

Two Main Pillars of Singapore's Public Housing

— HDB and CPF

新加坡公共住房发展的两大支柱

— 建屋发展局与中央公积金

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公共房屋政策— 新加坡、香港及澳門三地交流研討會

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Background背景

- **Global concern on the current housing market conditions in major Chinese cities.**
- 全球关注中国的主要城市房地产市场
 - China accounts for large share of global growth
 - 中国在全球经济增长占有重要的地位
 - Housing comprised 6.0% of Chinese output in aggregate in 2014
 - 2014年房地产部门占了中国总产出的6.0%
 - Construction sector contribute another 7.0%
 - 建筑行业贡献了另外的7.0%
 - Real residential land values have risen by over 17.25% per annum on average. In Beijing, the increase has been by a remarkable 27.5% per year (or by 1,036%) since 2004.
 - 实际住宅土地价格年均增长率超过17.25%。北京每年平均增长率超过27.5%，即2004以来上涨了1036%
 - There are a eight large markets, primarily in the interior of the country, in which new housing production has outpaced household growth by at least 50%, and another nineteen markets did so by less than 50% over supply.
 - 中国主要的八个房地产市场，基本上都是沿海城市，这些城市新建住宅的增长速度超过家庭数量的增加速度50%以上；其他19个城市新建住宅增长率比家庭数量增长的速度高接近50%

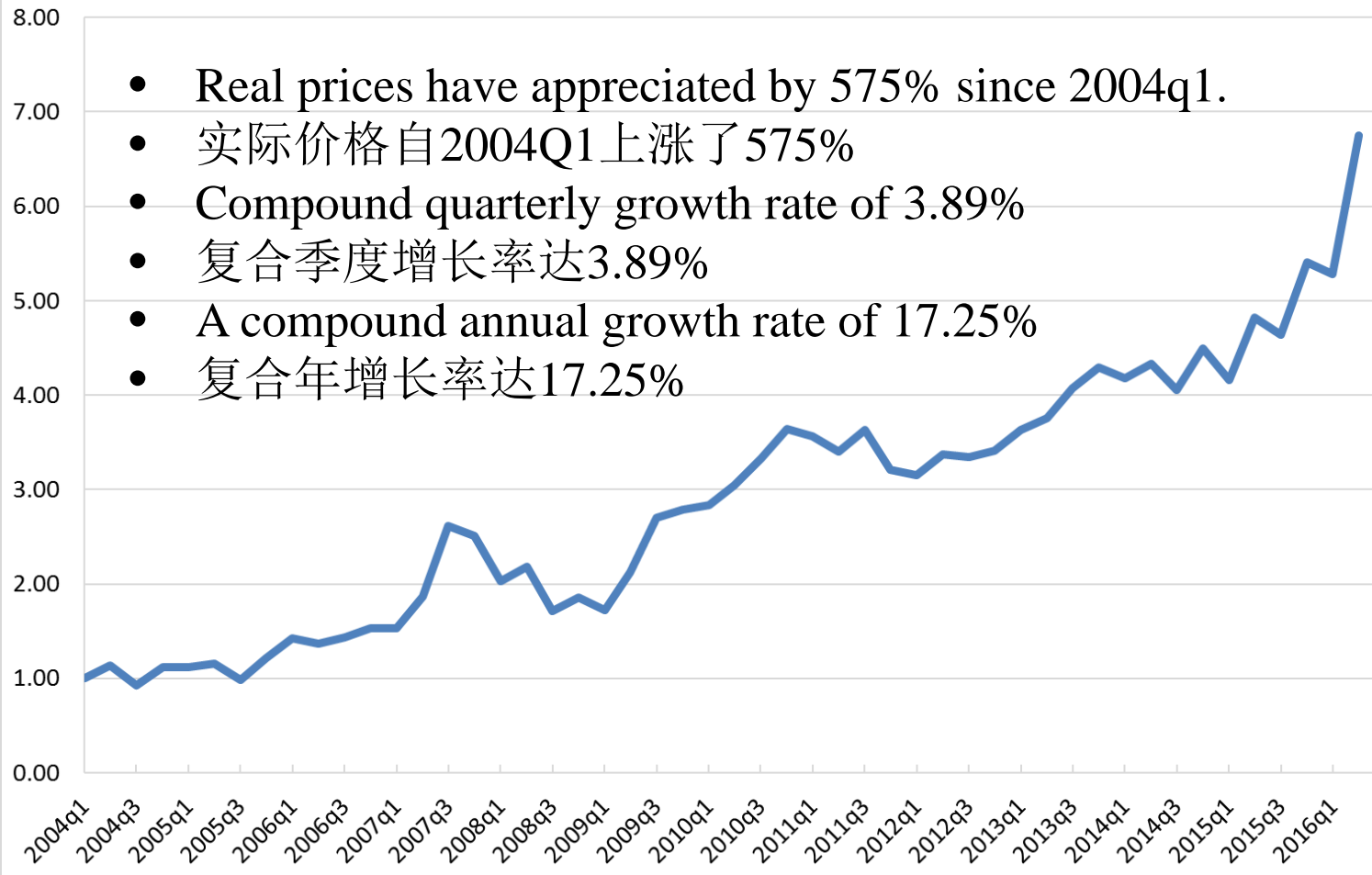
Supply-Demand Balance – Long Term

长期供求均衡分析

- The housing supply and demand was generally balanced in the national level.
- 总体来说，房屋供给需求基本平衡
- Insufficient supply in 2001-2014, but some evidences of oversupply in recent years.
- 2001-2014期间供给少于需求，但近年来有过度供给的趋势
- Large city variance in supply-demand ratio.城市间存在很大的供求比上的差别

	Annual Average Supply (thousand units)			Annual Average Demand (thousand units)			Supply-Demand Ratio		
	2001-10	2011-14	2001-14	2001-10	2011-14	2001-14	2001-10	2011-14	2001-14
	年平均供给			年平均需求			供给需求比例		
Nation	6739.32	10305.54	7758.24	7768.63	8170.90	7883.56	86.75%	126.12%	98.41%
Beijing	243.28	194.81	229.43	281.44	216.48	262.88	86.44%	89.99%	87.27%
Changsha	50.93	92.46	62.79	50.34	59.39	52.93	101.16%	155.68%	118.64%
Chengdu	100.11	210.19	133.32	51.7	73.26	57.86	193.63%	286.90%	230.41%
Chongqing	223.99	398.85	273.95	128.81	175.32	142.1	173.88%	227.50%	192.78%
Dalian	56.46	95.13	67.51	60.04	54.66	58.51	94.04%	174.04%	115.39%
Guangzhou	138.91	135.43	137.92	148.19	150.01	148.71	93.74%	90.28%	92.74%
Hangzhou	72.83	116.89	85.42	96.57	136.59	108.01	75.42%	85.58%	79.09%
Shanghai	258.93	178.53	235.96	304.68	417.46	336.9	84.98%	42.76%	70.04%
Shenzhen	181.08	63.87	147.59	235.25	105.6	202.82	76.97%	60.48%	72.77%
Tianjin	114.45	196.78	137.98	92.72	135.43	104.92	123.44%	145.30%	131.51%
Wuhan	68.82	66.03	68.02	46.32	68.72	52.72	148.57%	89.77%	129.02%
Xian	59.23	116.55	75.61	58.1	58.75	58.29	101.95%	198.37%	129.72%

China Residential Land Price Index (CRLPI) (Quarterly: 2004Q1-2016Q2)



