FIRST HOME BUYERS' PURCHASING AFFORDABILITY IN POST-COVID ERA: A MICROSIMULATION COMPARISON OF FIRST HOME GUARANTEE AND HELP TO BUY SCHEME IN QUEENSLAND

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ABSTRACT: The surge in house prices, post COVID, presented a tremendous challenge to the Government in Australia. Enhancing purchase affordability, especially for new entrants of the housing market, that is the first home buyers, is the top priority for the current government. Several housing programmes have been proposed which aim to target and help low- and moderate-income families into homeownership. This paper analyses features of two of these programmes, namely "First home guarantee scheme" (FHGS) and "Help to buy scheme" (HTBS). Using Queensland as a case study, a housing microsimulation model is used to conduct a comparative analysis of these two programmes. The impact of these two programmes has been evaluated on the basis of their impact on the number of potential first-time buyers who can achieve home ownership. Results suggest that the FHGS can be more helpful in increasing rates of homeownership than the HTBS.

KEYWORDS: First home buyers, microsimulation, housing affordability, post-COVID, Help to Buy Scheme.

1. INTRODUCTION

Housing is one of the most basic human needs. Besides providing shelter, in the modern world it has impacts on other aspects of economy as well. Housing, particularly in the form of homeownership, is associated with long-term effects on micro-businesses or home-based businesses (Reuschke 2016), low crime rates and clean neighbourhoods (Hoek-Smit and Diamond 2003), good child education, and improved health (Productivity Commission (2004). In Australia, it is also deemed important for security of tenure and beneficial for retirement housing costs reduction

(Bourassa, Greig et al. (1995). Alongside these micro level benefits, on a macro level, homeownership is considered important for increased labour supply due to increased financial needs for purchase (Dietz and Haurin (2003) and economic growth (Hoek-Smit and Diamond (2003). Homeownership is an important component of wealth, and in some countries, homeownership accounts for as much as half of household wealth Buckley and Gurenko, 1997). It is also stated to be the single pronounced reason of the rising capital/income ratio of developed economies (Rognlie, 2016). The divergence in homeownership accessibility when combined with house price increases can have a consequence of rising inequality (Allègre and Timbeau (2015). There is empirical evidence of significantly larger benefits to high income home buyers than low and middle income buyers (Burbidge (2000). Decline in entry into homeownership has been linked to intergenerational inequalities as well (Barrett, Cigdem et al. (2015); Flood and Baker (2010). Declining rates of homeownership among the new generation together with an aging population may mean a greater burden on the Government budget in the longer run in the form of larger amounts of pension (Yates, 2012; Stebbing and Spies-Butcher, 2016). Keeping these impacts of homeownership in view, this research aims to evaluate the Government's housing policy in Australia with a focus on housing purchase assistance schemes in the period of high house prices.

2. BACKGROUND

In Australia, post COVID, house prices have exhibited a sharp rise. The statistics released by the Australian Bureau of Statistics for the time period during and after COVID has shown that the residential property prices indicated a positive growth in nearly all the states, as can be seen in Table 1.

The major reason for high house prices in Australia, besides low interest rates, has been stated to be increased saving during COVID, which became possible as a result of less expenditure in lockdown periods and the Government's COVID stimulus in the form of different kinds of payments. As can be seen in Table 2, the net worth of households has increased in period March quarter 2020 to June quarter 2020 and since then continued expanding until September 2021 after which it started declining. This means that those households that could take advantage of the COVID related savings could have enough for a down payment and tenure transition into homeownership, while those who could not take advantage

of these kind of savings would have to bear the consequence of homeownership related disadvantage as a result of high house prices resulting from the increased demand coming from the above stated house purchasers.

Table 1. Residential Property Prices in Australia, 2020–21. Source: Australian Bureau of Statistics (2021, December). Residential Property Price Indexes: Eight Capital Cities. ABS.

Residential property prices	**Sep Qtr 21 to Dec Qtr 21 % Change**	**Dec Qtr 20 to Dec Qtr 21 % Change**
Weighted average of eight capital cities	4.7	23.7
Sydney	4.1	26.7
Melbourne	3.9	20.0
Brisbane	9.6	27.8
Adelaide	6.8	23.9
Perth	2.9	15.7
Hobart	6.5	29.8
Darwin	1.5	13.0
Canberra	6.4	28.8

Table 2. Household Wealth, Contribution to Growth, Quarterly. Source: Australian Bureau of Statistics, Australian National Accounts: Finance and Wealth June 2022

