

An Empirical Study on House Preference of Low-Income People with Choice Experiment



Suwei FENG, Yao FU

Email: fsuwei@mail.shufe.edu.cn

School of Public Economics & Administration

Shanghai University of Finance & Economics

Shanghai, China

OUTLINE

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RESEACH BACKGROUND

- Local governments have enlarged the public housing supply in recent years, including the low-rent (廉租房) and economically affordable housing (经济适用房) .
- But the **gap** between the supply and the demand (ought to cover) is quite huge, which gives great pressure to public finance of local government.

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- Building the Public Housing Security System for the Middle and Low Income People, *the National Social Science Planning Project, 2007-2009*

建立健全面向中低收入家庭的住房保障体系研究，
国家社科基金(No.07BZZ039), 2007-2009

- Assessment of the gap between the demand and supply of public housing in Shanghai, Shenyang, Xi'an, Shenzhen, Changsha cities.

上海低收入户廉租房应保户数和规划户数（预测）

年份	低收入户廉租房	廉租房规划	廉租房规划	保障户数比例
	应保障家庭户数	配租户数（新增）	配租户数（累计）	%
	(1)		(2)	(2)/(1)
2007	434000	6088	30254	6.97
2008	380000	7531	37785	9.94
2009	451300	8333	46118	10.22
2010	402000	9135	55253	13.74
2011	358000	9937	65190	18.21
2012	318900	10739	75929	23.81
2013	355000	11542	87471	24.64
2014	316200	12344	99815	31.57
2015	281600	13146	112961	40.11
2016	250800	13948	126909	50.60
2017	268100	14750	141659	52.84
2018	238800	15552	157211	65.83
2019	212700	16355	173566	81.60
2020	189400	17157	190723	100.70

RESEACH BACKGROUND

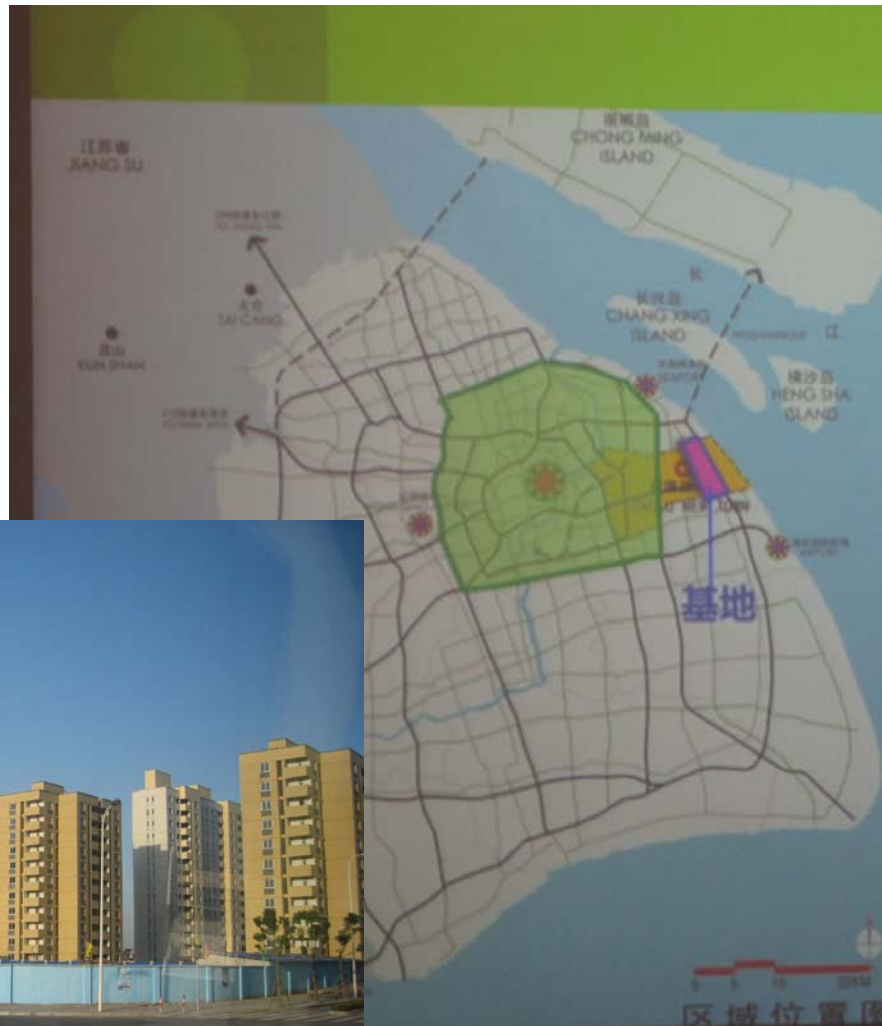
- ❑ The covering rate of low-rent housing is relatively **low** because the limit public finance of local government.
- ❑ Shanghai tends to supply the economically affordable housing since 2008. And most are supplied with Big Base Mode.
- ❑ Actually the move-in rate of some built public houses situated in the city edge is quite **low**.

