Evolution of mortgage regulations in Asian countries

Abstract
Since the mid-1970s, at least six banking crises correlated with housing bubbles. When housing prices reach the peak or fall sharply, financial crises occur. In some places, housing is an economic growth driver and corner stone of social stability. Whilst mortgage finance plays indispensable role financial system stability, regulations provide useful framework in governing the rules of games for many homeowners. Well or poor design of mortgage regulations often affects economy from this perspective. History tells many of the changes in regulations are due to the major economic incidents. In this paper, we aim to study the evolution of mortgage finance regulation in Japan, Hong Kong, China, Korea, Singapore and Thailand.
Keywords: mortgage regulation, Asia

1. Introduction

The naive-borrowers theory suggests that lenders exploit borrowers' misunderstanding of the risks in mortgage contracts by offering loans with high risk of default. A popular account of the financial crises in recent decade is that lenders marketed loans with low interest rates and payments, which fooled borrowers into that they could afford the loan. When interest rate increases and the monthly payments increase, borrower default unless they could refinance (Bubb and Krishnamurti 2015).

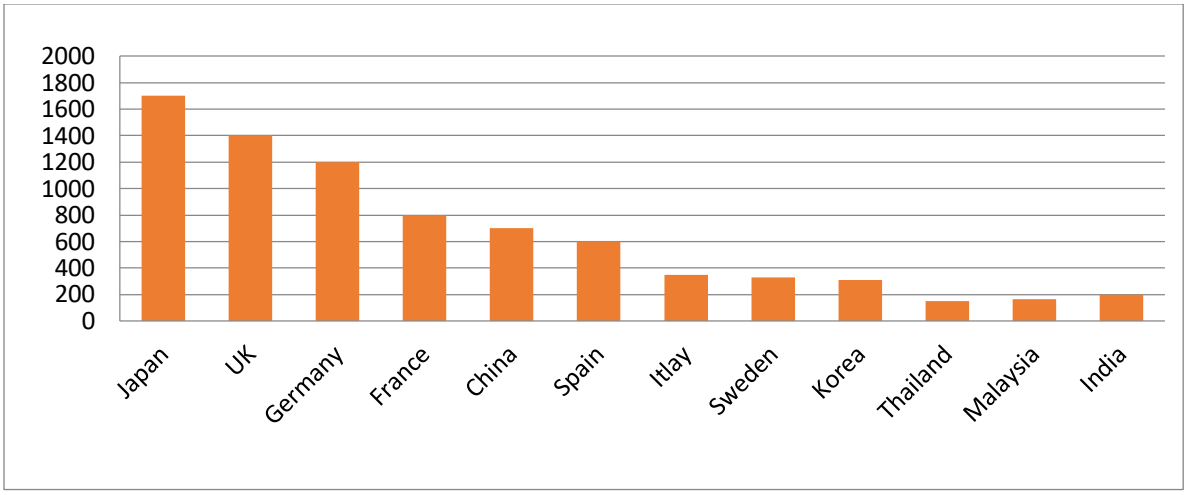

Figure 1 Mortgage Market Size in the world in 2012 in Euro billion (Kobayashi 2012)

2. Mortgage finance and macro economy

There is an extensive research on the relationship between the lodging fund market and the strength of economy and monetary markets. Bordo and Jeanne (2002) bring up that when lodging costs have crested or fallen forcefully, financial crisis would for the most part happen. Housing is a fundamental mainstay of monetary development and the foundation of social soundness. Contract account assumes a critical part in the solidness of the entire money related frameworks. Mortgage finance proportion in Asia's developing markets far beneath than that of the developed nations. In 2012, mortgage debt in Singapore and Hong Kong involve around 45% of their GDP. Thailand, China, Philippine can be viewed as the newcomer in the housing mortgage market. Mortgage debt just possess a couple segment of their GDP (Doling et al. 2013). Excluding US, Japan has the biggest home loan market. The Asian home loan market sizes are smaller than that

of the European nations. The small market size of the Asian nations may be credited to their moderate monetary improvement and unfavorable government policies (Kobayashi 2012).

The GDP per capita grew from 1994-2014. urbanization and the development of populace build the interest for lodging. Besides, medical and technological advance increase the life expectancy since the 20th century. As indicated by the United Nations, there will be 91 percent expansion in the populace in developing countries from 2000 to 2030. Growing interest for lodging infers that a proficient home loan fund is required (World Bank 2016). The dependency ratio is the highest in Japan. Direct lending and housing construction are the most important industries for governments. Mortgage finance regulation and policy improvements are placed in the top priority (Chiquier and Lea 2009). Except Japan, there is an increase in the population growth over the past 20 years.