	Net worth (ppt)	**Assets: Land and dwellings (ppt)**	**Assets: Super-annuation (ppt)**	**Assets: Equity (ppt)**	**Liabilities: Housing loans (ppt)**	**Assets: Deposits (ppt)**
Mar-20	-2.3	0.9	-2.5	-0.6	-0.1	0.2
Jun-20	2.2	-0.2	1.5	0.3	-0.1	0.3
Sep-20	3.1	2.1	0.3	0.1	-0.1	0.6
Dec-20	5.5	3.3	1.4	0.5	-0.2	0.2
Mar-21	4.6	3.8	0.6	0.2	-0.2	0.1
Jun-21	4.5	3.4	0.9	0.3	-0.3	0
Sep-21	5.5	4.5	0.4	0.2	-0.3	0.6
Dec-21	4.8	4.0	0.7	0.1	-0.3	0.3
Mar-22	0.7	1.0	-0.3	0.1	-0.3	0.2
Jun-22	-3.3	-1.0	-1.7	-0.1	-0.3	0

Housing Market of Queensland

An overview of Table 1 shows that among the housing markets in Australia, the state that had exhibited the major increase was Queensland, with its capital city, Brisbane, showing an increase of over twenty-five percent over one year (December 2020 to December 2021).The house price growth of residential property in Brisbane for the last reported quarter of 2021 (September Quarter 2021 to December Quarter 2021) was 9.6 percent, which was the highest among the capital cities. Although the mean price in the state was still lower than other states but the rate of growth was faster. Not only that, but the housing market of Queensland had also been under immense pressure after COVID. With the domestic unemployment rate at a record low of 3.5 percent and still facing a skill shortage, the Federal Government in 2022 was determined to increase immigration to nearly 200,000 in the next two years and Queensland, being a popular tourist attraction and with more job opportunities, was more likely to be affected by this influx of immigration. It was speculated that this would increase the rental demand, leading to an increase in residential property investment demand and a further increase in house prices. The house price rise due to strong demand of housing and unresponsive supply generates an affordability issue (Worthington, 2012). Rising house prices usually affect first home buyers more than existing homeowners, as the changeover buyers have some housing equity to provide a shield against surging prices resulting in the declining rate of first home buyers, which in turn leads to an overall declining rate of homeownership rates. In the case of Australia, this decline in the homeownership rate is causing concern, as this would mean greater reliance on private rentals in the future, leading to an increase in rental demands and consequential rental unaffordability (Vidyattama, Li et al., 2023).

As house prices in Queensland are predicted to continue to increase in the coming years, at least until 2032, and because of the current situation, there is a need of housing programmes to facilitate first home buyers into ownership tenure as soon as possible and give them a competitive edge over property investors. To address this issue, the Government has placed special importance on housing policy and delivering affordable houses through different schemes. One of the approaches for solving the affordability issue is to encourage new entrants in the market by incorporating special schemes for them in the Australian housing planning

policy. Various initiatives have been taken by both Commonwealth and the Queensland Government to protect the interests of first homeowners and to encourage new entrants in the housing market. These include housing programmes such as first homeowners concession, first homeowners grant, and first home vacant land concession. The aim of these subsidies is to make housing more affordable to a wider population. An important and most recent inclusion in the Australian housing programmes are the "First home buyer guarantee scheme" (FHBGS) and the Federal Government equity partnership scheme named the "Help to buy scheme" (HTBS) introduced by the current Government.

The analysis presented in this paper empirically evaluates the impact of these two kinds of schemes on homeownership rates of first home buyers in Queensland through design of policy scenarios similar to these two demand side housing initiatives.

3. SCHEMES COMPARISON

A brief description of these two schemes, on the basis of which policy scenarios are designed and evaluated in this paper, are as follows.

First Home Buyer Guarantee Scheme (FHBGS)

Under the FHBGS, the government provides the guarantee of loan for up to 15 percent. So, the buyer only needs to have five percent of the deposit instead of 20 percent to avoid lenders mortgage insurance. The buyer still has to repay the loan along with the interest on this 15 percent, but they have 30 years to repay that 15 percent of the loan which otherwise would have needed to be in savings for an upfront payment in order to avoid the financial liability of mortgage insurance and hence would have needed more savings. So, the loan to value ratio in this case is 95 percent. This scheme, however, is further targeted with income caps for housing consumers who can take advantage of this scheme and house value caps on houses which can be purchased with the help of this scheme. As to income, singles who want to purchase the house with the help of this scheme, the annual taxable income is capped at AU$125,000 while for couples the annual income is specified as AU$200,000. The property price caps specified are different for different regions. As the current analysis is for Queensland only, it is AU$600,000 for regional centres and capital cities while for rest of the state it is AU$450,000. One of the downsides of this scheme is that as the loan size is bigger, so greater monthly repayments

need to be made. Also, there can be a possibility of greater interest rates being charged by the lenders. However, achievement of ownership sooner will help in rent savings which makes the net out of pocket housing cost much smaller. There were 35,000 places allocated for this scheme for the financial year 2022-23. This scheme is for Australian citizens or permanent residents who are at least 18 years of age.

