Initial Property Offering: Underpricing and Learning in the Presale Housing Market

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Motivation

- Product pricing is one of the most challenging decisions producers and marketers make.
- We don't fully understand producers' pricing strategies, including pricing sequentially sold products with dynamic prices.
- Inspired by IPO underpricing.
  - Leaving money on the table.
  - Information asymmetry, signaling, issues mechanism, behavioral explanations, etc.
  - Baron, 1982; Baron Holmström, 1980; Benveniste Spindt, 1989; Khurshed, Paleari, Pande, Vismara, 2014; Muscarella Vetsuypens, 1989; Neupane Poshakwale, 2012; Rock, 1986; Welch, 1989;Allen Faulhaber, 1989; Grinblatt Hwang, 1989; Ibbotson, 1975; Ritter, 1984; Welch, 1989, etc.

Motivation

- Presale real estate
  - A prevailing selling mode, especially in Southeast Asia.
  - Developers set and adjust prices during sequential sales.
- Presale literature
  - Price anomalies (Munneke, Ooi, Sirmans, Turnbull, 2019), transaction volume (Yiu, Wong, Chau, 2009), housing quality (Chau, Wong, Yiu, 2007), speculation (Fu, Qian, Yeung, 2016).

Introduction

- Singapore presale private properties over 20 years.
- Selling prices of the presale residential projects show rising trends (approximately 1% every 100 days) since the launch date.
- Developers unconsciously leave money on the table and learn from experience and adjacent peers to adjust subsequent projects' pricing.

Introduction

- Presale projects in Singapore
  - Developers recruit marketing teams and promote projects.
  - Prospective purchasers visit show flats. Developers disclose estimated price ranges.
  - Keen purchasers may submit their Expression of Interest (EOI).
  - Project launch.
  - Purchasers with EOI and walk-in purchasers sign the Sales and Purchase Agreement (SPA) and progressively make payments.
  - Temporary Occupation Permit (TOP) date when the purchaser can move into the completed flat and pay at least 40% of the price.

Data

- Property transactions
  - Non-landed private property transactions from the Real Estate Information System (REALIS), 2000-2020.
  - Drop completed flats transactions at purchase.
  - Delete observations with missing, uncompleted, or wrong property attributes.
  - Exclude projects with less than 20 transactions.
  - Trim transactions outside the 1% and the 99% thresholds of unit price and flat area.

Data

- Developers
  - Listed developer names on REALIS.
  - Firm-level registration date, ownership, merged by name, collected from the Orbis database.
  - Remove developers registered before 2000.

