

Entry and Exit Affordability of Subsidised Homeownership: An International Comparison

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Abstract

Purpose – Shared equity homeownership is a form of resale-restricted, owner-occupied housing through which lower-income households can sustain their affordability. This paper aims to distinguish two types of affordability within shared equity homeownership: ‘entry affordability’ indicates how affordable subsidised housing is when a household first becomes a subsidised owner; while ‘exit affordability’ means how affordable private housing is after a household has enjoyed subsidised homeownership for a period of time.

Design/methodology/approach – Using price-to-income ratios, this study compares the entry and exit affordability of shared equity homeownership programs in Australia, Mainland China, Hong Kong, Norway, the United Kingdom, and the United States. Based on these international comparisons, this study generalises two distinct types of shared equity homeownership models, namely the models of “share-to-buy” and “share forever”. Given the fiscal constraint in adopting the “share-to-buy” model, we further suggest a “follow-as-you-go” subsidies strategy intended to increase the elasticity of potential affordable housing supply by providing incentives for existing subsidised homeowners to move.

Findings – A key finding of this study is that while shared equity homeownership programs can improve entry affordability, homeowners’ exit affordability is weak when the subsidy is in the form of shared equity such that subsidised homeowners have to share their capital gain with the government. While many housing policy discussions around the world that support shared equity homeownership focus only on the improvement of entry affordability, these discussions usually ignore the importance of exit affordability. This study attempts to fill the void in the understanding of these two types of affordability.

Originality/value – Shared equity homeownership policy is not just about offering low-income households an affordable housing option. It is also about facilitating well-off subsidised homeowners to move up the housing ladder so that the affordable housing option can be freed up for others in need. In a word, it is not only entry affordability but also exit affordability that matters.

Keywords: shared equity homeownership, housing affordability, residential mobility, housing ladder, international comparison

JEL Classification: E21, R20, R31, R38, C21

1. Introduction

Owning a home, especially for the first time, signifies a milestone in many people's lives. Homeownership is often associated with family stability, quality of life, and social class. It is perceived as an opportunity for low-income families to advance to the middle class through a "housing ladder" – "moves from renting to owner occupancy with progression through the life cycle" (Kendig, 1984 p.282). Some governments, rather than just providing low-income families with rental housing, choose to help them to climb up the ladder. To overcome the down payment constraint, many subsidised homeownership programs around the world adopt the *shared equity approach*,¹ where a government agency contributes part of the home purchase price in return for a stake in the ownership, usually in the form of exit restrictions governing arrangements for when the assisted families re-sell the home and for the sharing of the resale price with the government agency (Davis, 2006).

Shared equity homeownership is a form of resale-restricted, owner-occupied housing for lower-income households that remains affordable in perpetuity (Thaden, Greer, & Saegert, 2013). Such housing tenure has three defining features which served as the criteria we used in selecting economies for this international comparative study. First, shared equity homeownership requires an initial public subsidy to provide a shared equity home that allows a windfall for the initial homebuyer, hence improving entry affordability. Second, different contractual arrangements are set to preserve affordability for prospective future homebuyers, e.g. subsidised homeowners are required to resell their homes to another income-eligible household using a pre-determined price formula. Third, more importantly such a shared equity arrangement should have a clear policy objective of helping low-income families progress on the housing ladder, hence enabling the shared equity homeowners to find it affordable to exit the programs. Given such defining features of shared equity homeownership, this paper will

¹ Many different forms of affordable homeownership programs exist in different countries, and the term "shared equity homeownership" has been increasingly used to describe such programs according to their nature of finance (Temkin, Theodos, and Price, 2013). In this study, the term subsidised homeownership is used interchangeably with shared equity homeownership.

mainly focus on the shared equity homeownership programs in Australia, China, Hong Kong, the United Kingdom, the United States, and Norway².

Unless a shared equity homeownership program is intended to assist families for life, there should be an “exit” mechanism enabling assisted families to move on to better housing options through the housing ladder. In this study, “*entry affordability*” is used to describe the ability of eligible families to become subsidised homeowners; while “*exit affordability*” refers to the ability of these subsidised homeowners, after receiving assistance for a period of time, to transition from subsidised housing to private housing. However, in the housing literature, while many policy discussions that support shared equity homeownership focus on the improvement of entry affordability, these discussions usually ignore the importance of exit affordability. Understanding exit affordability provides important insight into the dynamics of social mobility on the lowest rungs of the housing ladder. In many cases, not all exits from social housing represent upward social mobility and improved economic circumstances. If the exit of households from social housing is only affordable at a margin, this may result in those households’ lower financial resilience; for instance getting a higher chance to become negative equity homeowners in falling market. Besides, when the costs associated with spatial mismatches (e.g. long commute to work) significantly trigger households to exit from social housing, such exit often requires a significant downsizing in terms of the quality and location of properties, which will result in a downward rather than upward social mobility (Wiesel and Pawson, 2015).

