Entry Barriers and Scale at Entry

Joonkyo Hong

The Pennsylvania State University

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  - Lower entry barriers
    - alter the entry cost schedule over different scales
    - **shift the scale dist.**
  - Predicted resource uses on operating costs w/o scale choice would be
    - lower than actual if more larger-scaled entrants
    - higher than actual if more smaller-scaled entrants

Theaters by Screen Counts in South Korea in 2013
(1 yr before land-use regulatory reforms)

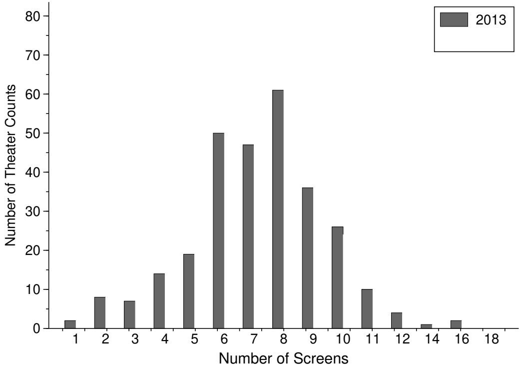

Figure: Number of theaters by screen counts: 2013

Theaters by Screen Counts in South Korea in 2018 (3 yrs after land-use regulatory reforms)

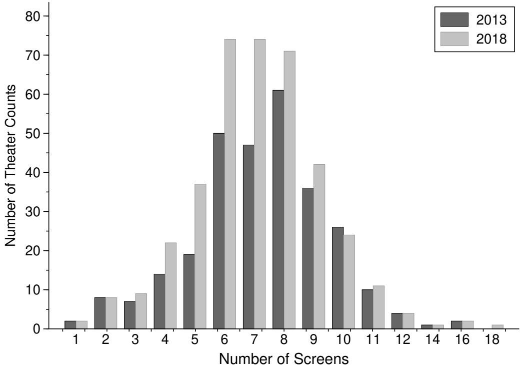

Figure: Number of theaters by screen counts: 2018

- invited more theaters; attracted middle-scaled theaters (5-7 screens)

Looking at Scale Choice Is Important

- The typical entry model looks at # entrants (i.e, theaters), ignoring
  - the influence of the reforms (reduction in entry costs) on
    - the screen choice upon entry
    - the shift of screen dist
  - its subsequent effect on resource uses on fixed operating and sunk entry costs

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    - the screen choice upon entry
    - the shift of screen dist
  - its subsequent effect on resource uses on fixed operating and sunk entry costs
- Exploiting the land-use regulatory reforms, this paper
  - measures the change in entry costs, accounting for *screen choice upon theater opening*
  - measures the response of market outcomes (screen dist. and net profit)
  - showcases that ignoring scale choices can generate a qualitatively different counterfactual

My Approach

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   - industry net profits
4. Re-do 3 using the typical dynamic entry model
   - learn the consequence of ignoring the screen decision upon theater opening

Preview of Findings

1. A salient increase in the number of mid-plex theaters relative to other types
   - the reforms have attracted mid-plex theaters by 9% than others

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2. The reforms have **disproportionately** shifted the *per-screen* sunk entry costs
   - per-screen entry costs drop by 32% and 27% for mid- and mega-plex (>=8)
   - the minimum efficient entry scale changes from mega-plex to mid-plex

Preview of Findings

1. A salient increase in the number of mid-plex theaters relative to other types
2. The reforms have **disproportionately** shifted the *per-screen* sunk entry costs
3. The disproportionate cost reductions **reduce** industry net profits by 5.6%
   - # theaters $\uparrow$ by 20%
   - Δ proportion of mini-, mid-, mega-plex theaters: -34%, 26%, -14%
   - industry's payments on entry costs $\downarrow$ 12%
   - resource uses on fixed operating costs $\uparrow$ 14%
   - Δ variable profit ≈ 0 as theaters steal business from each other