Data

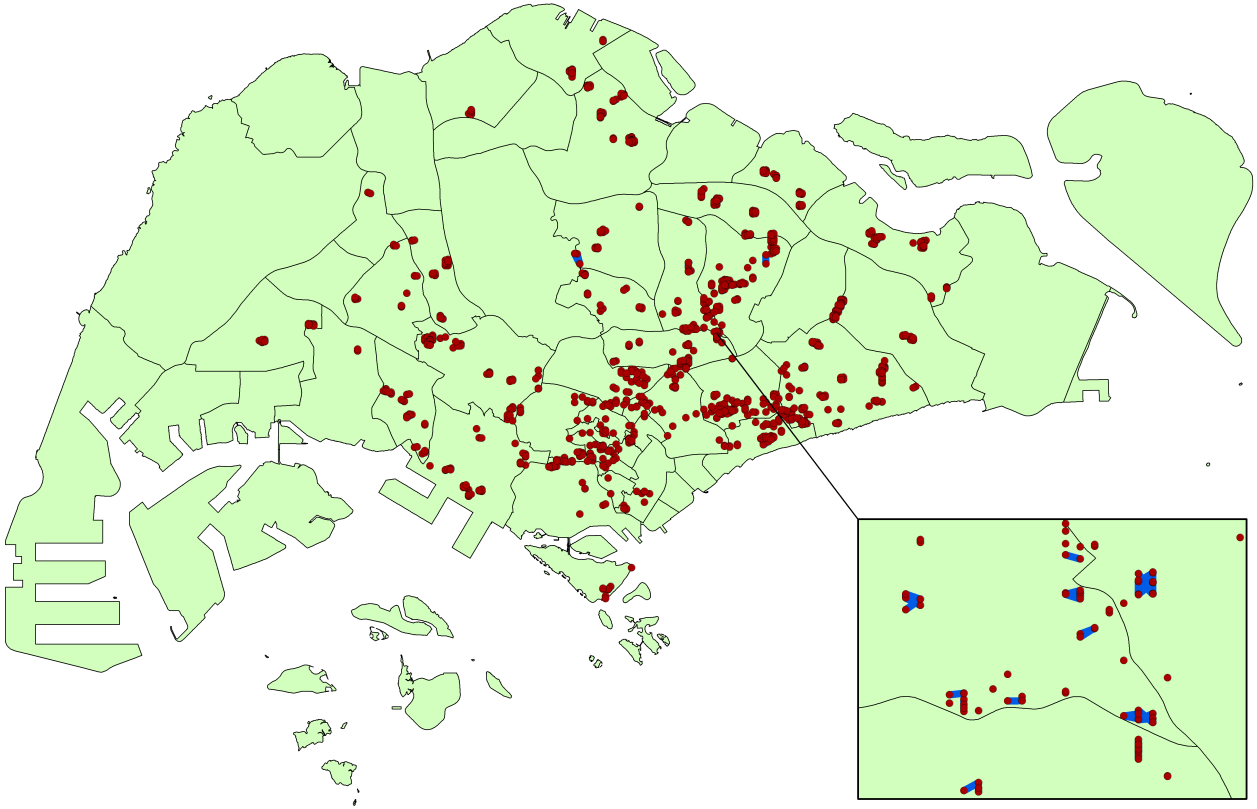

Figure 1: Distribution of presale private properties

Data

Table 1: Summary statistics

Variable	Unit	N	Mean	SD	Min	Max
unit price	S$/m2	65,142	13,573.590	4,598.869	5,208.000	32,524.000
number of days since launching	/	65,142	76.385	94.319	1.000	365.000
flat area	m2	65,142	84.829	37.613	36.000	259.000
flat level	/	65,142	9.864	7.895	1.000	67.000
purchaser type	/	65,142	0.490	0.500	0.000	1.000
distance to nearest MRT station	km	65,142	0.642	0.489	0.028	3.438
distance to nearest bus stop	km	65,142	0.135	0.122	0.005	2.401
distance to nearest top 30 primary school	km	65,142	1.537	0.898	0.047	5.071
distance to CBD	km	65,142	8.338	4.176	0.953	18.195

Empirical design

flat i, project j, time t

number of days since launch

control variables

$$ln(unit\ price)_{ijt} = \alpha + \beta daysincelaunch_{ij} + X'\Gamma + \tau_t + \mu_p + \varepsilon_{ijt}$$

year-month FE

project FE;
postal code FE;
project-stack FE;
project-stack-storey range FE

BLOCK 8

	01	02	03	04	05	06	07	08	09
10	CPG3	CPG3	BP1	BPS1	B1	CPG3	DPF1	BP1	AF1
09	CPG3	CPG3	BP1	BPS1	B1	CPG3	SKY GARDEN	BP1	AF1
08	CPG3	CPG3	BP1	BPS1	B1	CPG3		BP1	AF1
07	CPG3	CPG3	BP1	BPS1	B1	CPG3	DPF1	BP1	AF1
06	CPG3	CPG3	BP1	BPS1	B1	CPG3	DPF1	BP1	AF1
05	CPG3	CPG3	BP1	BPS1	B1	CPG3	DPF1	BP1	AF1
04	CPG3(P)	CPG3(P)	BP1(P)	BPS1(P)	B1(P)	CPG3(P)	DPF1(P)	BP1(P)	AF1(P)