Thus, measures of only the exit rate from social housing to private housing may not be informative. Further investigation into this topic would require a more explicit assessment of the housing affordability on both entry to, and exit from, the social housing. In this research, we aim to contribute to the housing literature by examining the beginning and the end of the subsidised home purchase cycle, namely the “*entry affordability*” and “*exit affordability*” of shared equity homeownership programs. We attempt to develop matrices that will help evaluate and compare the entry and exit affordability of such programs around the world. An international comparison of shared equity homeownership can further provide us with an

² Singapore is outside the purview of this study even though it has a shared equity model because the subsidised housing program in that country is not prepared for households moving up (exit) from the public housing to private housing. The Singaporean government has essentially segmented the social housing from the private housing market. Since there is no exit affordability issue in the market, we did not include Singapore’s subsidised housing market in this study.

analytical generalisation to develop appropriate strategies for addressing both forms of affordability.

The structure of the paper is as follows. Section 2 provides an overview of the selected shared equity homeownership programs. Section 3 uses price-to-income ratios to evaluate various shared equity homeownership programs around the world in terms of their entry and exit affordability. Section 4 generalises two main shared equity homeownership approaches used around the world. Section 5 concludes.

2. Shared Equity Homeownership Programs across the Globe

Different types of shared equity homeownership programs prevail around the world. The purpose of this section is to facilitate our comparison of their entry and exit affordability by highlighting the programs' essential features, such as the initial equity contribution by the government agency, and their exit arrangements. We will focus on the shared equity homeownership programs in Australia, China (excluding Hong Kong), Hong Kong, the United Kingdom, the United States, and Norway, countries with programs that are fulfilling the selection criteria of 1) having an initial windfall public subsidy for a shared equity home; 2) involving contractual arrangements with a pre-determined price formula to preserve affordability for future homebuyers, and 3) having a clear policy objective of helping low-income families progress on the housing ladder, hence enabling the shared equity homeowners to find it affordable to exit the programs.³

In **Australia**, housing affordability has worsened significantly in the past quarter-century, in both urban and regional areas (Worthington, 2012). To address the homeownership issues, a shared equity homeownership program called the Shared Home Ownership Initiative under the "Open Doors Scheme" was introduced. The concept is still relatively new to the Australian people. Eligible citizens can purchase and own government-built property by using a loan

³ European countries fell "off the radar" of this analysis because most of their social housing is rented housing and subsidised homeownership is relatively new to the region (Scanlon, Fernández Arrigoitia, & Whitehead, 2015). In countries such as Denmark, all the social stock is owned by housing associations; in others, such as Czech Republic, all social housing is municipal. Most countries have a mix, although the relative proportions in each type of ownership vary widely partly as a result of history. Germany and Spain may be exceptions: Germany because much of its social housing is provided by private landlords with state subsidies, and Spain because the bulk of its social provision is in the form of subsidised owner occupation rather than rented housing; yet the proportion is relatively small. In recent years there has been a trend in many European countries for social housing to move out of public ownership, often into the hands of not-for-profit housing co-operative associations with a social mission. This has been driven partly by a desire to reduce pressure on public budgets, and partly by a neoliberal belief that private providers can be more efficient and responsive to residents.

obtained from specified lending providers. As in many other shared ownership arrangements, the initial cost of buying a home is kept low, with the government retaining up to 30% of the property's equity. The exact share held by the government depends on a range of factors, including households' borrowing capacity, household size, and the location and type of the property.

At any time (i.e., a "no resale" restriction period), the homeowner may have the option of selling the house back to the government or on the open market. Nevertheless, the Housing Authority of the country always has an option to buy back the property before the homeowners resell it on the open market. A valuation will be conducted by the government to determine its market value and minimum sale price. In any case, homeowners will get back their equity shares of the resale value – a shared equity approach is typically used. To encourage homeowners to maintain their own housing, any capital improvements that the homeowners have made to the property during their residence will be credited to them when the resale value is calculated. The long-term goal of the Australian government is for its Open Doors Scheme to deliver at least 20,000 additional affordable homes to moderate-income earners by 2020.

In **China**, since the market-oriented housing reform in 1998 the housing allocation system has been replaced by housing privatisation. Households are encouraged to purchase houses in return for the homeownership (Kuang & Li, 2012). The shared equity homeownership program is called "Economically Affordable Housing" (EAH). On average, EAH homes are sold to qualified households at 25 to 40 per cent below the market price of ordinary commodity (private) housing. The government, in general, provides free land for the construction of EAH, and these houses can then be sold at prices that are discounted compared to private housing. Only after the first five years are EAH owners allowed to sell their homes back to the local housing authority and receive a share of the increased equity value. Open market sale is not permitted.

In some cities such as Beijing, the subsidised housing also includes price-capped commodity housing, whose price, in order to help moderate-income families become homeowners, is capped by means of a reduction in land use fees by the government. Apart from EAH and price-capped commodity housing, the Chinese government has also, in 1991, established the Housing Provident Fund, a compulsory savings plan with contributions from both employers and employees to assist moderate wage earners in buying a house. The Housing Provident Fund (HPF) enables local governments to more effectively finance affordable housing construction,

as well as providing additional interest returns from the loan arrangement. Today wage earners are allowed to withdraw their HPF savings when they retire, or to use their fund savings to purchase homes in the subsidised or private housing market. HPF and its variants are now found in most cities in China.