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3. The disproportionate cost reductions **reduce** industry net profits by 5.6%
4. The resulting loss of net profits is **not uncovered** by the typical entry model
   - ignoring the shift of screen distribution
   - under-predicting increases in fixed operating cost; over-predicting decreases in entry costs
   - incorrectly predicting that the reduced entry costs increases net profit by 27.3%

Contributions

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  - usually restricting strategy space to the extensive-margin dimension
  - My work: highlighting the limitation of status quo

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- To literature on discrete entry:
  - usually restricting strategy space to the extensive-margin dimension
  - My work: highlighting the limitation of status quo
- To literature on entry promotion measures and policymakers:
  - presuming removing an entry barrier is desirable
  - My work: highlighting the potential costs resulting from *business-stealing effects*

Outline of Talk

Data & Facts

Industry Model

Estimation & Results

The Impact of Reduced Sunk Entry Costs

Concluding Remarks

South Korean Theater Industry

- The typical chain industry
  - multi-store oligopoly: 3 chains (CGV, Lotte Cinema, Megabox)
  - geographically concentrated detail
  - the scope of service differentiation is limited
  - ticket prices are nearly fixed detail

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- Underwent a series of land-use regulatory reforms in 2014
  - executive orders by the Ministry of Land and Transportation in Feb and Sep 2014
  - removed stringent administrative processes
  - relaxed zoning restrictions in urban area

Data Sources

- Theater-Time information
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- Sample: fully balanced panel at the chain-market-time level
  - 3 chains, 131 municipalities, 2010H1-2018H2 (7,074 obs)
  - # of incumbent, entering, and exiting theaters by **screen counts**

Higher Turnover Rates Following the Reforms

Table: Entry and Exit Distribution (% of the sample)

	2010H1-2014H2	2015H1-2018H2
Entry	3.14%	4.25%
Exit	0.94%	1.24%
Unchanged	97.80%	94.51%

Note. The unit of measurement is firm-market-halfyear.

- Higher turnover rates are consistent with the reduced sunk entry costs
  - The reduced sunk entry costs encourages the entry of theaters
  - It increases the threat of potential entrant, increasing the exit of theaters as well

The Chainâs Theater Screen Choice Changed Following the Reforms

Table: Size Profile of Theater Entries and Exits

	2010H1-2014H2	2015H1-2018H2
Size profile of theater entries (%)		
Miniplex (screens less than 4)	15.45%	9.40%
Midplex (screens between 5 and 7)	52.85%	64.96%
Megaplex (screens more than 8)	31.71%	25.64%
Size profile of theater exits (%)		
Miniplex (screens less than 4)	40.54%	47.06%
Midplex (screens between 5 and 7)	56.76%	41.18%
Megaplex (screens more than 8)	2.70%	11.76%

- Suggesting the reform has affected the theater screen choices as well
- A model with extensive margin alone ignores this pattern

Do the Reforms Invite More Mid-plex Theaters?

- To confirm whether the entry of more mid-plex theaters is a result of the reforms
- In spirit of event study, scale category j, market m, half-year t,

$$n_{mt}^{(j)} = \theta_j + \theta_m + \theta_t + \sum_{k=-1}^{-8} \tau_k H_k D_j + \sum_{k=1}^{8} \tau_k H_k D_j + W'_{mt-1}\theta_w + u_{mt}^{(j)},$$

where

- $n_{mt}^{(j)}$: # of j category theaters: $j \in \{midplex, others\}$
- $\theta_j, \theta_m, \theta_t$: scale, market, and time FEs
- W_{mt-1}: population, GDP, commercial property prices in m and in $t-1$
- D_j: dummy of midplex theaters
- H_k: dummy of k halfyears relative to 2014H2