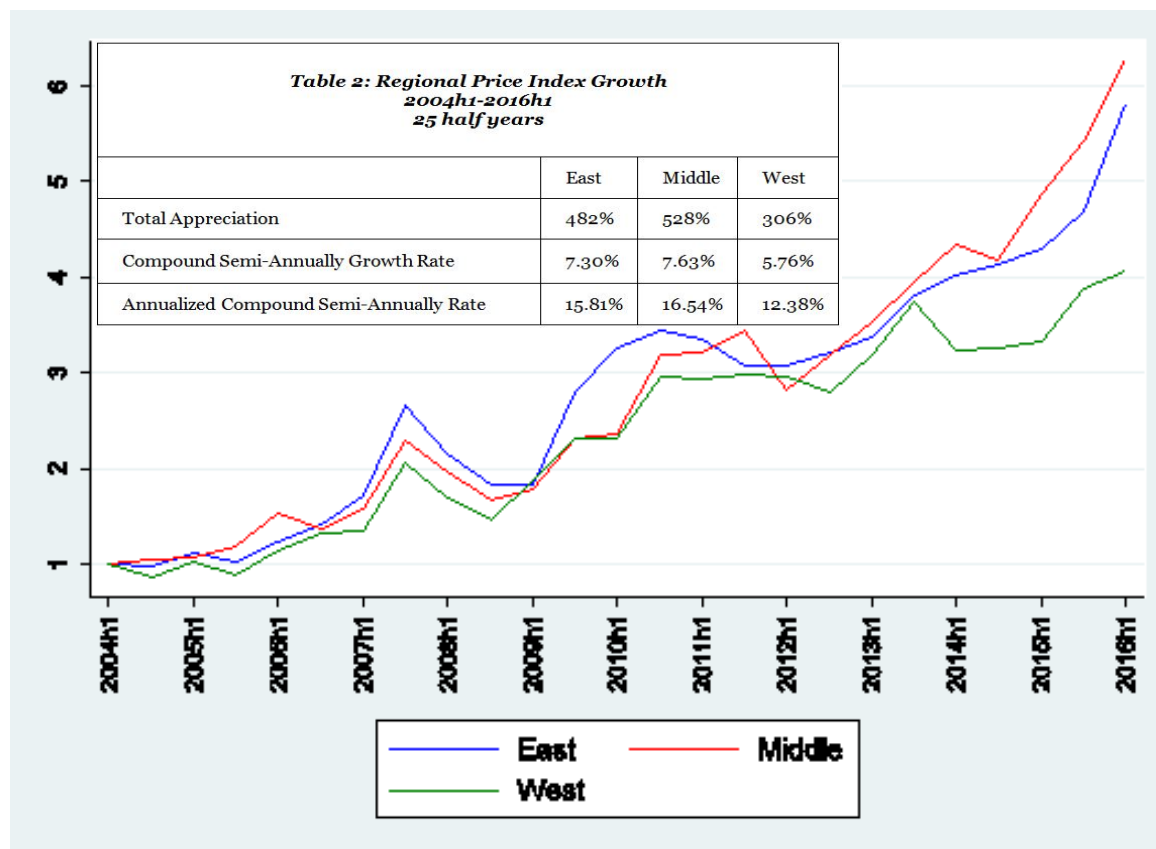
- Real prices have appreciated by 575% since 2004q1.
- 实际价格自2004Q1上涨了575%
- Compound quarterly growth rate of 3.89%
- 复合季度增长率达3.89%
- A compound annual growth rate of 17.25%
- 复合年增长率达17.25%

- In sharp contrast, the “China Urban Land Price Dynamic Monitor” system – an appraisal based land price index – reported by the Ministry of Land and Resource of China suggest aggregate growths between 2004 and 2014 was 54.2%, which implies a compound growth rate of 4.4% per annum.

China Residential Land Price Index (CRLPI)

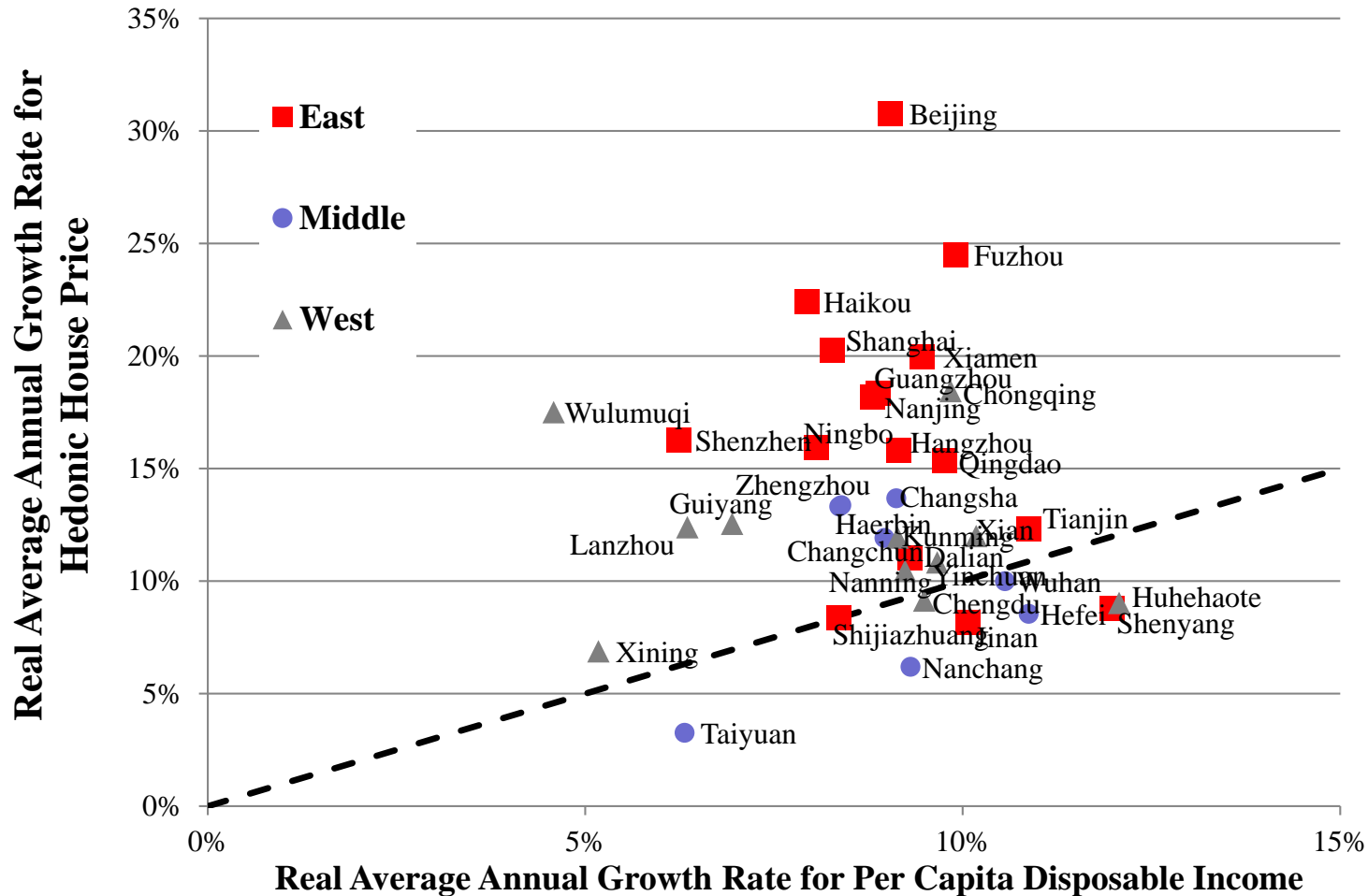
中国住宅土地价格指数(CRLPI)

- There is a strong common trend across land markets, although the most recent data show a downturn in the West region, but not the East and Middle regions
- 不同经济区域之间出现了非常相似的共同趋势，但是在近期，西部的增长有所放缓，但中部和东部仍然保持增长的势头。



Change of Price-to-Income Ratios

房价-收入比变化



Comparison of House Price Change and Household Income Change
房价增长-家庭收入增长变化比较

Mortgage Payment-to-Income Ratios in China's Major Cities 月均按揭还贷与收入比

Based on price-to-income ratios in 2010Q1, a family of 3 to purchase a 90 sqm housing unit, using a 30 year residential mortgage with coupon rate @ 5.05% (after the 8.5% discount), 20% downpayment, the monthly mortgage payment to household income ratios are

假定一个三口之家购买一套90平方房屋，20%的首付，分30年付款，贷款利息率是5.05%。

Beijing	95.9%	Wuhan	40.3%
Tianjin	48.0%	Shenzhen	111.7%
Shanghai	66.3%	Chengdu	31.8%
Hangzhou	60.3%	Xian	41.4%

Sources: Wu, Gyourko, Deng (2012), *Regional Science and Urban Economics*.