In **Hong Kong**, the shared equity homeownership model has been implemented for many years in order to promote affordable housing among lower-income people. A shared equity homeownership program called the “Home Ownership Scheme” (HOS hereafter) was first launched in the late 1970s. Under the HOS program, the government sells newly-built homes to eligible public housing tenants and low-income residents at discounted prices, usually 30 to 50 per cent below the market rates for comparable homes in the private sector, subject to certain resale restrictions.

Upon expiration of the resale restriction period, the owner can resell his or her subsidised home 1) to anybody, at a market price, after paying the government a premium equivalent to $d\%$ of resale market prices; or 2) to a public housing tenant at a negotiated price of about $(1 - d\%)$ of resale market prices.⁴ Either way, the owner will receive net sale proceeds of about $(1 - d\%)$ of resale market prices. In general, given the prolonged uptrend of property prices in Hong Kong, many HOS homeowners who resell their homes should typically be able to make considerable profits. Despite this, the data available so far reveal an extremely inactive HOS resale market. Although the Hong Kong Government has attempted to provide more incentives for the current HOS homeowners to opt out of the subsidised program by shortening the period of resale restriction, its efforts have proven to be unsuccessful. So far, on average, less than one per cent of the HOS housing stock is traded.

In the **United Kingdom** (UK), one major housing demand initiatives were shared homeownership (Poon & Garratt, 2012). Shared ownership schemes are available to all eligible households (except in Northern Ireland, where public housing is provided only for rent). Before the 1980s, a high proportion of homes in the UK were (government) council-owned. In 1980, the Conservative government of Margaret Thatcher introduced the Right to Buy (ROB) scheme, offering council tenants the opportunity to purchase their housing at a price of 30% of the market value. The shared ownership program helps first-time buyers to get a foothold in

⁴ The only difference is that the buyer in the first case will be exempted from having to pay a premium when he resells the home, whereas the buyer in the second case will still be subject to the premium payment requirement when he resells.

the housing ladder. In addition to paying a subsidised rent calculated on the basis of the remaining equity shared by the government, subsidised homeowners need to get a mortgage to repay their shared equity. Homeowners may have the option of acquiring additional shares in their property from the equity partner (i.e., the government) at the current open market price. Under the shared ownership scheme this process is referred to as “staircasing”. Subsidised homeowners may acquire the equity of their properties held by the government. This means that after the initial purchase there can be a maximum of three “staircasing” transactions to reach the entire 100% home equity. When homeowners buy more shares in their property, the monthly rental expense for the government shared equity will be reduced accordingly. Homeowners under the scheme can sell their home at any time. A homeowner who owns 100% of the property can sell the home on the open market. A homeowner who partially owns the property will have to sell it to a buyer who has met the affordable homes criteria.

In the **United States**, there are three common models of shared equity homeownership, namely community land trusts (i.e., CLTs), limited equity cooperatives (i.e., LECs), and long-term resale restricted affordability covenants on owner-occupiers (i.e., deed restrictions). CLTs originated in the rural hinterlands of the United States as a mechanism for developing affordable housing on collective land (Aernouts & Ryckewaert, 2018). The CLTs provide households with the opportunity to own the physical structure of their home, while the underlying land involved in the project still belongs to a nonprofit CLT. Whenever the present owners decide to resell their homes, the CLTs can either buy back the homes or require the owners to resell their homes to another income-eligible household at a below-market price as stipulated by a formula in the ground lease. As in the LEC model, residents participating in the program will own shares in a cooperative housing corporation. The subsidised homeowners can resell their shares at a price level that ensures moderate-income households of sustained affordability while allowing for reasonable equity growth. The deed-restricted housing model provides moderate-income households with owner-occupied housing that, as prescribed by the deed, is to be resold only to other income-eligible buyers. Deeds restricting the resale of these homes may expire after a certain period, though in some cases a permanent restriction applies. These three shared equity models are similar in nature, the only difference being the degree of stringency of the restrictions imposed upon resale. By comparison, LEC, given its stricter resident screening and property management, would be more effective in reducing negative externality (Miceli, Sazama and Sirmans, 1994).

Shared appreciation loans are offered by a public or non-profit agency in the form of a second mortgage, which, at the time of resale, buyers are required to repay in full together with a percentage of home value appreciation. These value appreciation gains by the public or non-profit agency are then reinvested to ensure homeownership that is affordable to other prospective low-income buyers. It should be noted that to ensure affordability, no payments are due if the buyer is living in the home. An evaluation by Temkin et al. (2013) has analysed shared equity homeownership programs implemented across the United States. The assessment concludes that these programs can achieve their goals of providing affordable homes to moderate-income buyers and can also offer an investment return that outperforms the stock and Treasury bond market. Also, under such shared equity programs, delinquency and foreclosure rates are found to be low. Nevertheless, it is worth noting that in these programs resale turnover rates remain very low, usually less than one per cent per annum.