BLOCK 12

	20	21	22	23	24	25	26	27	28	29
11	C1	CPG3	BP1	AF1	BPS1	BP1	CPG2	BP1	B2	AF1
10	C1	CPG3	BP1	AF1	BPS1	BP1	CPG2	BP1	B2	AF1
09	C1	CPG3	BP1	AF1	BPS1	BP1	CPG2	BP1	B2	AF1
08	C1	CPG3	BP1	AF1	BPS1	BP1	CPG2	BP1	B2	AF1
07	C1	CPG3	BP1	AF1	BPS1	BP1	CPG2	BP1	B2	AF1
06	C1	CPG3	BP1	AF1	BPS1	BP1	CPG2	BP1	B2	AF1
05	C1	CPG3	BP1	AF1	BPS1	BP1	CPG2	BP1	B2	AF1
04	C1(P)	CPG3(P)	BP1(P)	AF1(P)	BPS1(P)	BP1(P)	CPG2(P)	BP1(P)	B2(P)	AF1(P)

BLOCK 16

	40	41	42	43	44	45	46	47	48	49
11	C1	CPG3	BP1	BP1	BP1	C1	C2	AF1	BP1	AF1
10	C1	CPG3	BP1	BP1	BP1	C1	C2	AF1	BP1	AF1
09	C1	CPG3	BP1	BP1	BP1	SKY GARDEN	C2	AF1	BP1	AF1
08	C1	CPG3	BP1	BP1	BP1		C2	AF1	BP1	AF1
07	C1	CPG3	BP1	BP1	BP1	C1	C2	AF1	BP1	AF1
06	C1	CPG3	BP1	BP1	BP1	C1	C2	AF1	BP1	AF1
05	C1	CPG3	BP1	BP1	BP1	C1		AF1	BP1	AF1
04	C1(P)	CPG3(P)	BP1(P)	BP1(P)	BP1(P)			AF1(P)	BP1(P)	AF1(P)

Initial property underpricing

- Presale properties increase by approximately 0.6% to more than 1% every 100 days since the project launch.

Table 2: Presale property underpricing

	(1) ln (unit price)	(2) ln (unit price)	(3) ln (unit price)	(4) ln (unit price)
daysincelaunch (100 days)	0.013***	0.009**	0.009***	0.006**
	(0.004)	(0.004)	(0.003)	(0.003)
Controls	√	√	√	√
Year-month FE	√	√	√	√
Project FE	√			
Postal code FE		√		
Project-stack FE			√	
Project-stack-storey range FE				√
Observations	65,138	65,123	64,262	63,244
R-squared	0.968	0.972	0.989	0.991

Initial property underpricing

- Robustness check by adding the relative change in Google Trends as the demand measurement.

Table 2A: Robustness check on underpricing: control for the demand side

	(1) ln (unit price)	(2) ln (unit price)	(3) ln (unit price)	(4) ln (unit price)
daysincelaunch (100 days)	0.013***	0.008*	0.006**	0.005*
	(0.005)	(0.005)	(0.003)	(0.003)
Controls	√	√	√	√
Year-month FE	√	√	√	√
Project FE	√			
Postal code FE		√		
Project-stack FE			√	
Project-stack-storey range FE				√
Observations	40,966	40,949	40,447	39,660
R-squared	0.964	0.97	0.988	0.991

Initial property underpricing

- We divide the sample period into six periods and test the price dynamics.