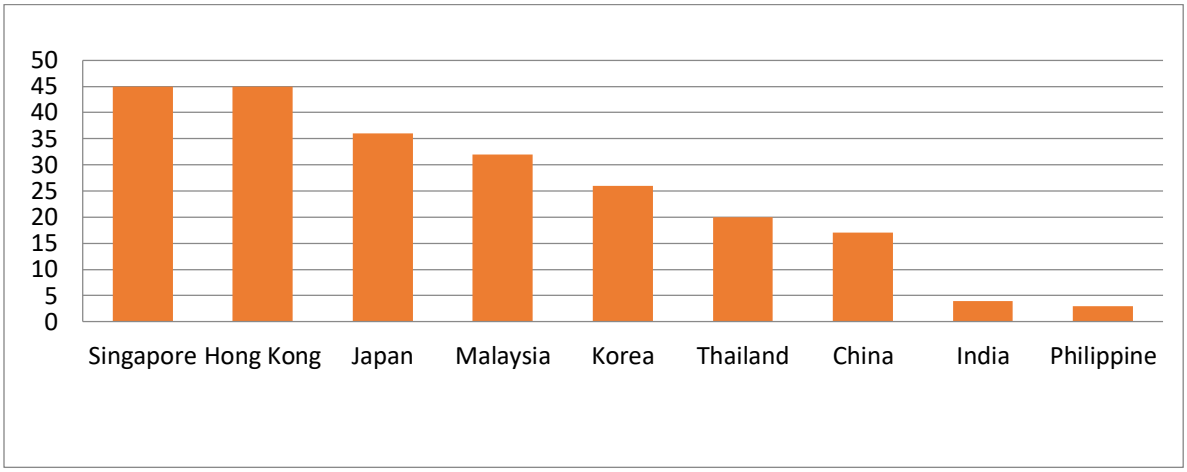

Figure 2 Market Depth in Asia in 2012 *(Doling et al. 2013).*

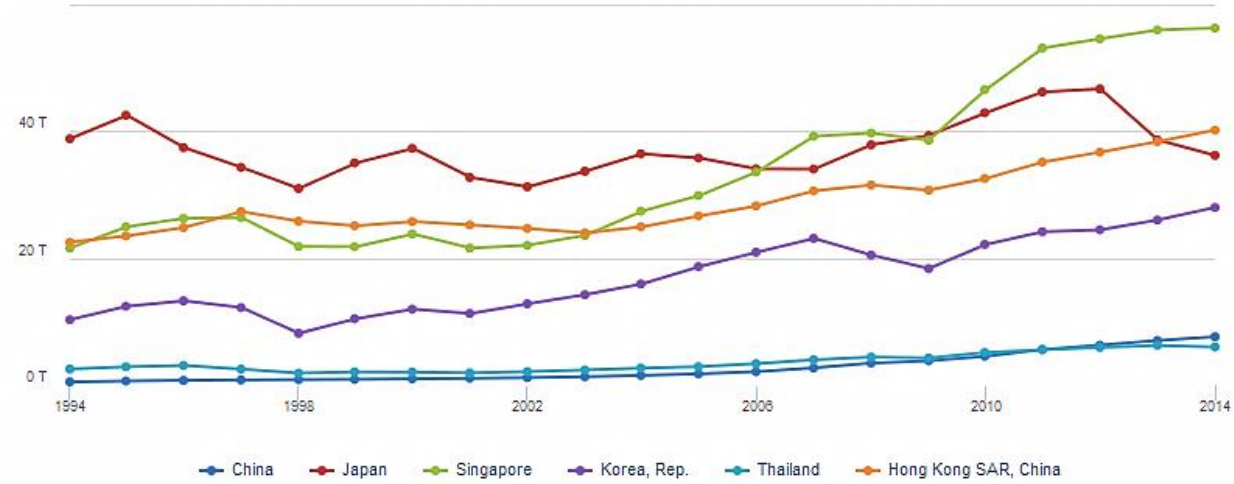

Figure 3 GDP per capita (US$)

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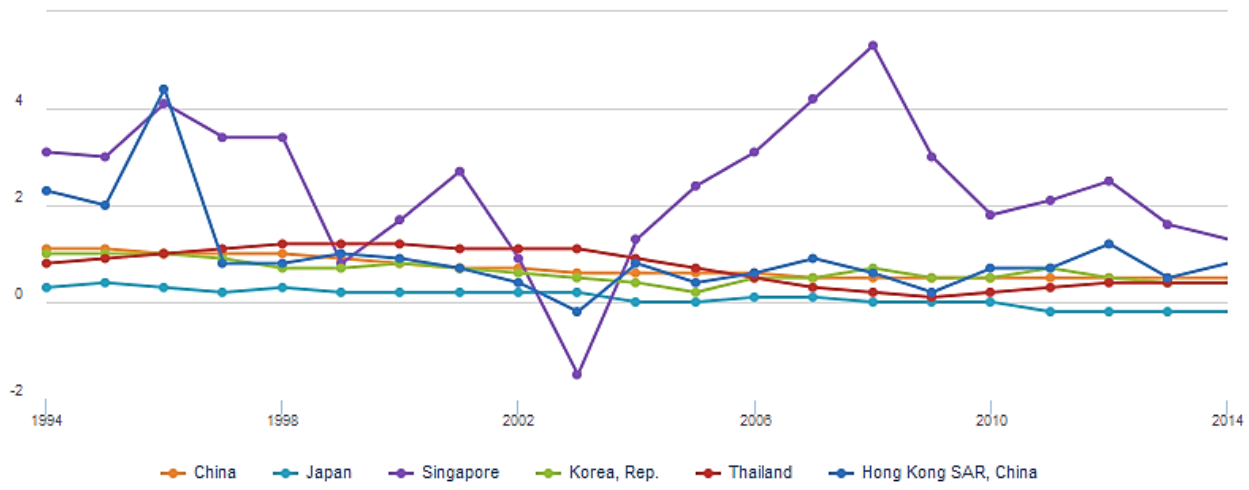