Two Main Pillars of Singapore's Public Housing - HDB and CPF Fund

**新加坡公共住房发展的两大支柱
—— 建屋发展局与中央公积金**

Singapore Public Housing

新加坡公共住房(组屋)



1. Rainbow HDB flats (80's)
2. Singapore one dollar
3. Tiong Bahru SIT flats (60's)



Singapore Private Housing 新加坡私人住宅



1 | 2
|
3

1. Keppel Bay
2. OMA Interlace
3. Marina Bay Sands

Singapore Public Housing

新加坡公共住房(组屋)



The Pinnacle @ Duxton



Sky Terrace @ Dawson



Housing markets in Singapore

新加坡的住房市场

- A two-tier housing market – private versus public markets
- 住房二元市场 – 私有住房及公共住房市场
- The Housing & Development Board (HDB), is the main developer/supplier of the public housing
- 政府部门（建屋发展局，HDB）为公共住房市场提供主要的开发与供应
- Public market – new sale and resale market
- 公共住房市场 – 新建组屋与转售市场
 - New sale market – concessionary pricing and discriminatory allocation subject to eligibility criteria
 - 新建组屋 – 优惠定价和根据购房者条件的差别化分配
 - Longer waiting time for new houses
 - 购买新建组屋需等待更长的时间
 - Resale flat is sold in open markets subject to “eligibility to sell” conditions
 - 转售组屋根据HDB“购房条件”在公开市场进行交易

Housing markets in Singapore

新加坡的住房市场

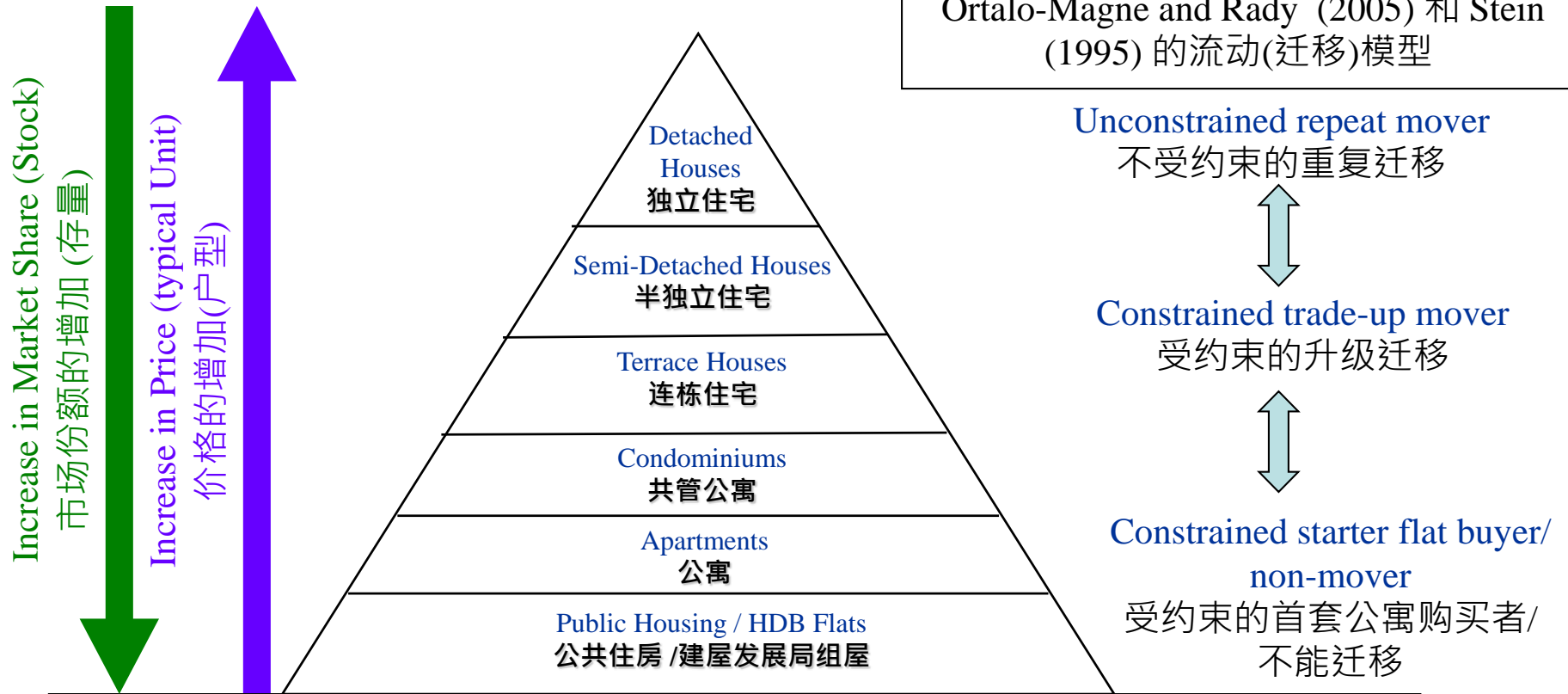
- Private property market is a laissez-faire segment at full market prices
- 私有住房市场是完全通过市场价格运作的
- Tenure system – leasehold versus fee simple (freehold)
- 住房租赁体系 – 租赁权及所有权
- HDP provides rental housing with shorter leases for lower income groups
- 建屋发展局为低收入群体提供较短租期的租赁住房
- Hierarchical structure of housing market
- 住房市场的分层结构

The Housing Dream of Singaporeans

新加坡人的住房梦

Housing market is segmented, which facilitates upward mobility

住房市场的分层结构促进了住宅消费的升级流动



HDB and public housing

新加坡建屋发展局(HDB)和公共住房

- HDB was set up in 1960 taking over the role of the public housing authority from its predecessor, the Singapore Improvement Trust, and entrusted with responsibilities to solve the nation's housing crisis in the post-independent periods.
- 新加坡建屋发展局于1960年取代原有的新加坡住房改善信托而成立，并肩负起了解决新加坡独立后住房危机的重任。
- Today, about 84% of Singaporeans live in HDB flats compared to only 9% in 1960 when HDB was first established.
- 现在，约有84%的新加坡人居住在建屋发展局承建的公寓(组屋)里，而在1960年这一比例仅为9%；且几乎所有的建屋发展局组屋住户（95%）拥有所住房屋的产权。

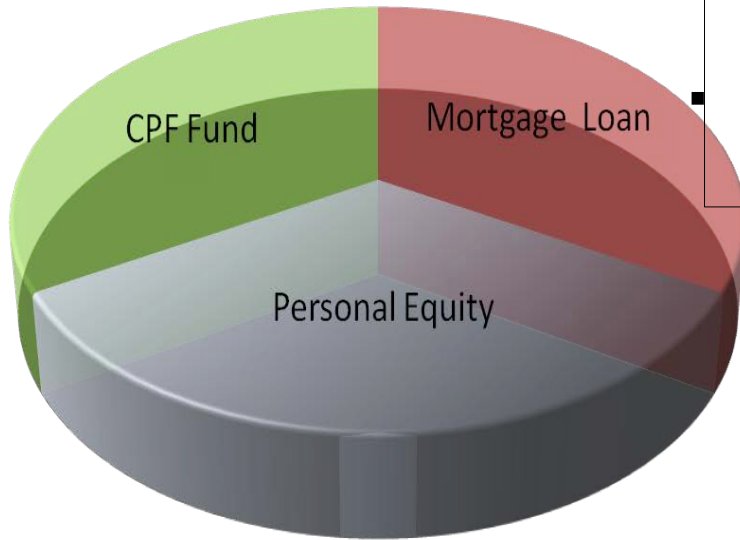
HDB and public housing

新加坡建屋发展局(HDB)和公共住房

- Three-prong strategies:
- 三足鼎立战略：
 - A sole national housing agency in charge of public housing
 - 管理公共住房的唯一全国性机构
 - A total approach to housing from planning, design, land assembly, construction, allocation, management and maintenance (the latter role has been taken over by Town Council)
 - 整体负责公共住房的规划设计、土地征集、建设、分配、管理和维修（后者现已由市镇委员会负责）
 - Strong government support for housing the nation program
 - 政府对全国建房计划的强力支持
- Policies supporting public housing financing
- 公共住房信贷的政策支持
 - In 1968, the government allowed the use of CPF savings to aid housing payments
 - 1968年，政府允许将公积金储蓄用于支付房贷
 - CPF housing grant
 - 公积金购房津贴
 - HDB concessionary loans
 - 建屋发展局优惠贷款

Financing Housing Purchase

购房融资



- HDB Concessionary Loan for a HDB flat
- 用于购买建屋发展局组屋的建屋发展局优惠贷款
- Bank Loan at Market rate for a HDB flat / a private property
- 用于购买建屋发展局组屋或者私有住宅的市场利率银行贷款