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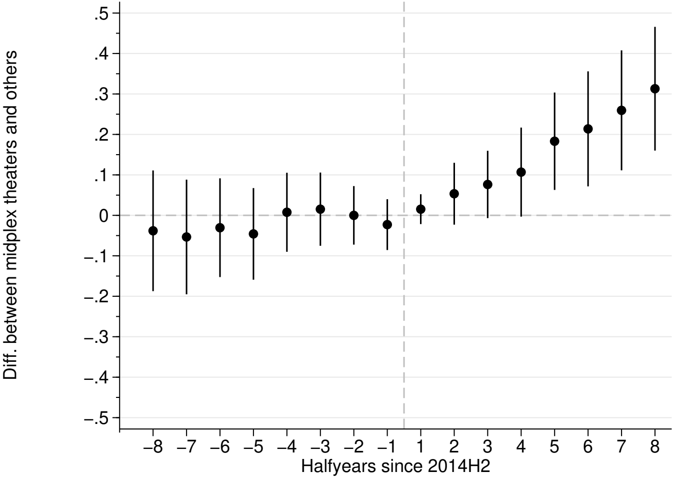

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- But, they are silent about
  1. The magnitude of the reduction in sunk entry costs
  2. Economic implication of the resulting shift of industry screen distribution
- Develop a dynamic oligopoly model to simulate market structure (# theaters & screen dist.) under the pre-reforms entry cost schedule

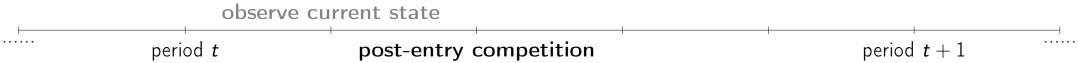
Environment

- Discrete time $t = 1, 2, 3, \ldots, \infty$
- Independent local markets $m = 1, 2, \ldots, M$
- Three chains $i = 1, 2, 3$
  - maximize NPV of net profits with beliefs over rivals' actions
  - by choosing screen counts of a theater opening/closing an existing theater
- Markov Perfect Nash Equilibrium

Publicly Observed State

- Chains observe state s_{mt} containing
  - own configuration $\vec{n}_{imt} = (n_{imt}^{(1)}, \ldots, n_{imt}^{(J)})$
  - rival configuration $\vec{n}_{-imt}$
  - population, GDP per capita, and commercial property prices $(z_{1mt}, z_{2mt}, R_{mt})$

Flow Operating Profit

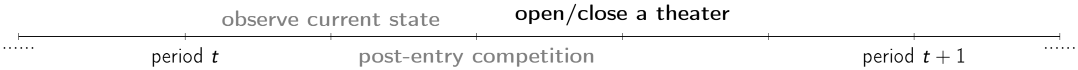


- Reduced-form operating profits

$$\pi_{im}(s_{mt}) = k_{imt} \times (-FIXED_{im} - FIXED_R R_{mt} + z'_{mt}\lambda + \gamma_1 k_{imt} + \gamma_2 k_{-imt})$$

  - $k_{imt} = \sum_j n_{imt}^{(j)}$: total number of same-chain screens
  - $k_{-imt} = \sum_{l \neq i} k_{lmt}$: total number of rival-chain screens
  - $FIXED_{im}$: fixed costs (or baseline profits)
- Two trade-offs for opening a larger-scale theater
  - higher fixed costs ($FIXED_R$) vs. higher variable profits (λ)
  - cannibalization (γ_1) vs. business-stealing (γ_2)

Sunk Entry Costs



- Average *per-screen* sunk entry cost schedules $(SUNK_1, \ldots, SUNK_J)$
- Privately observed cost shock $\varepsilon_{imt} \sim G$
- Sunk costs for opening a d-screen theater $(d > 0)$

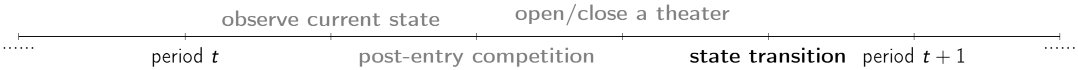
$$C(d, R_{mt}, \varepsilon_{imt}) = [d \times SUNK_d + d \times \varepsilon_{imt}] \times R_{mt}$$