Help to Buy Scheme (HTBS)

The HTBS was (at the time of this analysis) expected to start in early 2023. Under this scheme, the Government is a co-partner in the purchase of the house. This means that the Government purchases housing equity stakes of up to 40 percent in the case of a new home and 30 percent in the case of an existing home. So, the loan to value ratio for the consumer purchaser is 0.4 of the purchase price in the case of a new home and 0.5 of the purchase price in the case of an existing home if the down payment of 20 percent of the house value is assumed. Under this scheme mortgage insurance cost is avoided; however, the capital gain on that 40 percent or 30 percent (the Government's share) is also lost. In this case the minimum requirement of the down payment for the applicant is at least two percent of the property price. The applicant also needs to have enough savings for other costs required for house purchase, such as stamp duty, bank fees, and any legal fees or agency costs if required. This scheme is also targeted to low to middle income non-homeowners. The income cap in this case is AU$90,000 for singles and AU$120,000 couples. For this scheme, the requirement of being a first-time purchaser is not specified. However, at the time of application there should be no ownership of another home either within Australia or outside. In this case, the purchaser does not have to pay the Government any fees or interest rates for the part of the Government share. The buyers can also increase their stake at any time but it should be at least five percent at any one time. Also, if the income increases to an amount greater than the income specified, for consecutive two years, the purchaser is required to buy the Government share or start repaying the loan. Further, this scheme is limited in the sense that only 10,000 places per year will be available for this scheme.

4. LITERATURE REVIEW

The literature on these types of housing programmes is quite scarce. Much of the literature on the loan guarantee schemes that is similar to

FHBGS is on the loan guarantee for businesses. The major difference between guaranteeing a loan for a business compared to a dwelling is that in the case of businesses there can be an expectation of earning or profit, which makes the risk of loan default lower and thus easier to get approval for. Also, if appropriately targeted, they are considered very beneficial for the economy, as they help to include those who cannot otherwise be considered credit-worthy by the lenders. These kinds of loans guaranteed by governments aim to help "borrowers in a band between those who are not creditworthy enough to be able to handle their government loan, and those who are so creditworthy as to have full access to private loans without needing a government subsidy. A failure to target credit properly can cause harm either from denial of credit to creditworthy borrowers or from the provision of too much credit to people who can't handle it" (Stanton 2002, 384-385). While loan guarantee schemes are quite helpful for those who are not credit worthy, it has been noted that loan guarantee schemes can have huge costs on taxpayers, especially in cases of inability to pay (de Rugy 2012), as the risk is transferred on those taxpayers who cannot make the recovery. There are very few studies on housing loan guarantee schemes, In one such study, U.S. federal governments' veterans administration housing benefits through loan guarantee estimated with life-cycle tenure choice model indicates a 10 percent increase in homeownership rates (Fetter 2010).

As to housing public private partnership that is to compare with the Federal Government's HTBS in Australia, most of the literature is related to supply of affordable housing (Brown, Orr et al. 2006, Muhammad, Johar et al. 2015, Chitongo 2017). The focus of these studies is to know how public private partnership increases supply and construction of houses. On the demand side partnership, the literature focuses mostly on shared equity schemes between home buyers and housing investors or between home buyers and lenders. In a study of the U.S. housing market, shared equity between the housing consumer and the investors is considered a likely cause of an increase in homeownership rates of one percent to 1.5 percent (Caplin, Carr et al. 2007). When the home buyer's and lender's equity partnership has been evaluated, it has shown benefit and incentive to homeowners in case of housing crisis due to loss sharing (Posner and Zingales 2009). In times of high house prices, sometimes greater servicing of debt can lead to a slump or bubble burst (Andritzky 2014). In such situations, partnerships between government and home buyers can provide a buffer to the housing market.

On the basis of age groups, the literature contains studies on homeownership among young adults, and most of these studies have

consensus as to the decline of homeownership for the young adults at least. It is stated that the decline in homeownership rates among low-income earners and young adults is more than other groups (Yates, 2003; Morris, 2010). A study of Australia shows that the actual decline in homeownership rates between 1995 and 2003 has been covered up by aging of population (Andrews and Sánchez, 2011), as the median age of the population has increased from 27.5 to 36.6 years since 1971 to 2006 (Kryger, 2009). A detailed analysis of comparatively recent data (1995–2012) has shown that the actual decline in the homeownership rates of young adults is already greater than predicted by earlier researchers (Stebbing and Spies-Butcher, 2016). Hence, the present study contributes to this literature by analysing the impact of these schemes on different age groups of young adults.