In **Norway**, one crucial strategy for implementing the social housing policy is co-operative housing (co-op). More than 80% of the population are homeowners through either co-op housing or individual home ownership, leaving a small rental sector. Housing co-ops often manage to provide housing at costs that are below the price of a similar homes in the open housing market, and households buy shares in co-op housing which give them the right to occupy a specific home in perpetuity. As the co-op housing is selling at cost, the selling price is typically discounted in half of private dwellings. In 2012, the average share cost is approximately €70,000 (Moreau & Pittini, 2012) which was at about 55% to 60% of cost for private housing. When the “licence to occupy” is sold, it is sold at market value albeit making it far less expensive than private housing. Residents are jointly liable for meeting the financial responsibilities of the co-operative, and contribute their monthly proportionate share of operating expenses. If payments are missed by a resident, it could lead to expulsion and forced sale of their share. Co-op residents, like other private homeowners, are permitted to deduct mortgage interest rate payments directly from their taxes. There is no special tax treatment advantage or disadvantage for co-operative housing residents, other than that the transfer tax of 2.5% (Stamp Duty) required by the government every time the “license to occupy” is transferred. No special capital gains taxation exists for co-operative housing. Capital gains are levied at a rate of 25%. No tax is required if the owner has owned the dwelling for at least one year and has lived in it for 12 of the 24 months leading up to its sale.

[Table 1 Inserted]

3. Evaluating the Entry and Exit Affordability of Shared Equity Homeownership Programs

Although the fundamental policy goal of shared equity homeownership programs is improving housing affordability, many policy discussions that support subsidising homeownership focus only on the improvement of “entry affordability” while ignoring the importance of “exit affordability”, which is the ability of subsidised homeowners to transition from subsidised housing to private housing. By lowering the initial cost of purchasing a home and by reducing the monthly payments, shared equity homeownership programs can create an affordable means for people to own a home. At the same time, these programs provide people with a way to reap the benefits of homeownership, such as security of tenure, the opportunity for wealth accumulation, legacies for their heirs, and a range of tax deductions and credit enhancements. Meanwhile, shared equity homeownership programs enable affordability to be preserved over time. By limiting the resale price of the owner-occupied properties or by enabling sharing of the capital gains, the shared equity models facilitate the next generation of lower-income homebuyers to have access to the same property-based subsidies that are available to the current generation. This provides a chance for people to exit those subsidised homeownership programs at an appropriate time. Fundamentally, a well-functioning property ladder has to ensure both the “entry” and the “exit” affordability of households: otherwise, the ladder will lead only to a trap. In this section, we aim to develop matrices that help evaluate and compare the entry and exit affordability of shared equity homeownership programs around the world⁵. The comparison can serve as a basis to shed light on what the primary factors restraining exit affordability are.

Entry Affordability

The ability of a person to finance his or her home purchase depends largely on whether he or she has saved enough for a down payment and whether he or she will earn enough to sustain future mortgage payments. In spite of a significant number of contributions from across academic fields, over a long period, the concept of affordability with regard to housing remains a globally contested one (Padley & Marshall, 2016). Essentially, there are three primary methods for measuring housing affordability, namely the normative, behavioural and

⁵ Brounen, Neuteboom, & van Dijkhuizen (2006) adopted a similar approach in constructing a comprehensive first-buyer affordability model. However, their focus was on private first-time homebuyers but not on the subsidised homeownership.

subjective approaches. Whereas the normative framework is the most developed and embraces a number of different measuring strategies, the other two approaches are either primitive in their method or unsophisticated in their conceptual basis (Yip, 2005)⁶. A typical normative approach, namely, the ratio-income approach, assigns a threshold value of housing cost-to-income ratio, thereby assessing a household's capability for housing consumption (Cheong & Li, 2018).

Thus, one common method of measuring entry affordability for housing is the price-to-income ratio (PIR), which is defined as the median home price (P) to the median before-tax annual household income (I) (i.e., P / I). One may use PIR to calculate the hypothetical number of years for which one has to save all one's income before the full price of a home can be settled, assuming there is no change in income or property price over the saving period. In general, an affordable housing market exhibits a median property price that is three times or less than that of median household income, hence a ratio of 3.0 or below, while housing markets with a ratio of 5.1 or above will be considered as severely unaffordable (Cox and Pavletich, 2017). According to the Demographia's International Housing Affordability Survey 2017, three markets in **Table 2**, namely Hong Kong (with a PIR of 18.1), China, (10.2), and Australia (6.6) are all severely unaffordable; meanwhile, the United Kingdom (4.6), the United States (3.5) and Norway (5.8) are relatively more affordable. These are, however, broad-brush comparisons which do not take into account inter-country differences in the taxation and welfare systems, especially in the shared equity homeownership programs.