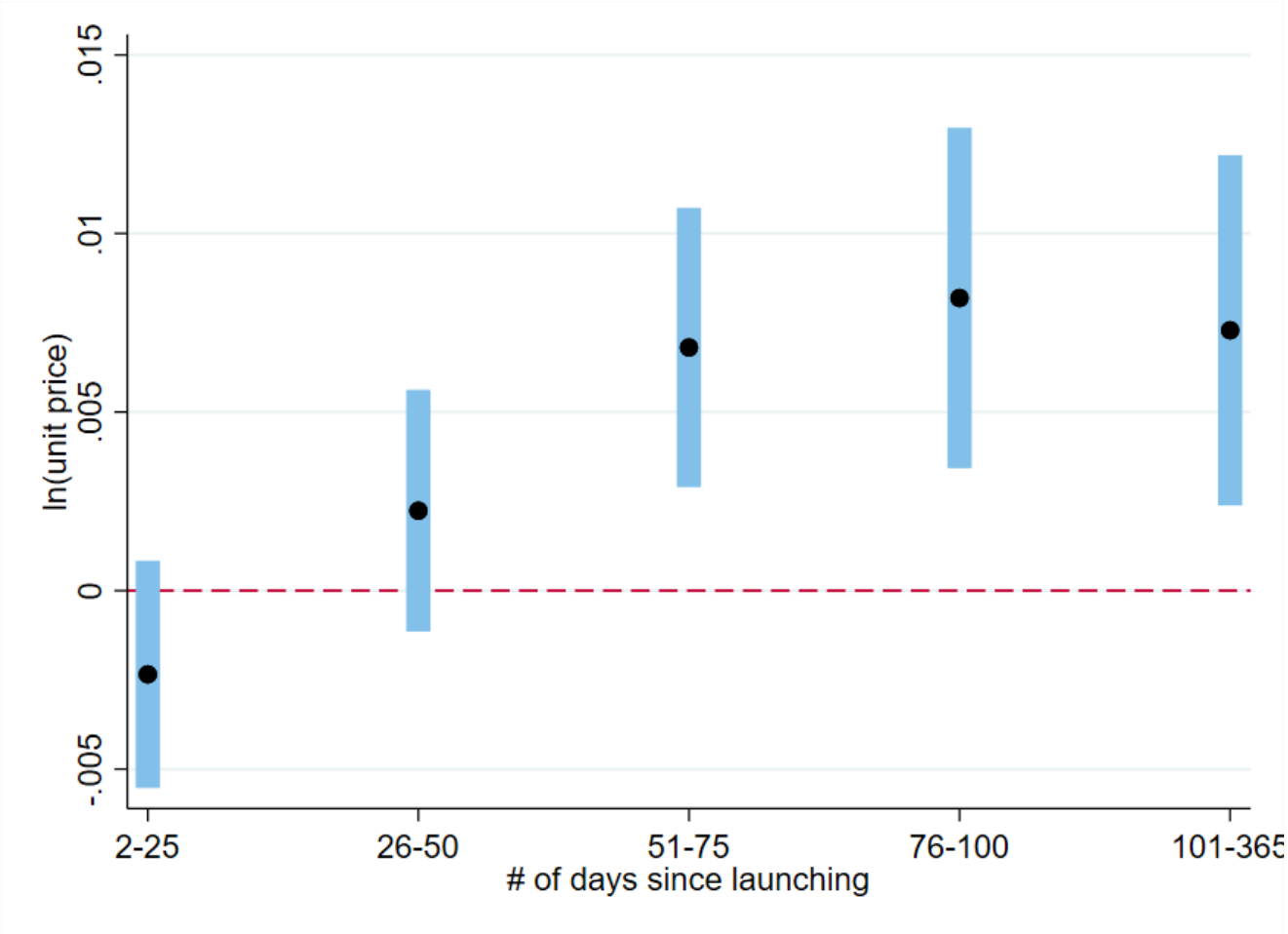

Figure 2: Price trends of presale properties since launching

Initial property underpricing

- Heterogeneous test: mature firms underprice more.

Table 3: Heterogeneity by developer's registration date

	(1) ln (unit price)	(2) ln (unit price)	(3) ln (unit price)	(4) ln (unit price)
daysincelaunch (100 days) × mature firm	0.007**	0.008**	0.009***	0.006**
	(0.003)	(0.003)	(0.003)	(0.003)
daysincelaunch (100 days)	0.011**	0.006	0.006**	0.004
	(0.004)	(0.004)	(0.003)	(0.003)
Controls	√	√	√	√
Year-month FE	√	√	√	√
Project FE	√			
Postal code FE		√		
Project-stack FE			√	
Project-stack-storey range FE				√
Observations	65,138	65,123	64,262	63,244
R-squared	0.968	0.972	0.989	0.991

Learning from experience

- Developers only leave money for purchasers in their first two projects. They learn and adjust their pricing strategies in the following projects.