5. METHODOLOGY

The method used for the estimation of homeownership rates under the features of these two schemes is microsimulation modelling. Microsimulation is one such method of data science which can use micro level detailed data sets to evaluate effects of different policies by introducing policy scenarios. Hence, this method can be a cost-effective close approximation of impacts of policies with real economic agents and their demographics.

A modified housing microsimulation model based on the one developed by Wood *et al.* (Wood, Watson et al. 2002) is applied for determining which of these schemes' features would be more helpful in enhancing affordability of greater number of first home buyers and resulting in increased number of homeowners. The microsimulation is carried out in two stages. In the first stage the cost of ownership is compared with cost of renting of potential first home buyers. If the cost of ownership is lower than renting the potential first home buyers are assigned as willing to choose ownership as tenure. In the second stage, their affordability for down payment and other transaction costs is determined. If that is also passed, then the potential first homeowners are assigned to homeownership.

Firstly, a baseline scenario is created where there are no FHBGS or HTBS in place. A housing consumer who plans to purchase a house can obtain a loan equal to 80 percent of their predicted house value and the minimum down payment requirement is 20 percent. That is, the loan to value ratio for a housing consumer is 0.80. This is to avoid lenders

mortgage insurance. The basis of this assumption is that most of the banks require the housing consumer to pay for lenders mortgage insurance if the down payment is less than 20 percent. Also, the existing first homeowner grant (FHOG) and stamp duty concessions in Queensland are included in the baseline case, as they are not replaced by the two mentioned schemes.

In the first stage, a user price-rent ratio model is used. That is, the housing consumer weekly cost of homeownership is compared with the cost of renting. The cost of homeownership is based on the i) marginal income tax rate of housing consumer/buyer, ii) transaction costs, such as agency cost, stamp duty, legal fees and mortgage registration fees, and iii) operation costs of the homeownership, such as property taxes and maintenance cost. The capital gains less depreciation at marginal income tax rate of home purchaser is also included. For marginal income tax rate calculation tax and benefit schedule of 2021–22 providing an average of 22 percent when (sample of all) renters become homeowners.

The cost of ownership also included mortgage and interest payments. The present analysis is an estimation in case the purchases are made in July 2021, so an interest rate of 2.10 percent (mentioned in reserve bank of Australia column G, more than three years fixed interest rate) is considered. The maximum loan repayment period allowed by financial institutions is 30 years, while an analysis of homeowner average (mean) holding period from the data set in use shows 14 years. In this analysis 20 years is assumed as the loan repayment period to balance out a reasonable repayment period, avoiding an extra 10 years of interest payments. The holding period of the house is also required for amortisation of the transaction costs over the holding period of the house, which is also specified as 20 years to be consistent with the loan repayment period. For cost of homeownership, the price of the house is required. This is estimated from a regression of house values for recent (last three years; 2017 onwards) purchasers in Queensland who have purchased in the last three years and is on the basis of number of bedrooms, property type (flat, apartment, house. etc.) and whether in a capital city or rest of the state. Based on this regression, a predicted value of the house required by the potential buyers is estimated. For housing cap values, as different values are specified for capital city and rest of the state, it is assumed that the income unit buys in the area (whether metropolitan or regional) where they are renting.

In the first stage, affordability is determined based on cost effectiveness of homeownership; that is if weekly cost of homeownership is lower than weekly cost of renting, which in this analysis is market rent minus rent

assistance (if any); it is assumed that the housing consumer chooses to own a house. The next stage is to see if they have enough savings to make a minimum down payment as well as any other (transaction) costs associated with purchase. If yes, they are assigned to homeownership.

In case of the FHBGS, the Government provides guarantee for up to 15 percent of the house value; hence the loan is 95 percent while the down payment requirement is five percent. The assumption for this microsimulation is that the maximum of guarantee is used. Since both principal amount and interest needs to be paid on the Government guarantee portion as well, so LVR is 0.95. Nationality requirement is ignored because the estimation is based on affordability enhancing capability comparison of two schemes with respect to current incomes, house prices, and financial conditions of the population.