Figure 4 Population growth (World Bank 2016)

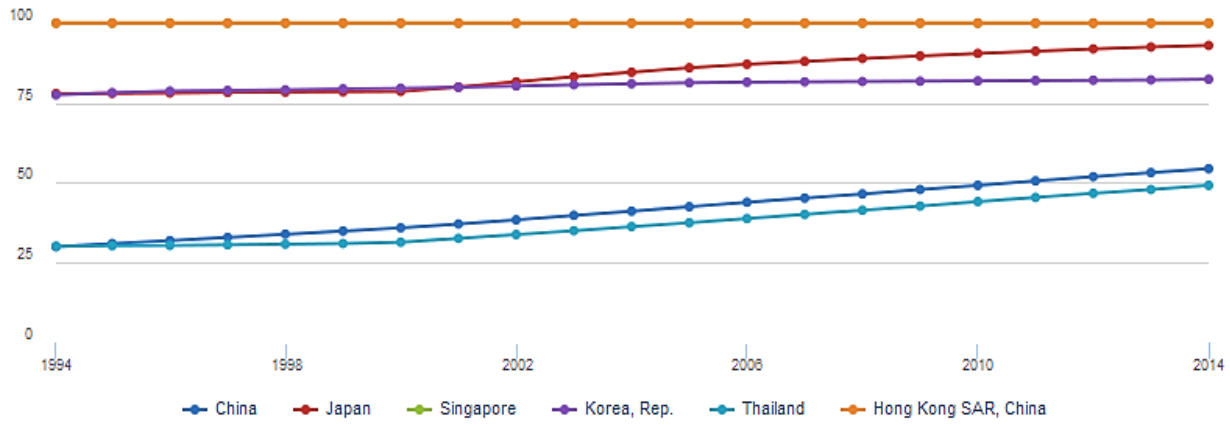

Figure 5Percentage of Urban population from 1994-2014 (World Bank 2016)

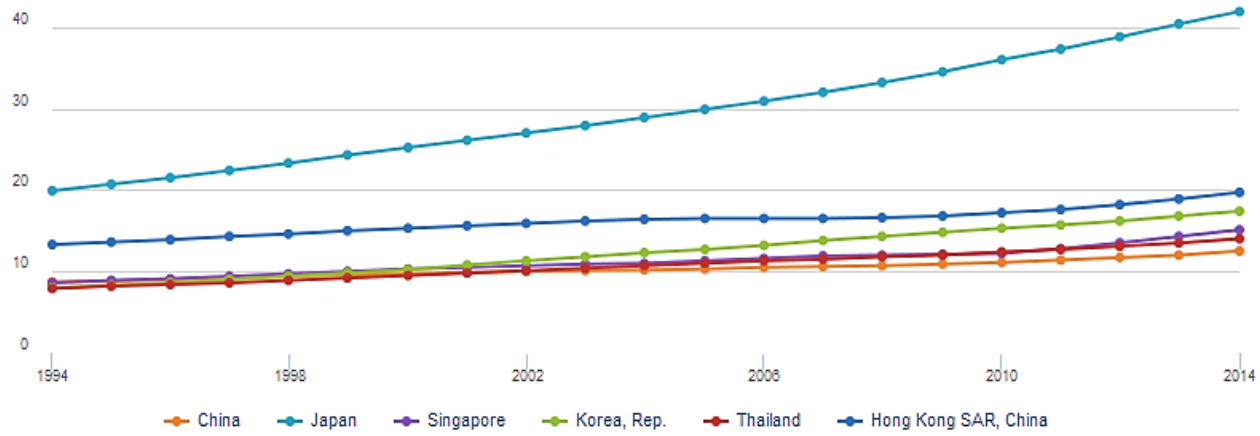

Figure 6 Dependency ratio, elderly age 65 or above (percentage of the working population) World Development Indicators 2016

4. Mortgage Finance Market in Asia

4.1 Japan

The Government Housing Loan Corporation (GHLC) was established to provide long-term lowinterest housing loans in 1950 for individuals, developers and urban renewal projects.

Individual's loans occupy a lion share of GHLC business. Earlier 1966, public sector assumed a key part in giving lodging finance, and their offer in new lodging credits in 1966 was around 68%. Private lodging loans expanded from 32 percent in 1966 to 73 percent in 1975. In 1975, the aggregate housing supply exceeds the number of families in Japan (Tiwari and Moriizumi 2003).