To show how shared equity homeownership programs improve entry affordability in these markets, we constructed a modified PIR. First, instead of the median residential property price, the relevant price for subsidised homeowners is the discounted purchase price prescribed in various programs. The average discount, relative to the market price, is 30% in China, Hong Kong and Australia, 38% in the US, and 48% in the UK. Given these discounts (d), the numerator of the PIR for subsidised homeowners becomes $(1 - d \%) \times P$. Second, instead of median household income, the relevant denominator for subsidised homeowners is the income of eligible households in various programs. Due to data unavailability, we used as a proxy the income limit as a percentage of the national median household income (μ). This indicator

⁶ A normative approach defines a threshold for the norm of housing affordability. A behavioural approach evaluates housing affordability based on the characteristics of households' housing decisions. A subjective approach is based on large sample surveys, summarizing the subjective evaluations of respondents' feelings about their affordability situations.

ranges from 73% in China to 83% in Australia. Combining the modified numerator and denominator, a new PIR formula for subsidised homeowners is: $[(1 - d\%) \times P] / (\mu \times I)$

Referring to **Table 2**, the PIR of various shared equity homeownership are as follows: Hong Kong (17.0), China, (9.8), Australia (5.5), United States (3.0), United Kingdom (1.2) and Norway (3.3)⁷. Our key interest is the difference between the market-wide and subsidised PIR, which indicates the extent to which the participants' affordability is improved under the shared equity homeownership programs. A positive difference means the program has improved entry affordability – people can become homeowners faster or earlier.

In **Table 2**, the subsidised PIR indicates that the shared equity homeownership programs have reduced the PIR by 0.4 to 3.3 percentage points. The values of item (a) minus (b) in the table are all positive. The programs in the United Kingdom and Norway outperform all the others (with a decrease of the PIR by 3.3 and 2.5 percentage points respectively); while that in China shows a marginal improvement (with a decrease of the PIR by only 0.4 per cent point). Such a comparison may, of course, be limited in that it takes no account of differences between the private and subsidised homeowners in household characteristics. Despite these considerations, using hypothetical median multiples can still numerically offer a sense of the extent to which shared equity homeownership program can help improve entry affordability of the households concerned.

[Table 2 Inserted]

Exit Affordability

Another major implicit objective of shared equity homeownership programs is to help the relevant households to move up a housing ladder, i.e., facilitate them, after a period of time, to purchase homes in the private market. One may question why the subsidised family should have the guaranteed right to enjoy a capital gain that only the party that takes the full investment risk would normally have the right to benefit from?

⁷ The hypothetical PIR is not an artifact, because if the purchase discount and income limits are set at an unduly low level, the ratio may exceed the national level. The hypothetical PIR assumes that a subsidised household lives in median-priced housing (with the help of a subsidy), but in reality, the subsidised owner usually lives in the housing below median price. That means the hypothetical PIR is biased upward. Without knowing the distribution of subsidised housing prices, it is hard to conclude how large such a bias is, but it is still possible to infer that as long as the hypothetical PIR is less than the national PIR (i.e., the values of the last row in **Table 1** are positive), the subsidy has the effect of improving affordability, whereas a negative value will be inconclusive.

The main argument that supports the importance of exit affordability is the social cost of residential immobility under shared equity homeownership. Giaccaria, Talarico & Bravi (2008) emphasised that in relation to urban mobility factors it is essential to consider the roles of the housing market, of filtering-up and of safeguarding spending power for families. Indeed, exit affordability is closely related to residential mobility. A residential location that allows access to only a small and inactive job market with a substantial commuting time may be costly to the households, even though the housing is deemed theoretically affordable. Herrera and Rouband (2005) have used panel data to demonstrate that urban households' links to centrally located work opportunities are meagre and that in countries such as in Peru and Madagascar the transport costs are particularly high. In these countries, residence on the outskirts of cities was strongly linked to chronic urban poverty. Another example is South Africa, where local governments have been building much heavily subsidised "affordable" housing in areas that require a long and expensive commute. In extreme cases, transportation costs can be more than 50% of a worker's salary. All this suggests that housing affordability without upward social mobility is merely a poverty trap.

To investigate the growth of housing wealth that subsidised homeowners can potentially gain upon resale, we calculated a ten-year compound annual growth rate (CAGR%) of private housing prices for each market. Given the volatile market conditions in the global housing market over the past decade, we deemed a ten-year CAGR to be appropriate for evaluating the return of subsidised homeowners. The growth of private housing prices can be used as a proxy for an average capital appreciation of subsidised home sales because in most cases, subsidised homeowners should fetch this market price appreciation to maximise their gains. As the shared equity homeownership programs in all the selected markets for this comparative study use a shared equity formula to derive the resale proceeds, the published initial purchase price discount allows us to estimate the annualised housing wealth growth under the shared-equity arrangement.