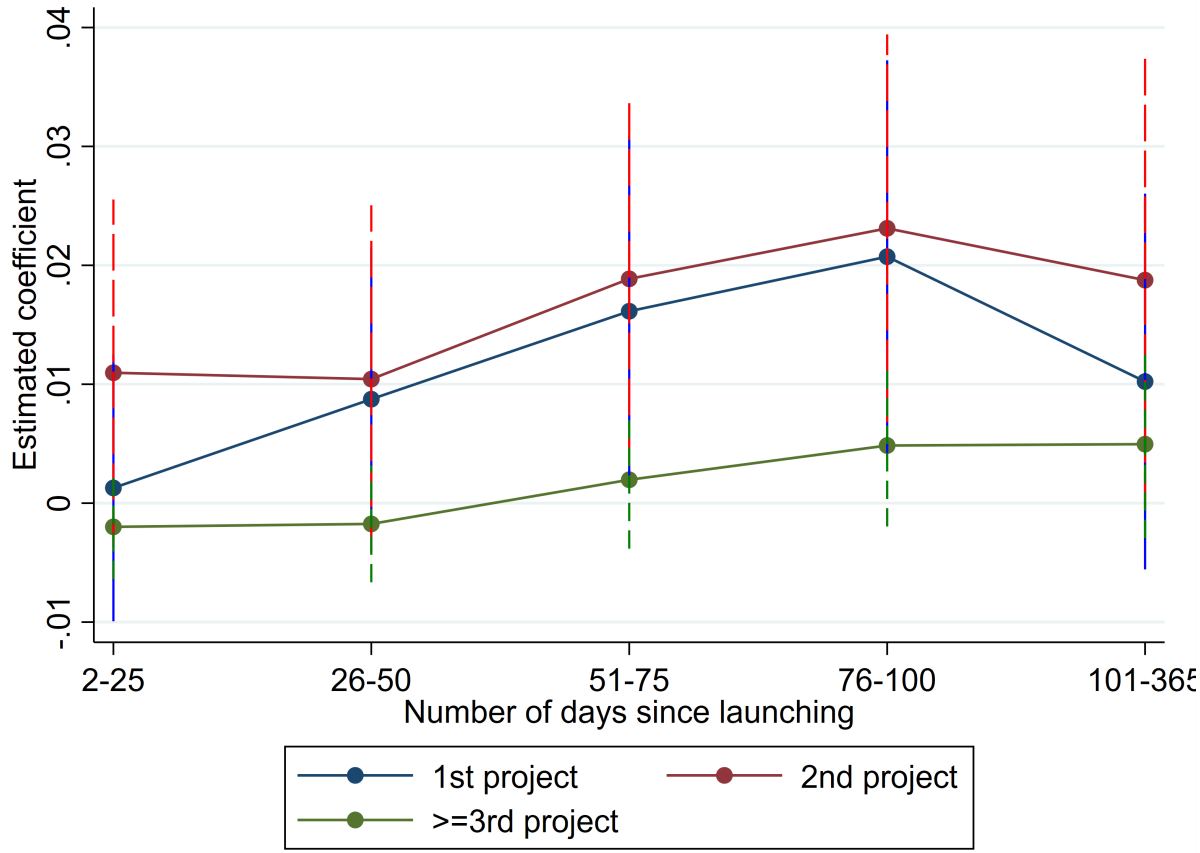

Figure 3: Learning in pricing sequential projects of developers

Learning from adjacent peers

- For a project, if there were more than ten projects launched before it within its 2 km radius, it has a significantly milder price appreciation trend after its launch.