Cash / CPF cumulative savings
现金 / 公积金累计储蓄

+

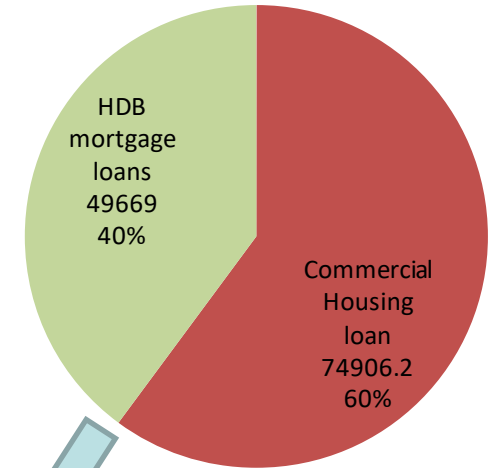
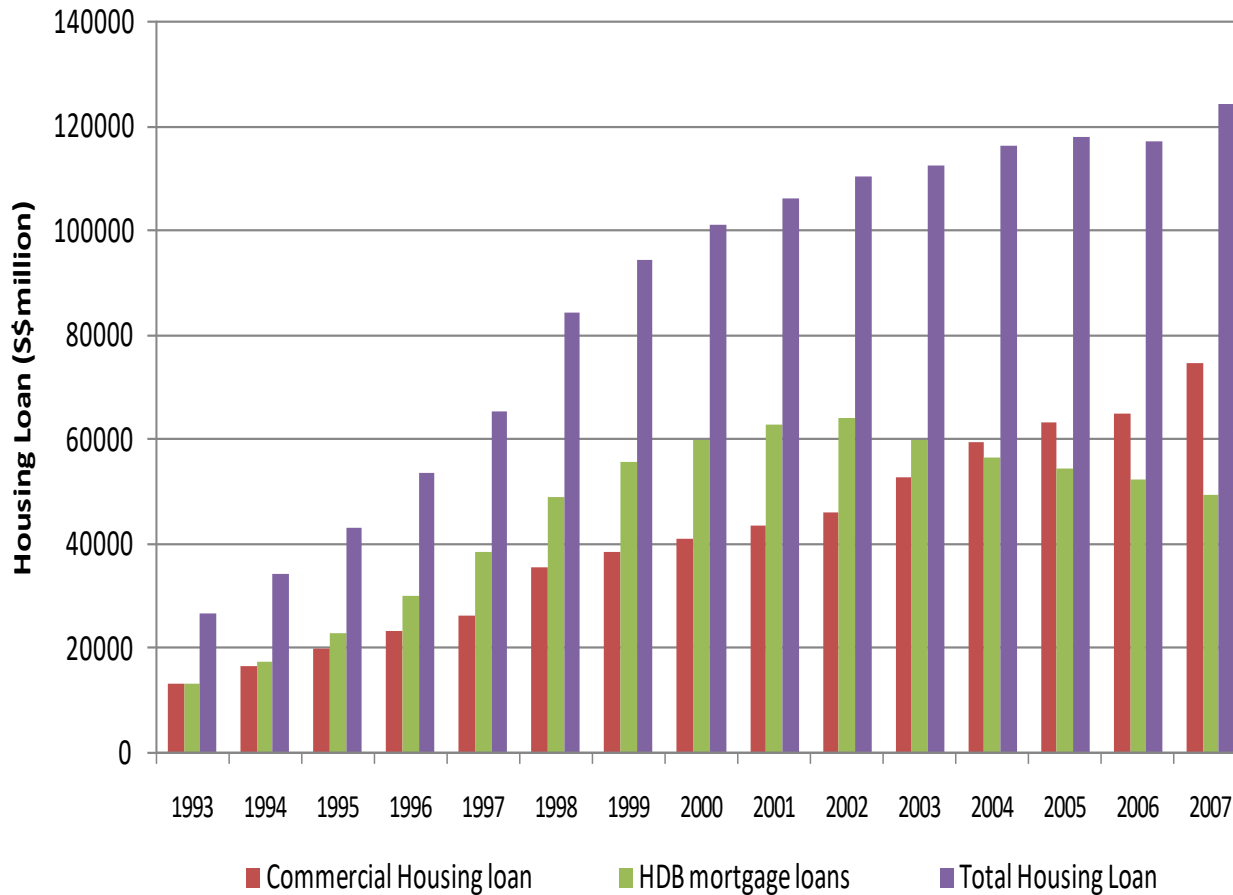
Maximum Loan
贷款最大限额

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Purchase price of property/flat
住宅/公寓购买价格

Housing Loans in Singapore

新加坡的住房贷款



Source: MAS, HDB

Central Provident Fund (CPF)

中央公积金 (CPF)

- The CPF, legislated under the CPF ordinance 1953, was introduced in 1 July 1955
- 新加坡中央公积金在1953年公积金法案的法律规范下于1955年7月1日引入。
- As a contributory social insurance scheme to provide retirement benefits to workers
- 作为一种需要供款的社会保险制度向劳工提供退休福利
- Beyond social security
- 社会保险之外
 - Homeownership scheme
 - 居者有其屋计划
 - Medisave was introduced in 1984 to allow CPF members to use their Medisave savings for hospitalisation expenses for themselves and their immediate family members
 - 1984年引入医疗储蓄计划以允许公积金参与者将医疗储蓄部分的公积金储蓄用于自身及家人的住院医疗花费
 - Education
 - 教育
 - Protective insurance, e.g. Medisheild insurance for major illnesses
 - 防护保险，如大病医疗保险
 - Investments
 - 股市投资

Central Provident Fund (CPF)

中央公积金 (CPF)

- Two major policies that affect housing markets in Singapore
- 两个影响新加坡住房市场的主要政策
 - The PAP Government in 1968 allowed Singaporeans to use their CPF savings to buy flats built by HDB
 - 人民行动党政府于1968年允许新加坡人使用公积金储蓄向建屋发展局购置组屋
 - In 1981, Approved Residential Properties Scheme where CPF savings could be used to purchase private residential property
 - 1981年，核准住宅物业计划允许使用公积金购置私有住宅

CPF withdrawal limit for housing

公积金住宅置业取款限额

- The Withdrawal Limit (WL) is the maximum amount of CPF beyond the VL that you and your co-owner(s) can use for the property. If your housing loan to be outstanding when your CPF account reaches the WL, you are required to top-up the short fall in cash.
- 取款限额 (WL) 是住宅物业 (共同) 拥有人所能提取用于住宅置业的超出VL的最高公积金金额。一旦达到WL，如果住房贷款仍未偿清，你必须以现金还清房贷余额。
- A maximum limit to the amount of CPF savings for housing applies to those who
- 公积金存款住宅置业提取额度最高限制适用于：
 - Buy HDB flat from 1 Jan 2003 financed with a bank loan
 - 自2003年1月1日后向银行贷款购买建屋发展局组屋
 - Refinance their HDB concessionary loan with a bank loan from 1 Jan 2003
 - 自2003年1月1日后为现有的建屋发展局优惠贷款向银行再融资 (Refinance)
 - Buy a private property with a bank loan from 1 Sept 2002
 - 自2002年9月1日后向银行贷款购买私有物业
 - Refinance existing housing loan taken before 1 Sept 2002
 - 2002年9月1日前为现有住房贷款再融资

CPF contribution rate and its distribution

公积金缴存和分配比率

雇员年龄	雇主 缴存比例	雇员 缴存比例	总缴存比例	普通 账户	特别 账户	医疗储蓄 账户
Employee Age (years)	Contribution By Employer (% of wage)	Contribution By Employee (% of wage)	Total Contribution (% of wage)	Credited Into		
				Ordinary Account (Ratio of Con)	Special Account (Ratio of Con)	Medisave Account (Ratio of Con)
35 & below	14.5	20	34.5	0.6667	0.1449	0.1884
Above 35 - 45	14.5	20	34.5	0.6088	0.1739	0.2173
Above 45 - 50	14.5	20	34.5	0.5509	0.2028	0.2463
Above 50 - 55	10.5	18	28.5	0.4562	0.2456	0.2982
Above 55 - 60	7.5	12.5	20	0.575	0	0.425
Above 60 - 65	5	7.5	12.5	0.28	0	0.72
Above 65	5	5	10	0.1	0	0.9

