rho_{i,j,t}$	$\rho_{i,j,t}$
$\beta$	0.0478	0.0441	0.1812
t-stat	(1.26)	(0.85)	(2.56)
state i-year FE	No	Yes	Yes
state j-year FE	No	No	Yes

- ▶ Standard errors clustered at the state  $i$  level (same if clustered at the state  $j$ )
- ▶ Last column is intriguing: reduced form result is there
  - ▶ Jump in coefficient when using state-year fixed effects
  - ▶ Less robust to sample selection (time period, years before after regulation, etc)

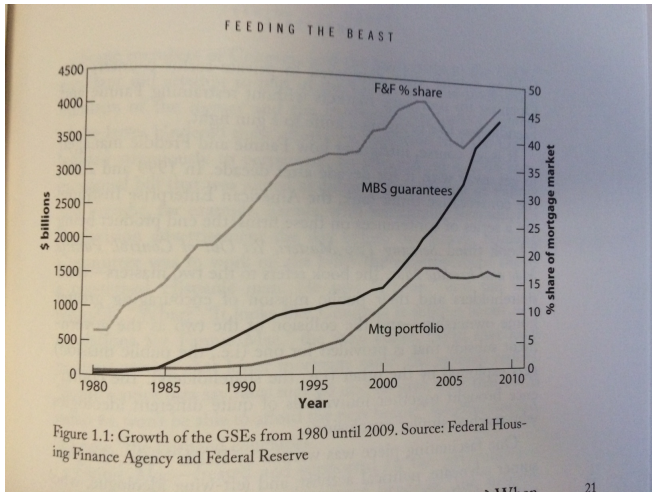
## Identification concern

- ▶ My reduced form regression suggests that effect of across-state bank deregulation exists in the time series
  - ▶ Would like to see s.e. robust to residual correlations at the state i **and** state j level

# Identification concern

- ▶ My reduced form regression suggests that effect of across-state bank deregulation exists in the time series
  - ▶ Would like to see s.e. robust to residual correlations at the state i **and** state j level
- ▶ However, hard to interpret
  - ▶ Income effects (e.g. Michalski, Ors 2011; Acharya, Imbs, Sturges 2011)?
- ▶ Contemporaneous events that may have affected states in heterogeneous manners?
  - ▶ Two examples: increase in GSE market share, and Savings and Loan crisis

# GSE market share

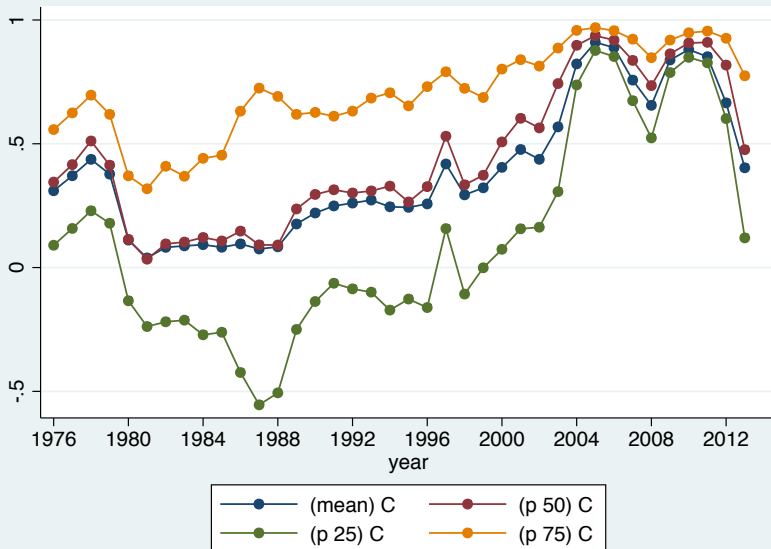


Source: "Guaranteed to Fail"

# Savings and Loan crisis

- ▶ Crisis affected different states at different times (<http://www.fdic.gov/bank/historical/s&l/>):
  - ▶ 1985: Ohio, Maryland
  - ▶ 1987: Texas (50% of S&L losses in the country) “*Texas economy in major recession: crude oil prices fall by nearly 50%, office vacancy is over 30%, and real estate prices collapse.*”
- ▶ Same year as interstate banking deregulation
- ▶ Further, because of heterogeneity in exposure, post crisis bank market share was differentially affected

However, in the longer run...



## To conclude

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  - ▶ A story based purely on banking integration is harder to square with this evidence
- ▶ Identification is hard!

# To conclude

- ▶ Interesting paper: novel mechanism that seems theoretically plausible
- ▶ Observation that pairwise correlation of house price growth increased from 1976 to 1996/2000 is most salient when growth is measured relative to last quarter
  - ▶ A story based purely on banking integration is harder to square with this evidence
- ▶ Identification is hard!
- ▶ What about the longer time series?
  - ▶ GSEs?
  - ▶ Sub-prime?
  - ▶ ...

Thanks

Thank you!

## Minor comments

- ▶ Controlling for ex post income growth correlation: endogenous
- ▶ Shouldn't it be  $(51 \times 51 - 51) / 2 = 1,275$  state pairs per year?
- ▶ Typos:
  - ▶ page 20: numbers don't line up with Table III
  - ▶ page 22: "...both states of the pairs  $(ij,t)$ ..."