- Closing a d-screen theater $(d < 0)$

$$C(d, R_{mt}, \varepsilon_{imt}) = d \times \varepsilon_{imt} \times R_{mt}$$

- Flexible schedule admits both economies and diseconomies of entry scale

Transition



- Transition of market configuration

$$n^{(j)}_{imt+1} = n^{(j)}_{imt} + \mathbb{I}_{\{d_{imt}=j\}} - \mathbb{I}_{\{d_{imt}=-j\}}$$

- Transition of market demand and cost shifters

$$F_m(z_{mt+1}, R_{mt+1} | z_{mt}, R_{mt})$$

Dynamic Optimization

- Chain i takes public state s given; forms beliefs Ψ_i over rivals' decisions
- Chain i's choice over a new theater's screens σ_i: a Markov strategy

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- Chain i's choice over a new theater's screens σ_i: a Markov strategy
- The corresponding Bellman equation is given by

$$V_i(s;\sigma_i,\Psi_i) = \pi_i(s) + \int_{\varepsilon_i} \max_{d_i \in D(\vec{n}_i)} \left[-SUNK_{d_i} d_i \mathbb{I}_{\{d_i>0\}} R - d_i \varepsilon_i R + W(d_i|s,\Psi_i) \right] dG(\varepsilon_i),$$

where

- $W(d_i|s,\Psi_i) =$
$\beta \sum_{\vec{n}'_{-i},z'_1,z'_2,R'} V_i(\vec{n}'_i(\vec{n}_i,d_i),\vec{n}'_{-i},z'_1,z'_2,R')\Psi_i(\vec{n}'_{-i}|s)F(z'_1,z'_2,R'|z_1,z_2,R)$

Sunk Cost Schedule & Optimal Screen Choices

- Focus on a cutoff strategy σ_i

$$\bar{\varepsilon}_{d+1,d} < \varepsilon_i < \bar{\varepsilon}_{d,d-1} \Rightarrow i \text{ opens a } d\text{-screen theater},$$

where

$$\bar{\varepsilon}_{d,d-1} = \frac{W(d|s,\Psi) - W(d-1|s,\Psi)}{R} - SUNK_{d-1} - d \times (SUNK_d - SUNK_{d-1})$$
$$\bar{\varepsilon}_{d+1,d} = \frac{W(d+1|s,\Psi) - W(d|s,\Psi)}{R} - SUNK_d - (d+1) \times (SUNK_{d+1} - SUNK_d)$$

- Economies of entry scale ($SUNK_d < SUNK_{d-1}$) $\rightarrow \bar{\varepsilon}_{d,d-1} \uparrow$: more likely to open a d-screen theater
- Diseconomies of entry scale ($SUNK_d > SUNK_{d-1}$) $\rightarrow \bar{\varepsilon}_{d,d-1} \downarrow$: less likely to open a d-screen theater

Markov Perfect Nash Equilibrium

- A MPNE constitute optimal cutoff strategy profile $(\sigma_1^*, \sigma_2^*, \sigma_3^*)$ and belief profile $(\Psi_1^*, \Psi_2^*, \Psi_3^*)$ such that

  1. $V_i(s; \sigma_i^*, \Psi_i^*) \geq V_i(s; \tilde{\sigma}_i, \Psi_i^*)$ (Optimality)
  2. $\Psi_i^*(\vec{n}_{-i}|s) = \prod_{l \neq i} P_l^*(\sigma_l^*|s)$ (Belief Consistency)

Tying the Model to the Data

1. Estimate an ordered probit model of screen counts choice with time-varying cutpoints (pre- and post-reforms)
   - complete description of what chains will do at any state (conditional choice probs.; CCPs)
   - tell how chains adjust the theater scale decision following the reforms