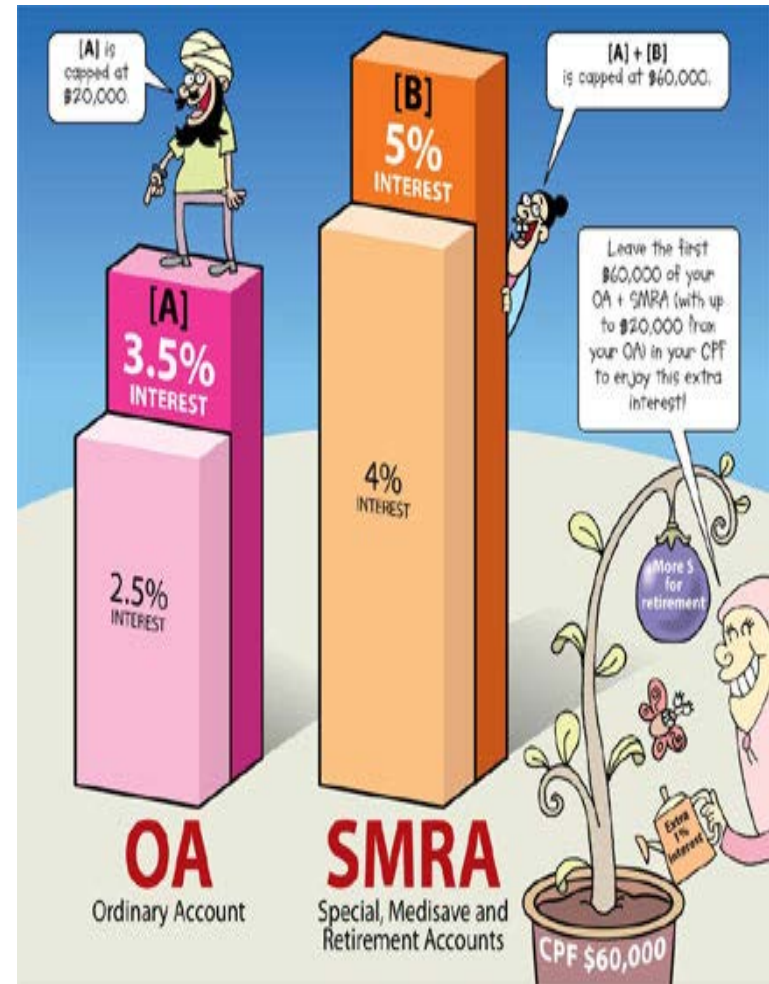
The CPF salary ceiling will be adjusted downwards from \$6,000 to \$5,500 (1 April 2004, \$5,000 (1 January 2005), \$4,500 (1 January 2006), and then upwards to \$5,000 (1 September 2011).

公积金薪资月供上限由\$6,000降低为\$5,500（2004年1月1日），\$5,000（2005年1月1日），\$4,500（2006年1月1日）然后又回到\$5,000（2011年9月1日）。

Interest earned by CPF account savings

公积金账户储蓄利息

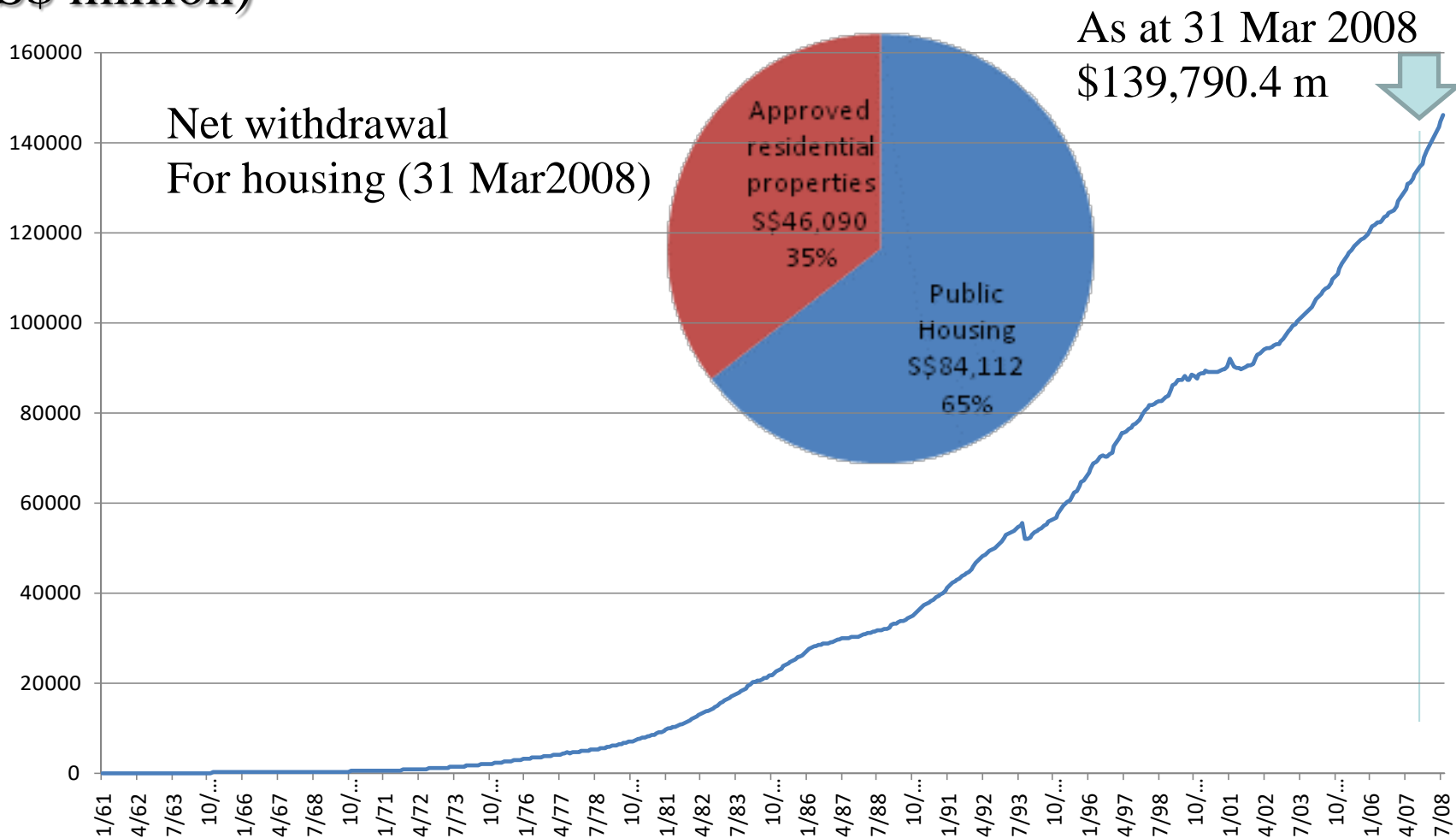
- Your CPF savings earn a minimum risk-free interest of 2.5% guaranteed by the Government.
- 公积金储蓄账户享有政府担保的2.5%的最低无风险利率。
- In 2008 and 2009, Special, Medisave and Retirement Account savings will earn a guaranteed minimum 4% interest.
- 2008年和2009年，特别账户、医疗储蓄账户和退休账户储蓄可享有4%的担保最低利率。
- In addition, the first \$60,000 in your combined CPF balances, with up to \$20,000 from your Ordinary Account, will earn an extra 1% interest.
- 另外，公积金账户总余额的首个\$60,000（普通账户最高为\$20,000）将享受额外1%的利率。



CPF: Amount due to members

公积金： 数额和人数

(S\$ million)



Source: Department of Statistics, CPF Board

Policy changes attempting to cool the property market in 2010/2011

2010/2011年旨在降温房地产市场的政策变化

Purchase of new HDB flats 购置建屋发展局新建组屋

Period 时期	HDB Concessionary Loan 建屋发展局优惠贷款	Commercial Bank Loan 商业银行贷款
19 July 2005 – 19 Feb 2010 2005年7月19日 – 2010年2月19日	LTV = 90% 贷款房价比= 90% Downpayment = 10% (5% cash and 5% CPF) 首付 = 10% (5% 现金及 5% 公积金)	LTV = 90% 贷款房价比 = 90% Downpayment = 10% 首付 = 10%
20 Feb 2010 – 29 Aug 2010 2010年2月20日 – 2010年8月29日		LTV = 80% 贷款房价比 = 80% Downpayment = 20% (5% cash and 15% CPF) 首付 = 20% (5% 现金及 15% 公积金)
30 Aug 2010 onward 2010年8月30日前		LTV = 80% (first loan) 贷款房价比 = 80% (首次贷款) LTV = 70% (additional /second loan) 贷款房价比 = 70% (追加/二次贷款)
14 Jan 2011 2011年1月14日		LTV = 60% (additional/second loan) 贷款房价比 = 60% (追加/二次贷款)

* The downpayment requirement for the purchase of DBSS flat and EC after 30 Aug 2010: 5% cash and 15% CPF