A numerical example helps to illustrate exit affordability. Suppose, at the initial purchase, a subsidised homeowner receives a 30% price discount from the government. That means the subsidised homeowner is just required to pay \$700,000 for a home that is worth \$1 million on the market. Furthermore, assuming that the home increases in value to \$2 million over ten years, the subsidised homeowner will be required to repay the government's equity gain by $\$1,000,000 \times 30\% \times 200\% = \$600,000$. As a result, the homeowner receives only \$1.4 million as the resale proceeds. In terms of CAGR%, if the subsidised homeowner is not required to

repay government's equity, the annualised rate of return from the resale can be up to 11.1% (i.e., $\$2,000,000/700,000 \wedge (1/10) - 1$). Yet, if it is necessary to repay the government equity, the annualised rate of return will be reduced to only 7.2% (i.e., $\$2,000,000 \times (1 - 30\%) / 700,000 \wedge (1/10) - 1$).

Thus, if a homeowner decides to resell after repaying the government's equity, by applying such a calculation consistently to all the markets concerned, we can derive the corresponding CAGR% of each shared equity homeownership program. These are listed in **Table 2**. Considering the housing market price growth without repaying the equity to the government, Hong Kong displays the most significant growth of housing wealth, with a CAGR% of 12.4%. Norway and Australia follow next, at 6.21% and 5.84% respectively. China and the United Kingdom record only a 2 to 3% increase in home value, while the United States, owing to its 2008 housing market collapse, fares worst, registering a negative growth rate. However, when we take into consideration the equity repayment under the shared equity homeownership, the performances are different. CAGR% on shared equity homeownership in the United Kingdom and Australia is around 9%. This is also higher than the market return because homeowners are likewise leveraging their subsidised housing investment with the government's equity. The subsidised homeowners in Hong Kong, China and Norway, record an annualised growth of shared equity homeownership just on a par with the market. Since the subsidised homeowners are required to repay the entire government's equity upon resale, the increase in housing wealth is always the same as the market. Indeed, these homeowners could still have retained a handsome gain over the period, but the increased housing wealth after settling the government's equity was insufficient to allow them to purchase comparable housing in the private market. In stark contrast, in the United States, the shared equity model displayed a negative annualised growth of 0.6% over the last decade, due mainly to the subprime mortgage crisis. Theoretically, the shared equity approach can partially reduce the subsidised homeowner's loss in wealth because government equity has shared the home value reduction. However, given the absolute decline in housing wealth, subsidised homeowners usually retain the housing asset instead of reselling the property on the market. Under such circumstances, housing wealth is not cashed out.

Furthermore, we can compare the PIRs of shared equity homeownership to the market-wide PIRs at the time of entry. Since the market conditions at the time of exit would be different from those at entry, it would be better to compare "exit affordability" (in PIR) with the market-wide (median) affordability at the same time to get a full picture of the analysis. The PIRs on

shared equity homeownership in the United Kingdom, Australia, and Norway are around 2.1, 7.6 and 7.3 respectively, slightly better than or similar to the market-wide PIR (i.e., the lower value, the better). As said, the improvement on affordability is due to the leveraging of the subsidised housing investment with the government's equity or the open market sale of co-op housings' shares. Meanwhile, the subsidised homeowners in Hong Kong and China recorded the PIRs at 24.3 and 14.0 respectively, which make their property very unaffordable as compared to the market-wide PIR (18.1, and 10.2). Although these homeowners apparently may still have a shared part of the capital gain over the period, the increased housing wealth after repaying the shared equity has witnessed a drastic deterioration in affordability as compared to median private market households. In the United States, the shared equity model displayed relatively less deterioration in PIRs over the last decade, due mainly to the plummeting of market prices during the subprime mortgage crisis.

[Table 3 Inserted]

4. Generalising the Shared Equity Models in the Context of Exit Affordability

Based on the international comparisons above, we can generalise two distinct types of shared equity approaches used by different governments around the world, namely the models of “share-to-buy” and “shareforever”. The “share-to-buy” model is more like the shared equity approach used in the U.K. and Australia in which the subsidised homeowners have repaid their subsidies over time, thereby alleviating their repayment burden at an exit point. One may interpret such an arrangement as a “convertible zero-interest loan” to the subsidised homeowners, which requires them to partly or fully repay the subsidy over time without interest (i.e., the shared ownership staircasing program in the U.K.). Households under this model can self-select to redeem the government's equity and exit the subsidised housing program. Although such staircasing arrangements can significantly improve the exit affordability of subsidised homeowners, the arrangement costs the government more because the government *de facto* forgoes its share of capital gains. When the cost of subsidised homes is higher, it implies that, given the same government budget, fewer people would benefit from the program in future.

Another shared equity model is the “share forever” model. This type of shared equity arrangement is exemplified by the Hong Kong case, where the subsidy in the form of equity

has to be returned to the government at the time of resale. Because the repayment of the government's equity makes it very costly for subsidised homeowners to trade their homes on the open market and exit the subsidised housing, that is one of the most critical factors restraining households from moving up the housing ladder. As the government can get back the entire equity gains from homeowners, such "share forever" model would involve smaller subsidy costs. That's why the "share forever" model may lead to the problem of residential immobility, but it is still considered to be sub-optimal particularly when a government is financially constrained.