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   - complete description of what chains will do at any state (conditional choice probs.; CCPs)
   - tell how chains adjust the theater scale decision following the reforms
2. Find the parameters at which the estimated CCPs weakly dominate alternative strategies
   - allow fixed operating (or base profit) and sunk entry costs to differ before and after the reforms
   - obtain the cost effects of the land-use regulatory reforms

1st Step: Equilibrium Choice Over Theater Openingâs Screen Counts

- Assumption $\varepsilon_{imt} \sim N(0, \nu)$ implies cutoff strategy σ_i is characterized by an ordered probit regression

$$P(d_{imt} = j | s_{mt}, r) = \Phi(\kappa_{ijr} - y^*_{imt}) - \Phi(\kappa_{i,j-1,r} - y^*_{imt}),$$

  where $r \in \{\text{pre-reforms, post-reforms}\}$;

$$y^*_{imt} = \alpha_1 k_{imt} + \alpha_2 k_{-imt} + z'_{mt}\alpha_z + \alpha_R R_{mt} + \delta_m$$

- Cutpoint κ_{ijr} differ before and after the reforms: capture the changes in fixed operating and sunk entry costs

* Coarsen screen counts into three scale categories:
<=4 (mini; 3-screen), 5–8 (mid; 6-screen)), >=8 (mega; 9-screen))

1st Step: Predicted Probabilities Implied by Estimates

Table: Predicted Probabilities at Median of Explanatory Variables: CGV

Predicted Probs.	2010H1-2014H2	2015H1-2018H2
	CGV	
$P(d=0\|s)$	0.9813	0.9385
$P(d=3\|s)$	0.0044	0.0079
$P(d=6\|s)$	0.0103	0.0418
$P(d=9\|s)$	0.0041	0.0118

- At the median of other explanatory vars, $P(d>0|s, CGV)$ increases by 4.28%p
- $P(d=3|s, d>0, CGV)$ decreases by 11%p; $P(d=6|s, d>0, CGV)$ increases by 13%p
- Similar patterns arise for the other chains Others

coeff cutpoints

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  - $\hat{V}(\hat{P}_i, \hat{P}_{-i}; \Theta)$
  - $\hat{V}(\tilde{P}_i, \hat{P}_{-i}; \Theta)$
- MPNE restriction requires there are no profitable deviations at the true parameter Θ_0

$$\hat{V}(\hat{P}_i, \hat{P}_{-i}; \Theta_0) \geq \hat{V}(\tilde{P}_i, \hat{P}_{-i}; \Theta_0)$$

- $\hat{\Theta}$ best minimizes profitable deviations (Bajari, Benkard, and Levin (2007))

detail

2nd Step: Imposing Equilibrium Restriction

- Estimate *FIXED* and *SUNK* separately for periods before and after the reforms
  - Rust and Rothwell (1996), Ryan (2012), Kalouptsidi (2018)
- Calibrations
  - $SUNK_6 = 300$M KRW: matching the engineering estimate of a business report
  - $\beta = 0.963$: matching the annual real interest rates of 7.8% in South Korea from 2010 to 2018 relevance

Effects on Fixed Costs/Baseline Profits Are Not Considerable

Table: Averaged *per-screen* fixed operating cost/baseline profit (in millions of 2011 KRW)

	Pre		Post		Difference	
$\overline{FIXED}_i$	Estimates	SEs	Estimates	SEs	Estimates	SEs
CGV	8.53	3.64	-2.84	3.72	-11.37	3.27
Lottecinema	5.53	3.12	-6.14	3.50	-11.67	3.02
Megabox	19.39	3.75	-9.15	3.88	-28.54	3.77

- reduced fixed opearting costs (or increased baseline profitability)
- small magnitude changes relative to sunk entry costs (ex: 28/300), suggesting a substantial reduction in sunk costs

variable profit

Effects on Sunk Costs Are Significant

Table: *Per-screen* sunk entry cost parameters (in millions of 2011 KRW)