Year	Changes
1950	Japan housing loan corporation set up
2000	Started to issue mortgage-based securities
2001	Started to wind down the JHLC
2007	JHLC was replaced by Japan housing finance (JHF)
2011	JHF extended borrower outreach programs

Table 1 Changes in Japan's mortgage market from 1994 to 2014

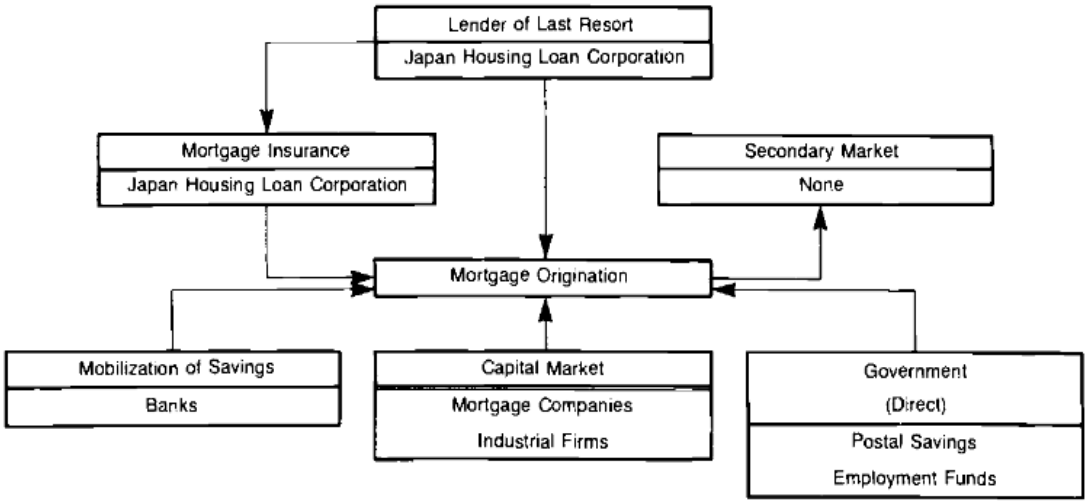

Figure 7 Structure of Japan mortgage market *(Mcguire1981), Fig. 13-1*

The first mortgage-based securities were issued by a private bank Hokkaido Takushoku Bank after the Asian Financial Crisis in 1997 to enhance mortgage liquidity. To diversify prepayment risk and funding sources, the JHLC issued mortgage-based securities in 2000. However, there is a shortfall of the JHLC, which was come about due to the decline in financing cost and accommodative monetary policies. Borrowers of JHLC can prepay loan without punishment. Likewise, the Japanese government is difficult to repay the shortfall of JHLC in view of the decayed monetary conditions. Consequently, it is an important to change the Japanese home loan market. The JHLC was replaced by Japan housing finance (JHF) in 2007. Its mortgage market swifts from primary to secondary market.

	Japan Housing Loan Finance (JHLF)	Japan Housing Finance (JHF)
Established	1950	2007
Ownership	Owned by Japanese government	
Mission	1. Provide liquidity to mortgage markets	

	2. Enhance the housing quality of low to medium income groups	
Main product	Fixed rate mortgages	
Main business	Primary mortgage market to compete with private sector	Secondary mortgage market to support private sector
Main funding source	Borrowing from Government	Mortgage-based Securities
Subsidy	Government-funded	In principle

Table 2 Comparison between JHLC and JHF *(Kobayashi 2012)*

Japan is the second largest mortgage market among Hong Kong, Singapore, Korea and China from 1950 to 2010. According to the data as shown in the following Table, the JHLC finances more than 19.4 million housing units which amount to 187 trillion Yen. Besides, Japan has very low mortgage rate of 2.375% in 2010.

Selected Asian countries	Percentage of GDP
Japan	40
Hong Kong	38
Singapore	36
Korea	13
China	10.

Table 3 Mortgage market as percentage of GDP in Asia *(Kobayashi 2012)*

4.3 Hong Kong

The Conveyancing and Property Ordinance (Cap 219) was gazette in 1997. Unless there is contrary intention, any equitable mortgage by deed or legal charge, the powers exercised by the mortgagee, a receiver and any person can give a receipt for mortgage money on its repayment. (2) Any power, which can be exercised under a mortgage, is subject to prior interests, estates and rights when the mortgaged land is the subject. (3) No power of sale enables a receiver or a mortgagee under an equitable mortgage to assign the legal estate in the mortgaged land (Department of Justice 2016).

In 1999, the HKMC promotes home ownership via the Mortgage Insurance Programme (MIP). Under the MIP, homebuyers' down payment burden can be lowered in absence of credit risk to banks. The HKMC introduced the Reverse Mortgage Program in 2011 which offered elderly a new financial planning option. It encouraged banks to offer reverse mortgage to those aged 55 or above. Borrowers get monthly payouts according to a fixed period of 10, 15 or 20 years or throughout borrower's whole life (Hong Kong Mortgage Corporation Limited 2016).