* 从2010年8月30日后，购置设计建设销售计划公寓(DBSS)和行政公寓(EC)的首付要求为：5% 现金和 15% 公积金

Other market cooling measures in 2010/2011

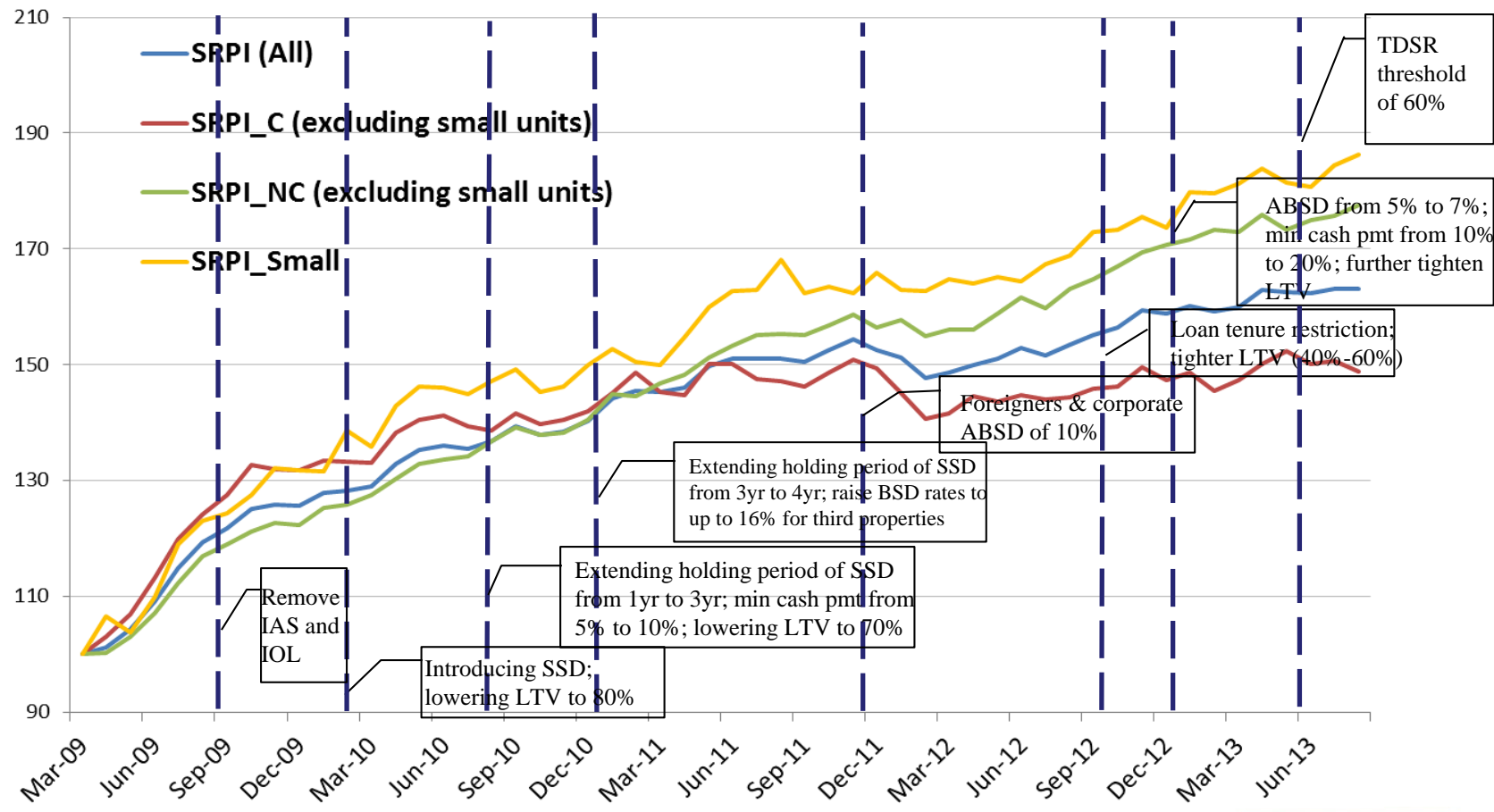
2010/2011年其他市场降温措施

- Disallow concurrent ownership of both HDB flats and private residential properties within the minimum occupation period (MOP)
- 不允许在最低居住年限内同时拥有建屋发展局组屋和私有住宅
- The MOP for non-subsidised flats increases to 5 years
- 非补贴公寓的最低居住年限增至5年
- The household income ceiling to buy new DBSS flats increase from \$8000 to \$10,000
- 购买新建DBSS公寓的家庭收入上限由 \$8000 增至 \$10,000
- The household income ceiling to buy new EC flats increase from \$10,000 to \$12,000
- 购买新建EC公寓的家庭收入上限由 \$10,000 增至 \$12,000
- Imposition of stamp duty on sellers:
 - 面向卖方征收印花税：
 - Holding periods increase from 3 years to 4 years
 - 持有时间由3年增至4年
 - Stepping-up rates of stamp duty: 16% (sold in first year), 12% (in second year), 8% (in third year) and 4% (in fourth year)
 - 印花税的分级税率： 16%（第一年出售）， 12%（第二年出售）， 8%（第三年出售）和 4%（第四年出售）

新加坡的重大降温政策及其对房屋价格的影响

(SRPI March 2009 to August 2013; 2009.03=100)

The SRPI, Central Region SRPI, Non-Central Region SRPI and Small Units SRPI
(March 2009 to August 2013; 2009.03=100)



政策干预对北京地方住房市场的影响

- 分析2005年以来的18项刺激政策和49项降温措施的效果

	18 Stimulus Measures			49 Cooling Measures		
	Effective			Effective		
	For at least 1 month during next 6 months	For more than 3 months during next 6 months	House prices rebound in one year	For at least 1 month during next 6 months	For more than 3 months during next 6 months	House prices rebound in one year
Measured by NBSC Index	17	5	5	33	25	14
Measured by NUS IRES Index	16	16	0	39	1	15

CPF Policy Question 有关公积金的讨论

- Can higher interest rates effectively incentivize Singaporeans to save more in their CPF accounts?
- 高利率会有效激励新加坡人民在他们的公积金账户内进行更多储蓄吗？
- In 2007, a reform was announced on National Day to help Singaporeans improve their retirement adequacy
- 2007年国庆日宣布了一项旨在帮助改善新加坡人的退休金的改革
- The first \$60,000 in members' combined CPF balances, including up to \$20,000 in their Ordinary Accounts (OA), will earn an extra 1% interest from 1 January 2008
- 公积金账户总余额的首个\$60,000（包括普通账户内最高为\$20,000的余额），将自2008年1月1日起享受额外1%的利率。

Thought Process 研究思路

- Constraints on CPF account usage makes it less straightforward to understand the net effect of higher interest rates on CPF savings
- 鉴于对公积金账户的限制，高利率对公积金储蓄的影响是不确定的。
- Economic theory tells us that the impact of higher interest rates on savings is determined by two counteracting forces:
- 经济理论告诉我们高利息率对于储蓄的影响取决于两个方面。
 - Income effect (+): leads to higher withdrawal and less saving
 - 收入效应：提款增加、储蓄减少。
 - Substitution effect (-): encourages people to save more
 - 替代效应：鼓励人们增加储蓄。

Thought Process 研究思路

- Theoretically, there also exists heterogeneous consumption behaviour by gender and age:
- 理论上来说，消费行为存在性别和年龄差异。
 - CPF members after age of 55 tend to leave a substantial proportion of their lump-sum withdrawal in low-interest bank accounts
 - 在年龄到达50岁之后，公积金成员会表现出对低利率银行账户的集中提款行为。
 - Women contribute to a higher rate but invest their pensions more conservatively than men
 - 女性会增加对高利率账户的储蓄，且在投资发面比男性更保守。

Research questions 研究问题

(1) What are the effects of extra interest on CPF withdrawal and contribution?

(1) 额外利率对公积金提取和缴存产生什么样的影响?

(2) What is the cumulative effect of this policy in the year after implementation? Is this effect economically significant?

(2) 这项政策执行之后的累积效应是什么? 此效应在经济上是否显著?

(3) Are there heterogeneous effects by age or gender?

(3) 这个效应是否存在年龄或性别的差异?