	Pre		Post		Difference	
	Estimates	SEs	Estimates	SEs	Estimates	SEs
3-screen ($SUNK_3$)	524.46	14.66	439.56	34.06	-84.90	41.60
6-screen ($SUNK_6$)	*300.00*	N/A	202.98	10.10	-97.02	10.10
9-screen ($SUNK_9$)	287.55	4.96	220.28	12.85	-67.27	12.76

*The standard deviation of private cost shock (ν) is estimated 64.63

- Following the reforms, 6-screen becomes the minimum efficient entry scale
- In terms of *total* sunk entry costs, the costs for 6- and 9-screen theaters decrease equally by 600 million KRW

Experiment Overview

- Held fixed at estimates for post-reforms periods:
  - Fixed costs (or baseline profits)
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- Simulate market outcomes $Q(SUNK_{pre})$ under pre-reform sunk entry cost schedule
  - $SUNK_{pre} = (1.16 SUNK_{3,post}, 1.47 SUNK_{6,post}, 1.33 SUNK_{9,post})$
  - Compute the corresponding equilibrium CCPs through best-response iterations
  - Q : proportion of mini-,mid-,mega-plex theaters; NPV of profits and costs

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- Calculate

$$\frac{Q(SUNK_{post}) - Q(SUNK_{pre})}{Q(SUNK_{pre})}$$

  - $Q(SUNK_{post})$: caculated using the 1st-stage CCPs for periods after the reforms (Arcidiacono et al. (2016))
    * narrowly focus only on the impacts of the reduced sunk entry costs

More Mid-plex Theaters Over the Middle-run

Table: Reduced Sunk Entry Costs and Industry Composition (%)

	Year			
	1	3	5	7
Changes in the number of movie theaters				
Percent	7.51	17.95	20.33	21.04
Changes in the number of movie screens				
Percent	7.43	17.44	19.64	20.23
Changes in proportion of mini-plex theaters				
Percent	-8.49	-21.25	-28.73	-34.14
Changes in proportion of mid-plex theaters				
Percent	4.63	14.23	20.71	26.35
Changes in proportion of mega-plex theaters				
Percent	-2.19	-7.62	-11.26	-14.42

Lower Entry Barrier Decreases Industry Entry Costs

Table: Reduced Sunk Entry Costs and Industry Performance

	Percent	billions in KRW
Δ NPV of net profits (Chain value)		
Industry Total		
Δ NPV of variable profits		
Industry Total		
Δ NPV of fixed operating costs		
Industry Total		
Δ NPV of sunk entry costs		
Industry Total	-12.53	-95.68

* NPV of scrap values ($E(\nu|d < 0, s)$) are suppressed for expositional purpose

- Industry saves payments on entry costs by 12% (95.68 bill KRW)
- Because of more entrants, the entry cost savings are smaller than the reduction of per-screen entry costs (14% – 32%)

It Increases Industry Operating Costs

Table: Reduced Sunk Entry Costs and Industry Performance

	Percent	billions in KRW
Δ NPV of net profits (Chain value)		
Industry Total		
Δ NPV of variable profits		
Industry Total		
Δ NPV of fixed operating costs		
Industry Total	14.59	367.26
Δ NPV of sunk entry costs		
Industry Total	-12.53	-95.68

* NPV of scrap values ($E(\nu | d < 0, s)$) are suppressed for expositional purpose

- New mid-plex that would be mini-plex under the pre-reform entry cost increase the industry's spending on fixed operating costs
- Resource uses on fixed operating costs ↑ by 14.59% (367.26 bill KRW)