Given the budget constraints, is there any means to improve the exit affordability of the Hong Kong type shared equity model? Simply put, in the Hong Kong case, *one can only enjoy the subsidy when one holds the subsidised home*; otherwise, one will lose the subsidy. Because of this, we suggest a second-best solution to improve the exit affordability, which is to unbundle the deadlock between the right to live in a subsidised home and the right to enjoy a housing subsidy. The solution is that existing subsidised homeowners are allowed to sell their subsidised homes and keep the subsidies for buying another home in the private market. The subsidy follows the households as they go. In the future, if they want to sell the private home and continue to trade up on the market, they may either sell it to another eligible subsidised home buyer at a discount, or to anyone at the market price after repaying the subsidy. This property rights arrangement would increase the flexibility of *in-kind* subsidies. Its spirit is in line with the notion of *housing vouchers*, which have been hotly debated in recent housing policy literature, whether a *cash equivalent* housing subsidy enables public housing residents to enjoy greater mobility and, thereby, leads to a substantial improvement in their well-being (Eriksen and Ross, 2015).

Regrettably, most public housing policy debates have so far concentrated mainly on the provision of adequate affordable housing by the government, with little regard to the role of housing subsidies in society. Our own "follow-as-you-go" subsidies approach is to establish institutional prerequisites and political strategies to increase the elasticity of the potential affordable housing supply (Granath Hansson, 2017) by providing incentives for existing subsidised homeowners to move, thus making more potential housing supply available on the market. Additional research and policy attention are therefore warranted, to help policymakers to better understand the differences between *in-kind* and cash-equivalent housing subsidies and their effects on residents' behaviour so that they can devise suitable housing policies that take into account their overall effects on society, as well as on various stakeholder groups.

5. Concluding Remarks

Regardless of how policy objectives are framed, the core objective of subsidised affordable homeownership is to develop the ability of those who can afford it to purchase their own properties and to encourage them to achieve self-sufficiency to move up the housing ladder. In short, as Bertaud (2014; p.3) has advocated, “it is time for planners to abandon abstract objectives and to focus their efforts on two measurable outcomes that have always mattered since the growth of large cities during the nineteenth century’s industrial revolution: workers’ spatial mobility and housing affordability.” He further explains that spatial mobility takes two primary forms. First, the ability to travel in less than an hour from one part of a city to another; and second, the ability to trade dwellings easily with low transaction costs. Anthony (2016) also emphasised the new, innovative policies are required to make a significant impact on the nation’s chronic and acute affordable housing crisis. If not, the homeownership dream of a safe, affordable home will continue to be more elusive today than it has been in the past. In our study, we conducted specific comparisons of entry and exit housing affordability, which can illuminate for policymakers the limitations of shared equity homeownership in the context of transaction costs.

Compared to residents in private housing who can flexibly move and change their neighbourhoods, households in the public housing sector generally have lower mobility (Andrews & Sánchez, 2011). These public housing households typically need to compromise a much longer commute for their jobs, schooling, and family time than do households living in private housing. In addition to mobility problems, the wealth effect is another key issue. Nowadays, it appears that only those with private housing assets can truly share economic prosperity. For many working-class households hoping to share the fruits of economic growth, repairing the broken homeownership ladder may seem to be a way to do so. This study seeks to contribute to that goal by contextualising the entry and exit affordability issues associated with shared equity homeownership.

To summarise, the contribution of this paper is twofold. First, to the best of our knowledge, it is the first study to distinguish two types of affordability in the context of shared equity homeownership: (1) ‘entry affordability’, a measure that indicates how affordable subsidised housing is when a household first becomes a subsidised owner; and (2) ‘exit affordability’, a measure that indicates how affordable private housing is after a household has enjoyed shared

equity homeownership for a period of time. This paper compares the entry and exit affordability of shared equity homeownership programs around the world, including Australia, Mainland China, Hong Kong, Norway, the United Kingdom, and the United States. One key finding is that while these programs can improve entry affordability, their ability to enhance exit affordability is weak when the subsidy is in the form of shared-equity, i.e. subsidised homeowners have to share their capital gain with the government. Thus, it is necessary to rethink the goals of the shared equity homeownership programs that have been implemented across the world. Second, on balancing the transitory stage for households to climb the housing ladder in society with respect to entry and exit affordability, this study can stimulate policy discussions on how to alleviate, or even eliminate, the side effects existing among subsidised homeowners, and to maximise the positive impact of similar programs around the globe.