On 9 February 2012, Residential mortgage loans (Cap 155L) states that an authorized institution can allocate a risk-weight of 35 percent to a residential mortgage loan where 1) loan is secured by the first legal charge on one or more than one housing unit; 2) the borrower under the loan with a property-holding shell company or one or more than one individual; the loan-to-value ratio should not be more than 70 percent; 3) after a loan is drawn by borrowers or loan-to-value ratio of the loan falls below 100 percent etc (Department of Justice 2016).

In 2015, Banking (Liquidity) Rules Interpretation of Part 7 (Cap 155Q) in section 3(b) of Part 2 of Schedule 2. A bond issued by a bank or mortgage corporation is subject to relevant regulations

designed to protect the bondholders. Validity of the bond is able to cover claims attached to the bond.

Years	Changes
1997	The Hong Kong Mortgage Corporation is established.
2010	Implementation of special stamp duty (SSD)
2011	The HKMC launched the Reverse Mortgage Programme to encourage banks to offer reverse mortgage to the elderly aged 55 or above.
	Lowered LTV ratio
	Implementation of buyer stamp duty and extension of SSD
2012	Further tightening of mortgage policy
2015	The Hong Kong Monetary Authority (HKMA) announced a new round of mortgage tightening measures to cool the overheated housing market
	The maximum loan-to-value (LTV) ratio for self-use residential properties is lowered
	The maximum debt-servicing ratio (DSR) for borrowers and the stressed-DSR cap is lowered.
	The HKMC tightened the Mortgage Insurance Programme criteria.

Table 4 Changes in Hong Kong mortgage from 1994-2015 (Hong Kong Mortgage Corporation Limited 2016)

(A) Maximum loan-to-value (LTV) ratio (applicable to applicants who have not borrowed or guaranteed other outstanding property mortgage loans)			
Types of Properties	Property Price	Maximum Loan-To-Value (LTV)	
		Applicant's income derived mainly in Hong Kong	Applicant's income derived mainly from outside Hong Kong
Self-use Residential Properties	Below HK$7,000,000	60%	50%
	HK$7,000,000 - HK$9,999,999	60% (Maximum HK$5,000,000)	50% (Maximum HK$4,000,000)
	HK$10,000,000 or above	50%	40%
Non self-use Residential Properties	All	50%	40%
(B) Maximum loan-to-value (LTV) ratio (Applicants with existing outstanding property mortgage loans)			
Types of Properties	Property Price	Maximum Loan-To-Value (LTV)	
		Applicant's income derived mainly in Hong Kong	Applicant's income derived mainly from outside Hong Kong
Self-use Residential Properties	Below HK$7,000,000	60%	40%
	HK$7,000,000 - HK$9,999,999	60% (Maximum HK$5,000,000)	40% (Maximum HK$3,000,000)
	HK$10,000,000 or above	50%	30%

Non self-use Residential Properties	All	50%	30%

Table 5 Measures on Loan-to-Value Ratio (LTV) for Property Mortgage Loans with effect from 2015*: HKMA*

	Self-use Residential Properties & Car Parking spaces (percentage)	Non-self-use Residential, Commercial, Industrial properties & Car Parking spaces (percentage)
Base-DSR Cap	50	40
Stressed-DSR Cap (Based on the axiom of 300 bps interest rate increase)	60	50
(A) Applicants with outstanding property mortgage loans		
	Self-use Residential Properties & Car Parking spaces	Non-self-use Residential, Commercial, Industrial properties & Car Parking spaces
Base-DSR Cap	40%	
Stressed-DSR Cap (Based on the axiom of 300 bps interest rate increase)	50%	

Table 6 Guidelines on maximum debt-servicing ratio for applicants without outstanding property mortgage loans *HKMA*

The counter recurrent measures marginally chilled off the overheated property market. The new controls may hose the business sector request, however, the potential hit is sensible by a few engineers. Engineers could give top-up finance to help homebuyers to end up as property holders. Likewise, potential purchasers get second home loans offered by the designers to cover up front installments.