Theaters Steal Business From Each Others

Table: Reduced Sunk Entry Costs and Industry Performance

	Percent	billions in KRW
Δ NPV of net profits (Chain value)		
Industry Total	-5.60	-77.35
Δ NPV of variable profits		
Industry Total	-0.26	-10.79
Δ NPV of fixed operating costs		
Industry Total	14.59	367.26
Δ NPV of sunk entry costs		
Industry Total	-12.53	-95.68

* NPV of scrap values ($E(\nu|d<0,s)$) are suppressed for expositional purpose

- Theaters steal businesses from each other, not expanding the market
- Industry variable profits do not change considerably
- A loss of net profit arises

Abstracting Away Scale Choices Fails To Uncover Higher Resource Uses

Table: When scale choices are ignored

	Baseline Model		Restricted Model (no scale choice)	
	Percent	billions in KRW	Percent	billions in KRW
Δ NPV of net profits (Chain value)				
Industry Total	-5.60	-77.35	27.3	311.51
Δ NPV of variable profits				
Industry Total	-0.26	-10.79	-0.00	-0.908
Δ NPV of fixed operating costs				
Industry Total	14.59	367.26	2.77	120.83
Δ NPV of sunk entry costs*				
Industry Total	-12.53	-95.68	-23.1	-169.95

* NPV of scrap values ($E(\nu|d < 0, s)$) are suppressed for expositional purpose

- Savings from the reduced sunk costs are over-predicted
- Increases in fixed operating costs are under-predicted

Recaps

- Combine web-archived data on movie theaters and a case study to explore the economic implications of scale choices upon entry
- Look at the land-use regulatory reforms as a reduction in entry costs; recognize the reforms alter the optimal entry scale (screen)
- The resulting shift of the screen distribution incurs substantial resource uses on fixed operating costs, leading to a loss of industry net profit
- Standard entry model underpredicts resource uses on fixed operating costs, predicting the positive profit effect of the entry cost reduction
- My idea can be applied to other settings where entrants jointly decide entry and scale decisions, and regulators are interested in entry promotion measures

Most markets have fewer than 5 theaters

Table: Summary of Market Structure

# of theaters	# of municipality-semester obs.	Percent
0	265	11.24%
1	721	30.58%
2	631	26.76%
3	302	12.81%
4	204	8.65%
5	120	5.09%
6 or more	115	4.88%
Total	2,358	100%

Return

Prices are nearly Fixed

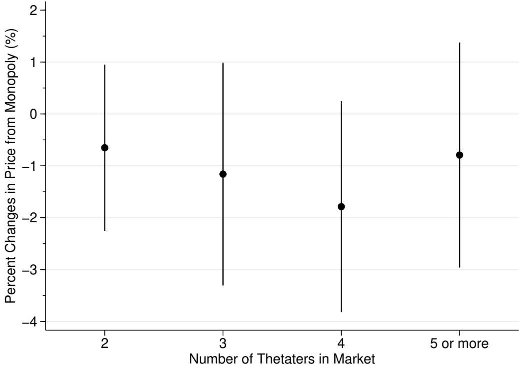

Figure: Local Market Price with the Number of Theaters

Return

1st step: coefficients

Table: Ordered Probit on Intensive Marginal Theater Entry-Exit Decision: coefficients

Covariates	(1)	(2)
# own chain screens	-0.1013^{***}	-0.0260^{***}
	(0.0129)	(0.0094)
# rival chain screens	-0.0739^{***}	0.0022
	(0.0082)	(0.0034)
population (thousand people)	0.0084^{***}	0.0008^{***}
	(0.0014)	(0.0001)
GDP per capita (thousand KRW)	0.0057	0.0013
	(0.0048)	(0.0007)
Property value per m^2 (million KRW)	-0.3692^{*}	-0.0250
	(0.2067)	(0.0160)
Market Dummies	✓	
Log likelihood	-1456.33	-1551.38
Observations	6,681	