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Table 1 Summary of Shared Equity Subsidised Homeownership Programs

	China	Hong Kong	Australia	United Kingdom	United States	Norway
Programs / Common names	Economically Affordable Housing (EAH)	Home Ownership Scheme (HOS)	Open Doors Scheme (ODS)	Affordable Home Ownership Schemes	Shared Equity Homeownership; including CLTs, LECs, and deed-restricted	Co-operative Housing
Resale target	Government	i) Any buyers on the open market with the shared equity repaid; or ii) low-income buyers without repayment	Any buyers on the open market; or the government. Government always has the priority to buy back	Buyers who meet the income and asset criteria	i) Another moderate-income buyer on the open market; or ii) Government	Any buyers on the open market; or the co-op.
Prices setting at resale	Government appraised value	i) Open market price; or ii) at a price determined by low-income buyers	Government appraised value	Price determined by low-income buyers	Open market for resale target (i); or government given target (ii)	The price of shares of the co-op on open market price
Recipient of the subsidy	<i>In-kind</i> subsidies as discounted deed-restricted housing	<i>In-kind</i> subsidies as discounted deed-restricted housing	Loans to homeowners	Loans to homeowners	Grant to CLT and LEC; or <i>in-kind</i> subsidies (in the form of discounted deed-restricted housing)	Grants the license to occupy to homeowners (no repayment required)
Disposition of subsidy upon resale	Subsidy recaptured by the government (based on government's equity)	Subsidy recaptured by the government (based on government's equity)	Subsidy recaptured by the government lender (in whole or in part) and then re-loaned to next low-income homebuyer	Subsidy recaptured by the government lender (in whole or in part) and then re-loaned to next low-income homebuyer	It depends. Subsidy could be retained in the property, recaptured by the government, or pocketed by sellers	The seller pockets the capital gains; but the resale prices of the co-op shares may be constrained

Sources: Authors compilation; relevant housing departments/authorities of countries.

Table 2 Entry Affordability of Shared Equity Homeownership Programs across countries

	China	Hong Kong	Australia	United Kingdom	United States	Norway
Initial purchase discount						
<i>(d%)</i> ⁽¹⁾						
Lower bound	20	20	30	25	25	-
Upper bound	40	40	30	70	50	-
Mean	30	30	30	48	38	57 ⁽⁴⁾
Minimum occupancy period (in years)	5	5	N.A.	N.A.	5-10	N.A.
Median household income						
(\$US; at avg. ex.rate 2007-2016)						
Market-wide 2016 Q3 ⁽²⁾	9,378	46,272	93,597	65,083	56,516	91,050
Income limit under program ⁽³⁾	6,849	34,535	78,524	128,370 ⁽³⁾	45,213	-
Entry Affordability						
(Price-to-income ratio)						
(a) Market-wide (2016, Q3)	10.2	18.1	6.6	4.5	3.9	5.8
(b) Under subsidised homeownership program	9.8	17.0	5.5	1.2	3.0	3.3
Difference (a) – (b)	0.4	1.1	1.1	3.3	0.9	2.5

Sources: CEIC, Demographia International, Economic Intelligence Unit, Housing departments of the countries concerned

Notes: (1) Singapore is not included because the price discount (*d%*) is undisclosed. (2) The housing affordability ratio can be categorised as “affordable” with a median multiple ≤ 3.0 ; “moderately unaffordable” with 3.1 to 4.0; “seriously unaffordable” with 4.1 to 5.0 and “severely unaffordable” with 5.1 and above. (3) The income limit is often stated with reference to specific household size; but the income limit here refers to the median household size under each program. (4) The threshold income of shared ownership program in the UK is set above the national-wide median household income. Most British are therefore eligible applicants. More than 166,000 active applications are still pending under the shared ownership program (Homes and Communities Agency, 2012). For the market as a whole, the median household income of a shared equity owner in 2011/12 was £27,000. (4) On average, individuals require to buy the share of the co-ops at €270,000 – approximately USD 303,000 (full market value) which is at a discount around 55 to 60% compared to private housings.

Table 3 Exit Affordability of Shared Equity Homeownership Programs across countries

	China	HK	Australia	U.K.	U.S.	Norway
Initial purchase discount (<i>d</i>%)	30	30	30	47.5	37.5	57
National wide						
Housing market price growth (10Yr CAGR%)⁽¹⁾	3.73	12.42	5.84	2.39	-0.62	6.21
<u>Investment performance</u>						
Shared equity homeownership (10Yr CAGR%)⁽²⁾	3.73	12.42	8.69	8.58	-0.62	6.21
Housing Affordability (Price-to-income ratio)						
(a) Market-wide	10.2	18.1	6.6	4.5	3.9	5.8
(b) Resell the subsidised home that bought 10 years ago to buy home in the private market	14.0	24.3	7.6	2.1	4.9	7.3
Difference (a) – (b)	3.8	6.2	1.0	-2.4	1.0	0.6

Sources: CEIC, Bank for International Settlements.

Notes: (1) CAGR refers to the compound annual growth rate in %. (2) The annualised shared equity growth is calculated by assuming the government caps the resale proceeds according to the initial purchase discount *d*%, hence $((1-d\%) \times (P_2/P_1))^{(1/n)} - 1$ where P_1 is the initial purchase proceeds, P_2 is the final resale proceeds, *n* is the holding period.

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