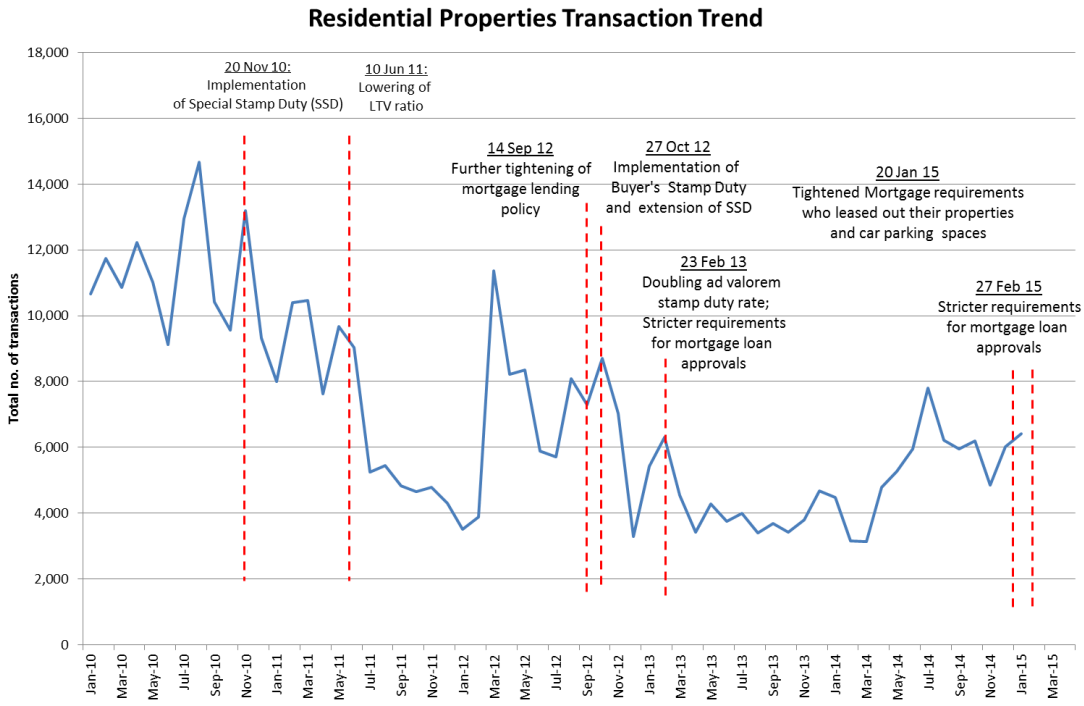

Figure 8Residential properties total number of transactions and changes in regulations from 2010 to 2015 (The Land Registry 2016)

Alluding to the critical offer of private home loan advances in Hong Kong's family unit obligation, the expansion in family obligation since the Global Financial Crisis mostly mirrored the ascent in lodging costs in 2007 to 2014. It prompted an expansion in the measure of new private home loan advances. Higher house costs could likewise prompt a withdrawal of value by family units from the lodging stock to discharge reserves for different purposes. This halfway clarified the outstanding increment in loaning by banks through other individual credits amid this period. The HKSAR identify the risks associated with household indebtedness to the banking industry and macro economy. The Hong Kong Monetary Authority implemented 7 rounds of macro measures on property mortgage lending since October 2009. The average loan to value ratio of new mortgages was 51 percent in the third quarter of 2015 which fell below the average of 64 percent in January to October in 2009 before the measures were introduced. The delinquency ratios for mortgage loans kept at low level at 0.03 percent towards the end of September in 2015.

4.4 Thailand

The Government Housing Bank (GHB) in Thailand was established in 1953 when the King Bhumibol Adulyadej signed the Government Housing Bank Act B.E. 2496 on 9 January 1953 and Gazette on 20 January 1953. The Bank was formed under the Finance Ministry's supervision on 24 September 1953, with a mission to secure housing finance for the general public. It mainly issued mobilized loans for land-subdivision and housing construction. The Revolutionary Council issued amended the Government Housing Bank Act BE 2496 by adjusting the Bank's business in line with NHA's business. After transferring the development business to NHA in 1973, GHB extended the short-term financing to housing project developers and long term loans to general public for building and buying their own homes. From 1976 to 1979, Bank's loan portfolio increased from 381 million to 2,031 million Bt as the housing industry boomed (Government Housing Bank 2011).

The Secondary Mortgage Corporation (SMC) was established to develop the secondary mortgage market in 1997 under the Emergency Decree of Secondary Mortgage Corporation with Baht 1000 million. It introduces reverse mortgage and mortgage insurance. SMC was established under the Ministry of Finance with an aim to develop the secondary market for housing mortgage loan, enlarge the lending activities of the mortgage market and establish mortgage stability in real estate sector and the country economic security (Secondary Mortgage Corporation 2013).

Years	Changes
1953	● GHB was established.
1972	● On 13 December 1972, Revolutionary Council established the National Housing Authority to take over dwelling project developments and transferred all GHB's rights, responsibilities, assets and liabilities according to the Government Housing Bank Act BE 2496 Sections 27 (1) and (3).
1997	● Secondary Mortgage Corporation was founded. ● GHB extended home loans with a repayment period up to 3 decades and raised the loan-to-value ratio up to 90 percent to 100 percent of the appraised house value ● Subsidized Home Loan Scheme under Real Estate

		Rehabilitation Program
1999	●	Rollover Mortgage Loan Program
2001	●	GHB-GPF Graduated-Payment Mortgage Loan Program
2002	●	SMC set up special-purpose vehicle (SPV)
2006	●	An amendment to the Government Housing Bank Act No. 3 B.E. 2549 allows the bank to finance home accessories and furnishings on 17 January 2006
	●	The Bank developed "Loans for home lovers" program for financing clients to buy appliances such as electronic goods, kitchen ware, furniture, sanitary ware.
2013	●	Banks tighten mortgage criteria by cutting loan to value ratio to prevent speculation