In case of the HTBS, the Government purchases up to 40 percent of the house value if it is a new house and up to 30 percent of the house value if it is an existing house (70 percent to be bought by buyer), while the minimum down payment requirement is two percent of the house value, so LVR of 0.68 is taken. Since it is difficult to know if the buyer will purchase a new home or existing, 30 percent is used, as it is minimum and common to both types. Also, due to the Government partnership, the mortgage insurance fee is saved. Purchase costs other than the share in the house value will be borne by the buyer and the house price appreciation will be only to the respective share of the buyer (managing partner), so on the basis of this it is assumed that operational costs too will be borne by the purchaser (with no liability on the Government's share) as the purchaser has the sole usage rights.

Data

Data used for this analysis is the Survey of Income and Housing Costs (SIHC) data 2019–20 provided by the Australian Bureau of Statistics. SIHC has detailed data available on income and wealth components of income units. SIHC 2019–20 is the latest year data available. This data has been collected between July 2019–June 2020.

SIHC has three levels of data: Household, Income unit and person level. All levels of data sets have some variables of interest available and some missing, so for this analysis all three level data sets have been merged. A sub-sample consisting of observations from Queensland is taken. The sub-sample of non-homeowners who can be potential first home buyers is taken by excluding those renters' income units who have rental property which

has been determined from the variable of rental income. The sample is also restricted with respect to age between 18 and 36 which is the most probable age of first home buyers estimated from SIHC 2019–20 to maintain consistency between the two schemes for comparison with respect to housing cap and some other scenarios.

6. RESULTS

The results of the simulation exercise are given in Table 3 to Table 7. These results indicate the impact on homeownership rates of potential first home buyers of Queensland in cases when none of the schemes are available to first home buyers and could only benefit from the first homeowners grant and stamp duty concessions for first home buyers, that is the baseline case. This baseline case is compared with two scenarios: one in which a scheme is available to potential first home buyers which has features similar to FHBGS and the other in which a scheme is available which has features similar to HTBS, in addition to first homeowner grant and stamp duty exemption.

The analysis is carried out when:

- There are no income or house cap value
- There is income cap as is specified for FHOGS
- There is income cap as is specified for HTBS
- There is housing cap value.

These scenarios are further analysed for three distinct age groups of potential first home buyers:

a) ages 18–24 (who become eligible after COVID);
b) ages 25–30 (very young cohort but who could take advantage of COVID related savings; and
c) age 31–36.

The results are presented both for the sample and the population after applying weights as specified in survey of income and housing. The total number of renters in the sample provided by SIHC 2019–20 in Queensland is 3,764 (= 4,007,530 population) out of which 395 (=4,84,986 population) are potential first home buyers. There are 103 income units from the age group 18–24, 176 income units in the age group 25–30, and 116 from the age group 31–36. Some of the income units that are 7 (age group 18–24), 94 (age group 25–30) and 205 (age group 31–36) are not the potential first

home buyers in the age band 18–36. This may be because of the additional restriction that has been placed in the simulation exercise of not owning any rental property, as some of renters own a property in another area and prefer to rent in places near to the amenities or the work area (Hulse and Yates (2017).

The results in Table 3 suggest that in the baseline case where none of these two schemes are in place and only FHOGS and stamp duty concessions are available to first home buyers, around 68 percent of the population (70.4 percent of sample) find it cheaper to own a house rather than renting. This might be because the interest rates were quite low in July 2021 while there was an expectation of house price increase leading to expectation of capital gains, so homeownership became a viable option during that period. Although rent assistance is also available to cover cost of renting, homeownership could provide a long-term benefit in the form of capital gains. This increased to around 70 percent of the population if the potential first home buyers were utilising the FHBGS. However, the increase with the FHBGS is not too much because with higher loan to value ratio, the weekly cost of ownership also increases. In case of the HTBS, the percentage of those reduces to 45 percent, reinforcing the point that expectation of capital gains plays a vital role in willingness to purchase a house which, in the case of the HTBS, some of this capital gains goes to the Government as part of its share.

When the potential home buyers reported savings were analysed for down payment and other costs, only around 20 percent of these potential first home buyers could be assigned to homeownership in the baseline case. That is, they are found to have enough savings to cover 20 percent of the down payment of their optimal required house as well as to cover transaction costs. In case of the FHBGS and the HTBS this percentage of willing potential first home buyers is around 81 and 90 percent of the population, respectively. This shows that these two schemes can prove to be really useful for upfront cost payments and thus achieving homeownership faster. In the HTBS, although the down payment requirement is as low as two percent, many are not willing to choose homeownership tenure (removed in first stage of simulation) so the overall rate is less than the FHBGS.

To know the effects of income caps and price caps, a further breakdown of the analysis has also been carried out and presented in Table 3. This is to see if the additional schemes will only benefit those who are from a good financial background and already can make it without the help of any of those schemes.