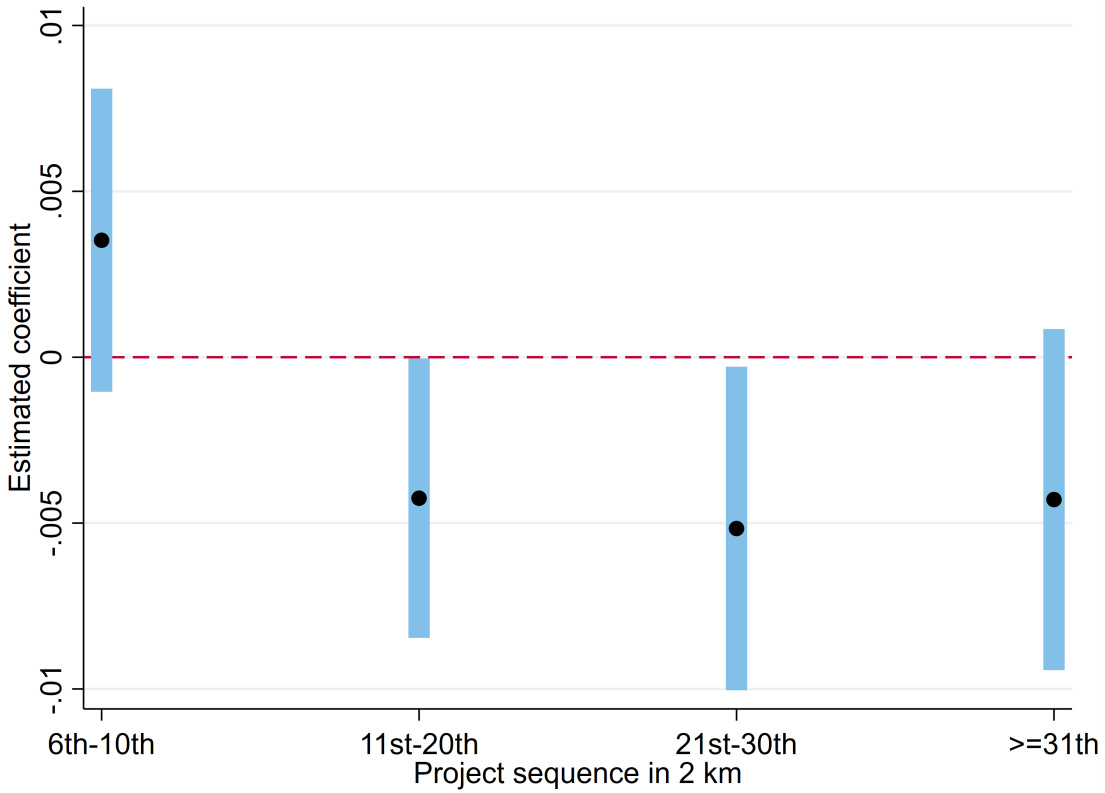

Figure 4: Price appreciation after launch and project sequence in 2 km

Deliberate discounting

- We rule out the explanation of deliberate discounting by showing the underpricing duing two housing market booms.

Table 4: Presale price trends since launching (housing boom years)

	(1) ln (unit price)	(2) ln (unit price)	(3) ln (unit price)	(4) ln (unit price)
	Panel A: 2005-2007			
daysincelaunch (100 days)	0.048***	0.034**	0.034***	0.030***
	(0.014)	(0.014)	(0.010)	(0.010)
Observations	8,164	8,163	8,050	7,876
R-squared	0.964	0.969	0.985	0.989
	Panel B: 2010-2012			
daysincelaunch (100 days)	0.010*	0.007	0.010**	0.008**
	(0.006)	(0.005)	(0.004)	(0.004)
Observations	24,463	24,461	24,194	23,943
R-squared	0.960	0.966	0.986	0.988
Controls	√	√	√	√
Year-month FE	√	√	√	√
Project FE	√			
Postal code FE		√		
Project-stack FE			√	
Project-stack-storey range FE				√

Concluding Remarks

- Findings
  - Presale property prices have an upward trend since the launch date.
  - For each flat, the presale underpricing leaves 13.9 thousand S$ on the table every 100 days.
  - Developers learn from experience and adjacent peers to leave less money on the table.
- Limitations
  - We do not have enough information on the demand side.
  - We do not directly test the mechanism which drives the unconscious presale underpricing.

THANK YOU!

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