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Return

1st step: cutpoints

Table: Ordered probit on screen counts of theater opening/closure: cutpoints

Cutpoints	2010H1-2014H2	2015H1-2018H2
	CGV	
κ_3	3.1500	2.6105
κ_6	3.2563	2.6788
κ_9	3.7141	3.3317
	Lotte Cinema	
κ_3	3.0476	2.7593
κ_6	3.1540	2.8276
κ_9	3.6118	3.4805
	Megabox	
κ_3	3.4949	2.6464
κ_6	3.6012	2.7148
κ_9	4.0590	3.3676

Return

1st step: cutpoints

Table: Predicted Probabilities at Median of Explanatory Variables

Predicted Probs.	2010H1-2014H2	2015H1-2018H2
	Lotte Cinema	
$P(d=0\|s)$	0.9761	0.9546
$P(d=3\|s)$	0.0054	0.0062
$P(d=6\|s)$	0.0130	0.0313
$P(d=9\|s)$	0.0055	0.0079
	Megabox	
$P(d=0\|s)$	0.9924	0.9427
$P(d=3\|s)$	0.0020	0.0074
$P(d=6\|s)$	0.0043	0.0391
$P(d=9\|s)$	0.0014	0.0107

Return

BBL Details: Imposing equilibrium restriction

- Simulate the market states forward and approximate the value function

$$\hat{V}_i(s|\hat{P}_i, \hat{P}_{-i}; \Theta) = \mathbb{E}[\sum_{t=0}^{T} \beta^t \zeta_i(s_t, \varepsilon_{it}; d_t; \Theta)|s_0 = s, \hat{P}_i, \hat{P}_{-i}],$$

  where $\zeta_i(s_t, \varepsilon_{it}; d_t) = \pi_i(s_t) - C(d_t, \varepsilon_{it}, R_t)$

- For perturbed strategy $\tilde{P}_i$, calculate the resulting value function $\hat{V}_i(s|\tilde{P}_i, \hat{P}_{-i}; \Theta)$ analogously

- The value of deviating from $\hat{P}_i$ to $\tilde{P}_i$

$$g_i(s|\hat{P}_i, \tilde{P}_i; \Theta) = \hat{V}_i(s|\tilde{P}_i, \hat{P}_{-i}; \Theta) - \hat{V}_i(s|\hat{P}_i, \hat{P}_{-i}; \Theta)$$

- $\Rightarrow \hat{\Theta}$ best minimizes the values of profitable deviations

$$\hat{\Theta} = \arg\min_{\Theta} \int_{\tilde{P}_i} \sum_{s,i} g_i^2(s|\hat{P}_i, \tilde{P}_i; \Theta) \mathbb{I}_{\{g_i(s|\hat{P}_i, \tilde{P}_i; \Theta) > 0\}} dQ(\tilde{P}_i)$$

Return

Calibration is relevant: Operating Margins

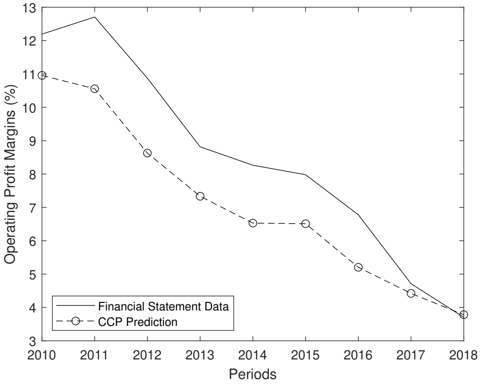

Figure: Operating Margins: CGV

- Simulated by using the estimated profit function parameters and CCPs

Return

2nd step: variable profit parameters

Table: Estimates of variable profits per screen (in millions of 2011 Korean Won)

	Estimates	SEs
Competitive Effects: γ		
Cannibalization	-3.8228	0.2392
Rival competition	-3.4897	0.3130
Demand Shifters: λ		
Population (thousands)	0.3676	0.0241
GDP per capita (thousand 2011 KRW)	0.0964	0.0402

Return