Table 3. Homeownership Assignment Under Each Scenario for Potential First Homeowners' Sample. Source: Author's calculation from microsimulation model.

PFHB**	**Baseline**	**FHBGS**	**HTBS**
With no restrictions			
Percent (WTP)	70.38(67.7)	72.7 (70.3)	49.4 (45.6)
Count (WTP)	278(3,28,311)	287 (341,003)	195 (221,289)
Percent (HO) of WTP	20 (20.5)	78(80.6)	90.3(90.2)
Count (HO)	56(67339)	224(274,843)	176(199,496)
With income cap specified under HTBS			
Percent (WTP) within income cap	65.3(63.3)	67.8(66.1)	41.1(38.4)
Count (WTP)	205(251,867)	213(263,224)	129(152,999)
Percent (HO)of WTP	15.6(17.3)	76.5(79.4)	88.4(90.1)
Count (HO)	32(43,520)	163(208,991)	114(137,902)
Total PFHB within income cap	314(398,005)		
With income cap specified under FHGS			
Percent (WTP) within income cap	69.6(67)	72(69.7)	48(44.3)
Count (WTP)	266(316,318)	275(329,010)	183(209,296)
Percent (HO) of WTP	18.8(18.8)	78.2(80.5)	89.6 (89.6)
Count (HO)	50(59,399)	215(264,684)	164(187,503)
Total PFHB within income cap	382(472,112)		
With price cap			
Percent (WTP) within price cap	67.9(64.2%)	69.4(65)	43.4(40.3)
Count (WTP)	175(196,205)	179(198,888)	112(123,189)
Percent (HO) of WTP	17(15.3)	76 (76)	91(88.7)
Count (HO)	30 (29,926)	136 (151,481)	102(109,289)
Total PFHB within price cap	258(305,831)		

* The number in parentheses is population count.

** Potential first home buyers

*** WTP (Willing to purchase), HO (Home ownership assigned)

The results suggest that with the income cap of the FHBGS, in all three scenarios the number of final homeownership attainment (assignment) reduces, which decreases even further in all three cases if the level of income cap of the HTBS is applied. This means that if the income caps were not specified, the high-income groups could also have accessed the schemes, which could cause housing demand pressure leading to an increase in house values, making it further inaccessible for potential first

home buyers. So imposition of income caps is a good way to restrict it to low to middle income groups.

The impact of the price cap on the value of the house is analysed to see if the price caps are aligned with the optimal value of the house required by the income units. When price caps are imposed only with no income cap yet, the number of potential first home buyers that are left to take advantage of the schemes are less than when income caps have been imposed. This means that many of the households who have incomes within the thresholds require a house the value of which is over the price ceiling which is specified for the FHBGS. This implies that the help in form of both schemes could have been used for either purchasing a higher value house or bidding for a higher price, making it inaccessible for potential first home buyers who are on the lower income margin. So, the house value cap is a good way to better targeting and can be imposed in the case of the HTBS as well.

Since the literature has raised concerns as to declining rates of homeownership among the young adults under thirty (McKee (2012), the analysis has further been broken down into three age groups—18–24, 25–30, and 30–36—to identify the impact of these schemes on each of these groups. This impact is also analysed with reference to the price cap mentioned for the FHBGS and both income caps for each scheme.

Table 4 gives an estimate of number of income units age-groups with none of the price caps and income caps. When none of the caps have been imposed, the percentage of those potential first home buyers who could afford upfront costs is the highest in the age range of 25–30.

With the price cap, the results (shown in Table 5) suggest that in the baseline case the highest percentage (of those willing to purchase on basis of ownership of a cheaper option) for affordability of upfront costs is in range of 25–30 while with schemes it is mostly in the age range of 31–36, implying the schemes are mostly beneficial for mature adults if price caps are imposed. However, in terms of restricting, mostly in the age group of 25–30 and 31–36 required the house for which the values are above the house value cap. Since this age is also associated with family formation age, the price value cap may limit the access of these schemes from those with families and requiring larger houses. It will be advisable in such cases to also include the family composition in the determination of house values or otherwise can prescribe different house value caps for different family types for better targeting. Also, in age group 18–24 the baseline number does not change, with the price cap implying those without help in this age group are already purchasing a lower value house may be barely enough

for their requirements. Or otherwise, maybe they have to pay 20 percent of the down payment, which limits the size (value of their house), as that is a huge saving for those ones in such young group.

Table 4. Homeownership Assignment Under Each Scenario with No Price (House Value) Cap or Income Caps; Age Grouping. Source: Author's calculation from microsimulation model.