Figure 9 Change of Thailand mortgage market from 1994 to 2014 (Government Housing Bank 2011; Secondary Mortgage Corporation 2013)

4.5 Korea

Prior 1996, most of the mortgage loans were provided by public entities. Starting from 1996, banks were permitted to go into the long haul contract business (Chang, 2010). After financial crisis, Asset-backed Securitization Act (ABS Act) came into force in 1998 to enhance the financial institutions' financial structure soundness and lower bank's burden of non-performing loans. Korean mortgage market altered rapidly since the financial crisis, some securitization company were established under the Act. Korea mortgage securitization market changed from asset-backed securities to residential mortgage-backed securities, from primary to secondary market (You 2005).

Prior 1996, over 80 percent of the mortgage market was public, the National Housing Fund (NHF) and the Korea Housing Bank (KHB) dominant the public market. Commercial banks enter into long-term mortgage market in 1996 during mortgage market liberalization. In 1997, the Korean government enacted the "Housing and Commercial Bank Law Abolition Act (No. 5403)" which was included in the "Monopoly Regulation and Fair Trade Act" which was enacted in 1990 (Chang 2010). Apart from refining mortgage regulation in the banking industry, the Asian Financial Crisis led to the implementation of two Acts with regards to the mortgage securitization: the Special Purpose Companies for Mortgage Backed Bonds Act (SPC Act) and the Asset Backed Securitization Act (ABS Act). They foster the structural change of secondary mortgage market in Korea and enhance the further development of mortgage market. With regard to Article 1 of the ABS Act, establishment of the Act in 1998 secured the housing finance foundation via housing loan in Korea. In 1999, the Korea financial giants established Korea Mortgage Corporation to repackage mortgage loan and issue MBS after ABS Act launched in Korea. It offers an alternative way for non-bank mortgage lender to raise new capital and expand business in Korea mortgage market (Lee 2003).

When the ABS market become mature, institutional investors feel confidence investing in real estate-backed products and willing to become contractors with low credit ratings, to whom traditional real estate lenders hesitate to originate commercial mortgages, enjoy the advantage of

off-balance sheet financing (You 2005). There is a need to provide housing finance to the low and middle income class, the Korea Housing Finance Corporation Act (KHFC Act) has been passed in 2003, which is now being considered as one of the Acts that governing the securitization business in Korea. After the implementation of this Act, the Korea Housing Finance Corporation (KHFC) is established to issue the mortgage-backed securities (MBS) in domestic housing market (You 2005).

According to the annual report of KHFC, KRW 7.8 trillion in MBS has been issued in 2010.[1] In order to maintain the stability of the national economy, Article 8 of the Regulation on Supervision of Korea Housing Finance Corporation has required the KHFC to have appropriate experts and well developed system to evaluate and due diligence of the mortgage loan.[2] Thus, the quality of mortgage loan and MBS can be ensured and lower the risks that faced by the KHFC.

4.6 Singapore

Singapore enjoyed high home ownership rate with nearly 92 percent in 2005 and 90 percent in 2010. Such impressive situation is a result of well-design and implementation of Home Ownership Scheme which was introduced in 1968. To fulfill the goal of providing sufficient housing, 9 percent of GDP is devoted to housing construction from 1967 to 1997 each year. Meanwhile, more than 80 percent of land belongs to government which is raised from 40 percent in 1960 (Phang 2001). Moreover, the assistance provided by the Housing and Development Board (HDB) and Central Provide Fund (CFI) planning is quite effective to achieve the Singapore government's goal of providing decent homes with modern amenities for all those who needed them (Zhu 2006). Nevertheless, the private mortgage loan is increasing recently due to the government policies adjustment.

Name of the institutions	Year of establishment	Name of the scheme	Objectives	Detail of the scheme
Housing Development Board (HDB)	1960	HDB Urban Planning	Aimed to build and sell the subsidized public housing	Offers mortgage loan: -up to 30 years -90% loan to value -interest rate =2.6% (CPR saving rate + 0.1%)

[1] KHFC Annual Report 2010, available at: http://www.hf.go.kr/hfp/eng/about/annual.jsp

[2] the Regulation on Supervision of Korea Housing Finance Corporation, legal information, available at: http://english.fss.or.kr/fss/en/laws/common/list.jsp?bbsid=1289369437852

Central Provident Fund Board (CPF)	1955	Social security saving scheme	Collect the employees and employers contributions for retirement	Member can withdraw the funds for approved objectives, including housing finance
Commercial Banks	------	Mortgage backed securities	Provide a market interest rate mortgages to buyers	Make loans to private sector developers for investments and constructions

Table 7 Major formal institutions in Singapore's housing market

Central provident fund (CPF)

The Central Provide Fund (CPF) and Housing and Development Board (HDB) play major role in government housing loan. CPF is a compulsory monthly payment scheme for financing home owners' mortgage payment. The mortgage loan is 0.1 percent higher than the floating CPF ordinary account interest rate set by the Singapore government. While HDB provides mortgage services for first and second hand home purchase, the mortgage rate charged by the HDB is lower than the prime rate of commercial banks in general (Phang 2001).