Big Base Mode 大基地模式

1、政策背景

◆2004年，曹路大基地（北片）作为当年“两个一千万”项目之一，规划为上海市级配套商品房曹路基地，为城市中心城区旧城改造等的动迁居民提供安置住房。但由于种种原因，该动迁基地项目很难推进而遭搁置或部分他用。

◆为落实市领导有关拓展住宅大基地、结合轨道交通完善大型社区配套、抓经济适用房建设的落实等方面要求，市规土局今年拟扩大的重点项目配套商品房基地主要涉及五个区，其中浦东新区为由曹路大基地向南扩区。曹路大基地扩区后规划共提供建筑面积约200万平方米的经济适用住房。



Caolu Base, Pudong District, Shanghai

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- House choice is tightly related to job, commuting, public services (like children's education, medical care for the old) and social network, and so on.
 - The house preference for the affordable market is easily revealed by commercial survey, but
 - ***What's the housing preference of low-income people?***

THEORETICAL FRAMEWORK

- With discrete and heterogeneous alternatives, the house owns an overall, individual attribute when a household chooses it. So the decision to buy a house is more naturally framed within a discrete choice framework (Earnhart, 2002).
- Random utility theory is applied to model the low-income people's choice among economically affordable houses from a hypothetical choice set in a choice experiment.

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- The probability $\pi_n(i)$ that individual n chooses dwelling i rather than j dwelling has the logit form

$$\pi_n(i) = P(V_{in} + \varepsilon_{in} \geq V_{jn} + \varepsilon_{jn}; \forall j \in K_n) = \exp(\mu V_{in}) / \sum_{j \in K} \exp(\mu V_{jn})$$

- The indirect utility function in linear form

$$V_{in} = \beta_0 + \beta_1 Z_1 + \beta_2 Z_2 + \cdots + \beta_m Z_m + \beta_{m+1} S_1 + \beta_{m+2} S_2 + \cdots + \beta_{m+l} S_l$$

constant

dwelling
attributes

demography
variables

CHOICE EXPERIMENT DESIGN

- Seven attributes relating to dwelling properties like **Area**, **Price**, built **Year** (age of house) and **Location**, and public service like infrastructure and facilities (**Environment**, in brief), job (job **Opportunity**) and commuting **Time**.
- The scale of attributes is determined by interviews to local officials on Security Housing Management Bureau in Yangpu district (杨浦区), Shanghai.

Table 1 Attributes and levels included in choice experiment

Attributes	Levels
Area (m²)	51~60, 61~70, 71~80
Price (Yuan/ m²)	4000~5000, 5001~6000, more than 6000
Year / Age of house (year)	0 (new), 1~5, 6~10
Location	Inside middle ring, between middle and outer rings, outside outer ring
Environment / Public services	Bad, moderate, good service
Commuting time (hour)	Less than 0.5, 0.5~1, 1~2
Job opportunity	Less, some, much job vacancy

CHOICE EXPERIMENT DESIGN

- ❑ The combination of all the attributes and levels together generates 2187 possible choice sets by full factorial designs.
- ❑ By the orthogonal design, 18 sets of economically affordable houses are divided into two groups to let respondents choose.
- ❑ Every respondent can choose thrice easily from 3 subsets (every subset has 3 houses) for their favourite houses.

Table 2 One of the choice sets

Suppose you could purchase economically affordable house built by local government. The columns below describe these 3 housing options. Which house would you buy given your current financial situation?

	House A	House B	House C
Area (m ²)	51~60	61~70	71~80
Price (Yuan/ m ²)	4000~5000	4000~5000	4000~5000
Year/ Age of house (year)	5~10	1~5	5~10
Location	Outside outer ring	Outside outer ring	Between middle and outer rings
Environment	Moderate	Bad	Good
Commuting time (hour)	0.5~1	1~2	Less than 0.5
Job opportunity	Less	Some	Some

SURVEY DATA

- ❑ The survey was conducted in May, 2009.
- ❑ Respondents were drawn from six residential communities located in the Kongjiang sub-district of Yangpu district (杨浦区控江街道), Shanghai.
- ❑ 104 people contacted, 100 returned completed surveys, for a response rate of 96%.
- ❑ Besides the house preference by choice experiment, the acquaintance and satisfactory to the public housing policies were also surveyed.

ECONOMETRIC ANALYSIS

- ❑ The houses with highest choice probability in each subgroup all locate inside the middle ring, which implies that the low-income respondents give the highest weight to **house location** when their making house choice.
- ❑ A corresponding **trade-off** decision can be observed to set the total house price within the reach of their disbursable household income.

Table 3 Conditional logit regression of choice experiment data

Variable	Coefficient	Order	Standard error	Z value
Area	0.00708	6	0.0083	0.85
Price	-0.00019	7	0.00008	-2.25**
Year / Age of house	0.0151	5	0.01656	0.91
Location	-0.15042	2	0.07127	-2.11**
Environment/Public services	0.17571	1	0.07362	2.39**
Commuting time (hour)	-0.14525	3	0.10936	-1.33
Job opportunity	0.05986	4	0.07231	0.83
	900			-432.792
Number of observations			Log-likelihood	
	20.58			0.0044
LR chi2(7)			Prob > chi2	
Pseudo R2	0.0232			

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

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- The sign of attribute coefficients imply the tendency of house preference.
 - From the order of the coefficients, the **environment**, **location** and **commuting time** are the top three factors during the house choice decision of low-income people.

SUMMARY

- **Location choice** of public housing needs to be carefully considered and the surrounding **public service** must be firstly concerned and arranged to meet the preference of security objects.
- **Job-housing relationship** of the low-income should not be neglected because the commuting time and expenditure may also become one of the obstacles of their job hunting and house choice decision.
- **'Big Base Mode'** should be rethought.

□ Further studies:

- Comparative studies on house preference among different income groups;
- Probability sampling;
- Making more comprehensive communication with respondents to realize the purpose of the choice experiment;
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Thank you!