PFHB	Baseline	FHBGS	HTBS
18 -24 years			
Percent (WTP)	43.7(46.2)	49.5(51.3)	25.2(27.6)
Count (WTP)	45(55,771)	51(61,918)	26(33,319)
Percent (HO) of WTP	8.9(7.26)	68.6(76)	73.1(71.9)
Count (HO)	4(4,084)	35(47,074)	19(23.948)
Total within age-group		103(120,702)	
25-30 years			
Percent (WTP)	76.7(70.5)	77.8(73.14)	52.8(45.5)
Count (WTP)	135(162601)	137(168,605)	93(104,953)
Percent (HO) of WTP	21(20.7)	83.2(82.4)	94.6(94.9)
Count (HO)	29(33,575)	114(138,932)	88(99,552)
Total within age-group		176(230,511)	
31-36 years			
Percent (WTP)	84.5(82.8)	85(82.6)	65.5(62.1)
Count (WTP)	98(109,939)	99(110,480)	76(83,017)
Percent (HO) of WTP	23.5(27)	75.8(80.4)	90.8(91.5)
Count (HO)	23(29,716)	75(88,837)	69(75,996)
Total within age-group		116(133,773)	

* The number in parentheses is population count.

** Potential first home buyers

*** WTP (Willing to purchase), HO (Home ownership assigned)

Comparing Tables 6 and 7 for analysis between different ranges of values of income caps, it becomes evident that with income caps the percentage of exclusion increases with age and mostly age group 31−36 are excluded. This means that these schemes have the effect of targeting young adults. Comparing the HTBS and the FHBGS for this age band shows that around 20 percent of potential first home buyers have income ranges between AU$120,000 and AU$200,000. So, the higher income caps in case of the FHBGS includes around one-fifth of homeowners from this high-income bracket. Given the higher income caps of the FHBGS, the extra income units are from the category of annual income above the threshold of the

HTBS, who not only become eligible for the scheme but also with their higher incomes find ownership a cheaper option. These are the income units who may not be eligible for rent assistance and thus renting is not an attractive option, or otherwise can have double incomes in the family.

Table 5. Homeownership Assignment Under Each Scenario With Price (House Value) Cap (Age-Wise); Age Grouping. Source: Author's calculation from microsimulation model.

PFHB	**Baseline**	**FHBGS**	**HTBS**
	18 -24 years		
Percent (WTP)	45.5(40.4)	49.4(42.8)	26(26)
Count (WTP)	35(35,834)	38(37,976)	20(22,618)
Percent (HO) of WTP	11.43(11.3)	63.2(63.2)	75(62.4)
Count (HO)	4 (4,048)	24 (24,004)	15(14,119)
Total within age-group within price cap	77(88,706); (77/103=74.8%); (88,706/120,702=73.5%)		
	25-30 years		
Percent (WTP)	78.4(74.6)	78.4(74.6)	53.2(47.8)
Count (WTP)	87(102,282)	87(102,282)	59(65,480)
Percent (HO) of WTP	19.5(17.1)	79.3(78.1)	91.5(91.8)
Count (HO)	17(17,492)	69(79,865)	54(60,079)
Total within age-group within price cap	111(137,080); (111/176=63%); (137,080/230,511=59.5%)		
	31-36 years		
Percent (WTP)	75.7(72.6)	77.1(73.3)	47(43.8)
Count (WTP)	53(58.089)	54(58,630)	33(35,091)
Percent (HO) WTP	17(14.4)	79.6(81.2)	100(100)
Count (HO)	9 (8,386)	43 (47,612)	33(35,091)
Total within age-group within price cap	70(80,045); (70/116=60.3%); (80,045/133,773=59.8%)		

* The number in parentheses is population count.

** Potential first home buyers

*** WTP (Willing to purchase), HO (Home ownership assigned)

Table 6. Homeownership Assignment Under Each Scenario with the HTBS Income Caps; Age Grouping. Source: Author's calculation from microsimulation model

PFHB	**Baseline**	**FHBGS**	**HTBS**
18 -24 years			
Percent (WTP)	38.6(39)	44.3(43.7)	20.5(19.3)
Count (WTP)	34(39,703)	39(44,515)	18(19,679)
Percent (HO) of WTP	3(3.1)	69.2(83)	72.2(81.8)
Count (HO)	1(39,703)	27(36,929)	13(16,104)
Total within age-group having income within caps	88(101,826); (88/103=85.4%)		
25-30 years			
Percent (WTP)	71.6(65.8)	73.1(68.9)	44.7(38.9)
Count (WTP)	101(126,809)	103(132,813)	63(74,887)
Percent (HO) of WTP	15.8(16.9)	79.6(79.1)	92.1(92.8)
Count (HO)	16(21,482)	82(105,011)	58(69,486)
Total within age-group having income within caps	141(192,782); (141/176=80.11%)		
31-36 years			
Percent (WTP)	82.4(82.6)	83.5(83.1)	56.5(56.5)
Count (WTP)	70(85,355)	71(85,896)	48(58,433)
Percent (HO) of WTP	21.4(24.4)	76.1(78.1)	89.6(89.5)
Count (HO)	15(20,792)	54(67,051)	43(52,312)
Total within age-group having income within caps	85 (103,397); (85/116=73.2%)		

* The number in parentheses is population count.