Data 数据

- **Individual-level (more than 110,000 members) CPF account data:**
- 公积金账户的个人数据（超过110,000个会员）
 - Monthly CPF account information of each member from Jan 2007 to Dec 2008
 - 2007年1月-2008年12月每个会员的月度公积金账户信息
 - *Ordinary Account (OA)* 普通账户
 - *Special Account (SA)* 特别账户
 - *Medisave Account (MA)* 医疗储蓄账户
 - *Retirement Account (RA)* 退休账户
 - Limited demographic characteristics that includes birth year, gender and postal code
 - 人口特征：出生年份，性别，邮政编码

Empirical Results 实证结果

Baseline regression of Equation 1. The following results show that

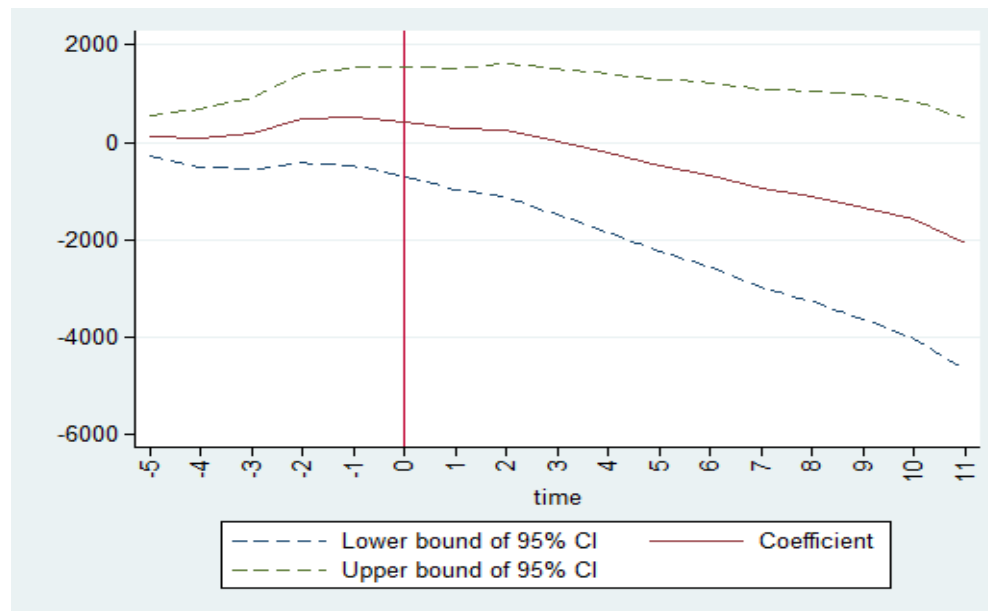
基于方程（1）的实证结果显示如下：

- Higher interest on CPF savings reduces OA monthly withdrawal by about \$218
- 公积金储蓄的高利率会导致普通账户每月提现额减少大约\$218
- There is no significant announcement effect
- 不存在显著的公告效应
- The effect on increasing contribution is much smaller
- 追加缴存的效应很小

	Monthly OA Withdrawal 月度普通账户提现	Monthly OA Contribution 月度普通账户缴纳
	(1)	(2)
$T_i \times Pre_t$	-135.051	43.524***
$T_i \times Ann_t$	106.169	35.973***
$T_i \times Post_t$	-218.153***	27.468***
Constant 常数项	361.320***	488.726***
Individual Fixed Effects 个体效应	Yes	Yes
Year-Month Fixed Effects 时间效应	Yes	Yes
Observations 观测值	234,600	234,600
R-squared R2值	0.023	0.493

Empirical Results 实证结果

- The following figure shows the cumulative effects of the policy on withdrawal from 5 months before implementation to 12 months after implementation
- 下图显示了政策对公积金提现的累积效应：从政策实施前第5月至实施后第12。
- The cumulative effect is about \$2000 less withdrawal in the year after policy implementation
- 在该政策执行1年之后，累积提现大约减少了\$2000。

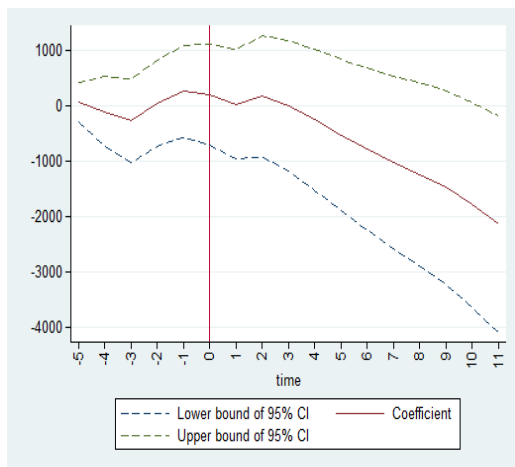


Empirical Results 实证结果

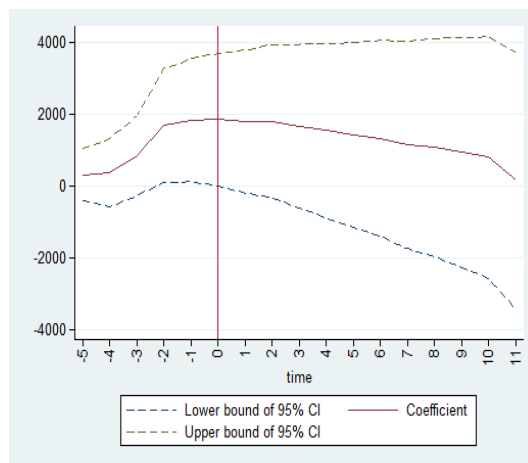
Cumulative Effects by Age

按年龄的累积效应

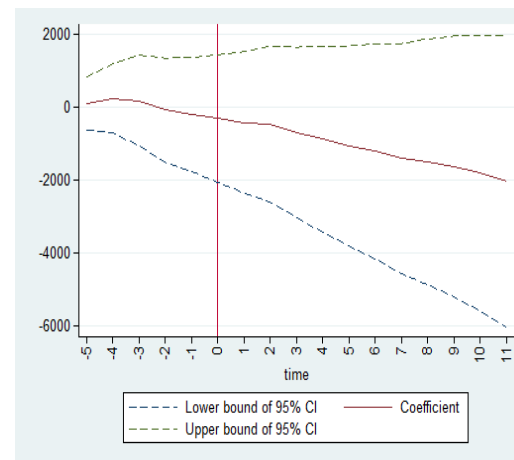
(a) Age 0-34
年龄：34岁以下



(b) Age 35-50
年龄：35-50岁



(c) Age 50 and above
年龄：50岁以上

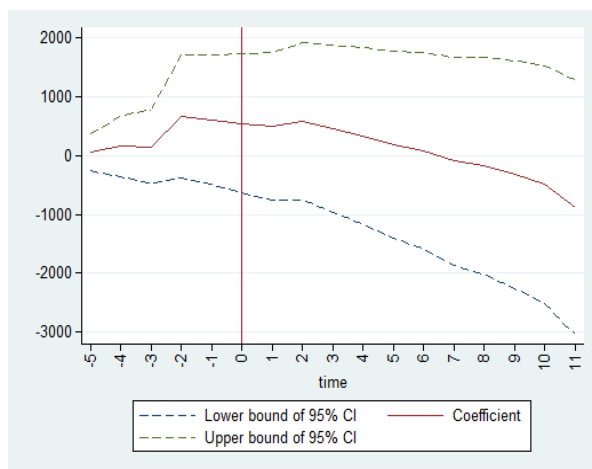


Empirical Results 实证结果

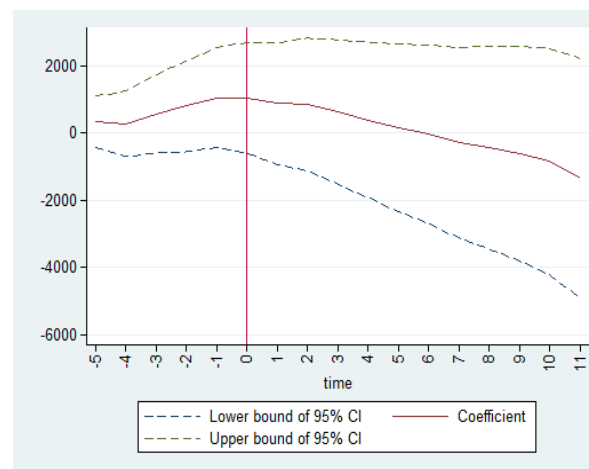
Cumulative Effects by Gender

按性别的累积效应

(a) female 女性



(b) male 男性



Summary 总结

- The additional 1% in interest on CPF savings provides significant incentive for members to save more in their CPF accounts
- 公积金储蓄额外1%的利率为成员增加其更多储蓄提供了显著的激励。
- This effect is mainly driven by less withdrawal rather than more contribution
- 这种效应主要来自提现的减低，而非缴存的增加。
- On average, members withdraw about \$2000 less in the year after policy implementation
- 平均而言，成员在政策执行一年后从普通账户提现减少大约\$2000。
- We do not find significant heterogeneous treatment effects by gender and age group
- 我们没有发现，年龄和性别的显著差异。

Fact 1. Is there any linkage between Marriage Decision and Home Purchase?

特征 1: 婚姻决策与房屋购买之间是否存在关联?