Year	Changes
1955	Central provident fund introduced
1968	Public housing scheme (PHS)
1981	Private properties scheme (PPS)
1993	CPF savings finance the private housing mortgage interest
1994	CPF housing grants for resale HDB purchase
2002	CPF board hold the first charge over the property

Table 8 Changes in CPF policy from 1955 to 2004

Housing and development board in Singapore

Since 1960, the Housing and development board (HDB) was set to construct and deal with people in general lodging. The Singapore government began to focus on the lodging program. Be that as it may, the lodging lack issue and quickly developing populace constrained the administration to put more exertion on the lodging market. The main need is amplifying the lodging supply, particularly constructing more houses for grass-roots. Thereafter, 5 years building system was established from 1960 to 1965. It planned to deliver the most extreme yield with the base time

and related expense. This plan has conveyed an extraordinary accomplishment to the Singapore lodging market. The HDB after that has moved their center from amount of lodging to nature of living environment. In this manner, they changed the objective to working class in 1974 to 1982, meant to give extensive variety of condo and high caliber of life. Therefore, more than 80% of private family units were living in their pads in 1985 because of HDB's maintainable exertion. In 1990, HDB embraced a domain reestablishment plan of enhancing the expectation for everyday comforts and overhauling the old pads. Notwithstanding for the single subjects who were more than 34 years old, HDB additionally declared a strategy in 1991 to permit them to purchase HDB housing outside central areas. In this manner, the qualification criteria in Singapore's lodging market has been discharged, more subjects got an opportunity to possess their residential units. In 2001, HDB set up the build to order system (BTO) which is the principle method of offers for new pads now. This framework is offering new housing units in non-full grown domains and permitting HDB increment or lessening the lodging supply toward the interest. As the years progressed, the lodging business sector being more productivity and complete.

Year	Changes
1960	Housing and development board set up
1960-1965	5 years building program
1974-1982	Target changed to middle-income flats
1990	Estate renewal strategy adopted
1991	The eligibility condition released
2001	The build to order system (BTO) introduced

Table 9 Changes in HDB policy in 1960 to 2001

The regulations in Singapore's housing market

Singapore's housing markets include HDB for e ligible citizen household where subsidized new public housing. The Figure below the framework of mortgage loans market. HDB first receive the lands, grants and loans from the government. HDB enlarges the public housing supply by using government funds based on different housing strategies. Eligible home buyers receive the HDB grants or mortgage loans. Besides, Singaporean have to contribute 2.5% of savings into Central Provident Fund (CPF). CPF will then use the savings to buy government bonds for down payment or investments.

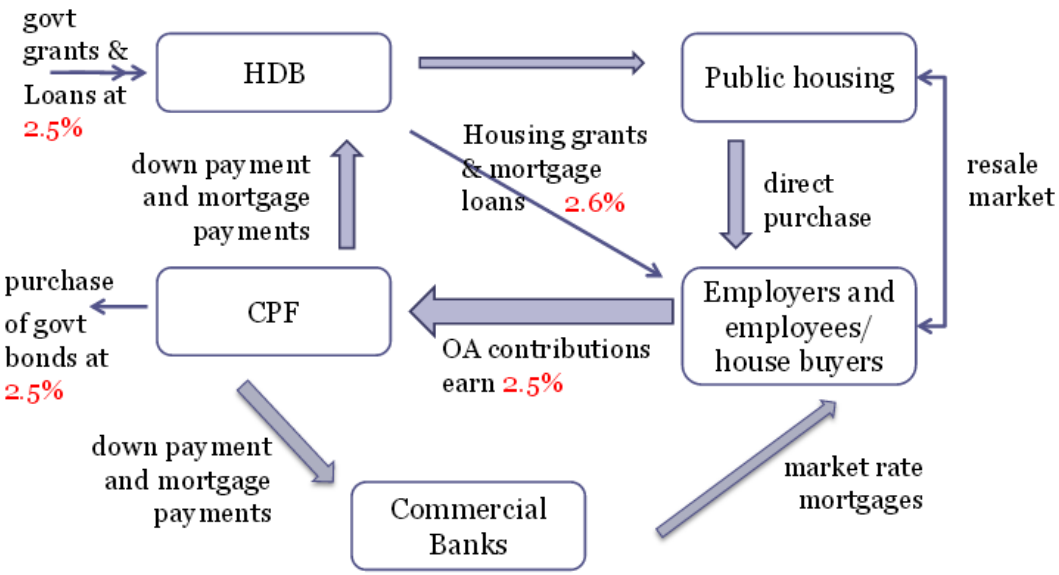

Figure 10 mortgage loans in public housing *(Phang 2010)*

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