** Potential first home buyers

*** WTP (Willing to purchase), HO (Home ownership assigned)

Table 7. Homeownership Assignment Under Each Scenario with the FHBGS Income Caps; Age Grouping**.** Source: Author's calculation from microsimulation model.

PFHB	Baseline	FHBGS	HTBS
18 -24 years			
Percent (WTP)	44.1(46.6)	50(51.7)	25.5(27.8)
Count (WTP)	45(55,771)	51(61,918)	26(33,319)
Percent (HO) of WTP	8.9(7.3)	68.6(76)	73.1(71.9)
Count (HO)	4(4,048)	35(47,074)	19(23,948)
Total within age-group having income within caps	102 (119,821); (102/103=99%)		
25-30 years			
Percent (WTP)	76.2(70.1)	77.3(72.8)	51.7(44.8)
Count (WTP)	131(159,422)	133(165,436)	89(101,774)
Percent (HO) of WTP	20.6(20.4)	83.5(82.9)	94.4(94.7)
Count (HO)	27(32,487)	111(137,151)	84(96,373)
Total within age-group having income within caps	172 (227,332); (172/176=97.7%)		
31-36 years			
Percent (WTP)	83.3(80.9)	84.2(81.4)	62.7(59.4)
Count (WTP)	90(102,125)	91(101,666)	68(74,203)
Percent (HO) of WTP	21.1(22.6)	75.8(79.1)	89.7(90.5)
Count (HO)	19(22,864)	69(80,459)	61(67,182)
Total within age-group having income within caps	108 (124,959); (108/116=93%)		

* The number in parentheses is population count.

** Potential first home buyers

*** WTP (Willing to purchase), HO (Home ownership assigned)

7. CONCLUSION

The analysis in this article aims to identify the impact of features under two federal government schemes, that is the FHBGS and HTBS on the homeownership rates of Queensland. The results suggest that the FHBGS, when combined with other programmes specified for first home purchasers, such as stamp duty exemption and first homeowner grant

scheme, can increase homeownership rates more than the HTBS. The HTBS, with its lower income caps, is more targeted not only towards the low-income households as compared to the FHBGS but also to younger adults and that is why the impact on homeownership rates is less. Also, the HTBS can be more helpful in regard to repayments, as smaller repayments for a smaller equity needs to be made although there is capital gain loss to the house purchaser equal to the share of government. Here it may be noted that this analysis is made when there was an expectation of high house prices. The results may or may not be similar in the case where the expectation of the house price rise is not much and hence capital gains expectations are insignificant. Another noteworthy point is that while the FHBGS is targeted towards first home buyers only, the HTBS in practice is meant for both first home buyers and repeat buyers and that is why can have some features which are not specifically beneficial for first home buyers.

An important implication of the current analysis is to highlight the point that the inclusion of income and housing caps is a good step for better targeting. However, imposition of restrictions only will make the situation regarding homeownership rates even worse. It will only be helpful in saving the funds from high-income households or those who are able to afford but the homeownership rates cannot be increased with these kinds of restrictions. One of the solutions could be to include different percentage contributions from the Government for different groups proportional to their needs. For example, as is in the case of the HTBS, different percentage contribution for new or existing houses, this can be replaced by different percentage contribution age cohorts, especially in first home buyers schemes. This will be helpful in increasing homeownership rates as well as among those who need it the most. Also, in the case of the housing value cap, it is suggested to be based on family composition type, as larger families need more space and thus a comparatively larger value house. So they should not be disadvantaged because of the size of their family.

The analysis presented here can be extended to other markets and other types of housing programmes, even though it was initially aimed at contributing towards the solution of the housing crisis in Queensland which emerged primarily due to greater interstate migration during COVID and was expected to exacerbate with anticipated increase in international immigration. One of the ways in which the federal government equity partnership scheme in the form of the HTBS is different from other equity partnership housing programmes that include contribution from housing investors or mortgage lenders is the administration cost that accrues to

government and finally borne by taxpayers. Hence it will also be beneficial to compare the effects of different kinds of housing equity partnership.

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