(1) This graph shows the average CPF withdrawal to purchase public housing for different age groups across years

(1) 本图显示了2002年、2006年及2010年, 不同年龄提取公积金用于买房情况。

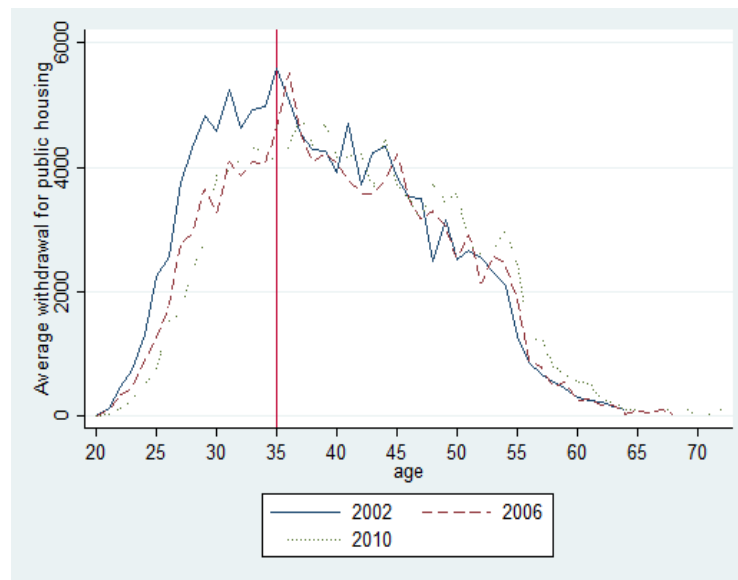
(2) There is an evident jump in withdrawal for housing at age 35, while the withdrawal just before/after this age is much lower

(2) 在35岁时购房提现额存在一个上升的跳跃, 但在35岁前后该提现额则小很多。

(3) There is also a shift in withdrawal for housing from 2002 to 2010. People under 35 withdraw more in 2002 than in 2010, suggesting that people may be postponing marriage

(3) 2002年35岁以下的人提现额要高于2010年, 这可能意味着平均结婚年龄可能推迟了。

- We will be able to further investigate the dynamics and relationships across CPF savings/withdrawals, housing purchase and marriage, with ROM and HDB data that can be matched to CPF data
- 我们可以基于ROM数据、HDB数据以及CPF数据, 进一步演进公积金储蓄/提现、房屋购买和结婚之间的动态关系特征。



Fact 2. How is CPF transferred between Family Members? 特征 2: 公积金如何在家庭成员之间转移?

(1) This graph shows the average MA withdrawal for different age groups in 2006, for both high-income and low-income cohorts. There is a similar pattern in other years

(1) 本图显示了2006年，高收入人群和低收入人群，不同年龄医疗账户（MA）提现情况。

(2) We find that MA withdrawal reduces significantly after 55, which is in contrast to the up-sloping trend before 55. This might be a result of the increase of Minimum Sum requirement

(2) 我们发现，在55岁之后，平均提现额显著减少，这与55岁之前提现额不断增长的趋势相反。这很可能是因为提高了最低退休金。

(3) Do retired members get transfers from their family members for medical purpose?

(3) 退休的成员是否从他们的家庭其他成员中获得转移，并用于医疗用途？

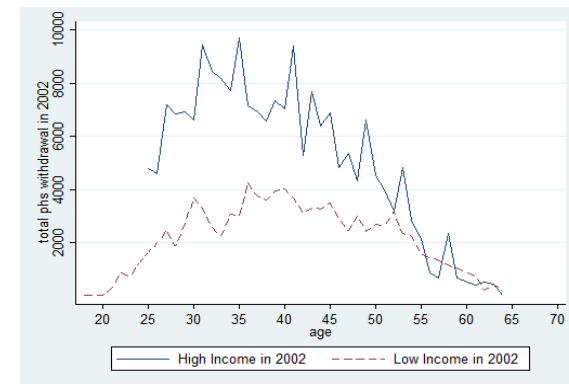
- In order to study the question of internal transfer, we need to be able to identify and link related members in our dataset
- 为了研究家庭内部转移问题，我们需要在数据中识别和联系成员之间关系。



Fact 3. Different Financial Behavior by Income Groups

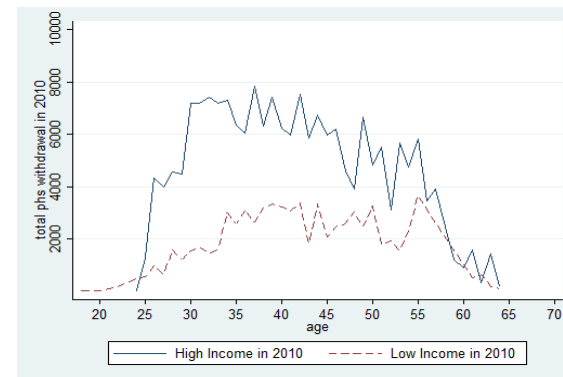
特征 3: 不同收入人群的不同投资行为

(1) In these two graphs, we plot the average withdrawal to purchase public housing by income groups in 2002 and 2010



(1) 在这两幅图显示中, 我们刻画了不同收入人群在2002年和2010年提取公积金用于购买组房的情况。

(2) We find that, from 2002 to 2010, low-income people tend to purchase houses later in their lives, while the high-income group also shows a similar trend over time



(2) 我们发现, 在2002-2010年间, 低收入人群倾向于在较年长时购房, 高收入人群的购房行为类似。

(3) So, has the labour supply decision changed before and after housing purchase? What's the difference between high-income and low-income cohorts?

(3) 因此, 劳动力供给会在购房前后发生变化吗? 导致高收入人群和低收入人群之间差异的原因是什么呢?

- To understand members' financial behaviour, we need additional information about their labour market outcomes, including their employment history, real income, occupation and employer/company
- 为了理解成员的融资行为, 我们需要劳动力市场产出相关的额外数据, 包括就业历史, 实际收入, 职位, 雇主/公司等。

Fact 4. Polarization of Wealth Level for People after 55 years of age

特征 4: 55岁之后财富的两极化

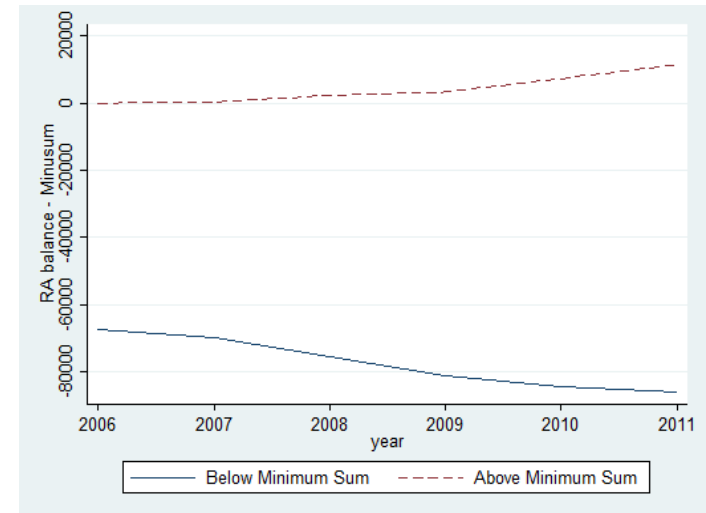
(1) In this graph, we plot the gap between CPF Retirement Account balance and Minimum Sum requirement for people at 56 years of age, across different years

(1) 在这幅图中，我们刻画了56岁人群，在不同年份，公积金退休账户余额与最低退休金存款。

(2) We show that the phenomenon of polarization over the years. Specifically, for wealthier, excess RA savings over the required Minimum Sum have increased even though the threshold has also been increasing. While for less well-off, it has become increasingly difficult for them to meet the required Minimum Sum in recent years

(2) 我们发现，这些年的极化现象：对富人来说，即使最低退休存款门槛在提高，但超额的退休账户储蓄仍在增长。然而，对于不太富裕人群来说，满足最低退休存款额的要求变得越来越难。

- To better understand how members financial situation after age 55 and how they may save enough for retirement, we will need further data on their detailed employment history and family members' financial status
- 为了更好的理解成员在55岁之后的融资行为，以及他们如何储蓄足够退休金，我们需要进一步数据：包括他们的就业历史、家庭成员的金融状况等。



Summary 总结

- **CPF financing is an integral part of REF in Singapore**
- 鼓励居者有其屋是新加坡政府公共住房政策的根本宗旨，也是引入公积金的核心目的
- **CPF contributions can be used to service mortgage payments - affect affordability**
- 建屋发展局和中央公积金这两大支柱互为补充推进了全国居者有其屋计划的实施
- **Mechanics of CPF utilization in property purchase and sale**
- 他们的肩负任务已超越满足可支付目标和公民置业需求
- **CPF devoted to:**
- 他们同时致力于：
 - **housing wealth effects boost consumption**
 - 通过建立房产创造财富效应进而促进住宅阶梯式消费的上升流动
 - **stabilize housing price**
 - 稳定住宅价格
 - **significantly lower the risk of default**
 - 降低按揭违约风险

Reference

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<http://www.cpf.gov.sg>