

EQUITY IN ACCESS TO EMPLOYER-ASSISTED HOUSING IN PAPUA NEW GUINEA: EMPIRICAL ANALYSIS AND POLICY IMPLICATIONS

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ABSTRACT

This study examines equity in access to two types of housing benefit — direct housing provision and rental allowances — available in urban Papua New Guinea. The characteristics of those who receive such benefits are identified while considering housing fringe benefit discrimination as a form of wage discrimination. The study investigates what policy level indicators are predictive of access to benefits and further examines key interactions between these predictors, employing novel individual level data from a multi-site survey of formal sector employees. The findings support modified policy interventions focussed on equitable taxation, residential land release, social housing and private ownership incentives that target the improvement of access to housing for disadvantaged groups.

Keywords: housing affordability, housing provision, employer benefits, housing allowances, taxation, Papua New Guinea

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I INTRODUCTION

Urban Papua New Guinea ('PNG') suffers from one of the highest housing rent-to-income ratios in the world,¹ where historical and structural factors that limit private ownership contribute to extreme housing scarcity. Scarcity of affordable housing, especially in the metropolitan cities of Port Moresby and Lae, has led to the development of sprawling 'squatter' settlements which are home to not only the poor and unemployed, but to a diverse cross-section of PNG's society of varying socio-economic means. These illegal settlements often lack access to basic government services, infrastructure for clean water and sanitation, and fail to provide long-term security of settlement with forced evictions commonplace.² Furthermore, the settlements often suffer from high levels of formal sector unemployment (up to 60 per cent), resulting in a thriving informal sector infiltrated by organised violent crime that is perpetrated by 'raskol' gangs.³ Ongoing expansion of such squatter settlements, driven by the lack of access to both land and affordable housing stock, continue to sow seeds of future social and economic inequity as well as present barriers to long-term economic development within PNG.⁴

In the formal sector, the high tangible and intangible cost of housing in PNG had traditionally incentivised both public and private institutions to provide housing benefits to employees as part of their remuneration.⁵ Such fringe benefits take the form of either a housing allowance (cash assistance) or a direct provision of accommodation (owned or rented by the employer), the latter of which is concessionally taxed. As the pace of urbanisation has quickened, the value of existing dwellings has risen exponentially.⁶ As a consequence, access to housing benefits now imparts substantial value transfers to those lucky enough to receive them, not just in terms of a fringe benefit in equivalent rental value but also in utility of access to security, government services and essential infrastructure.

¹ Belden Endekra, Flora Kwapena and Charles Yala, 'Understanding Property Price Movements in Port Moresby: Lessons from a Price Tracking Experiment' (Issues Paper No 14, National Research Institute, 2015). Eugene Ezebilo, 'Evaluations of House Rent Prices and Their Affordability in Port Moresby' (2017) 7(4) *Buildings* 114 ('Evaluation of House Rent Prices').

² United Nations Human Rights Office of the High Commissioner, 'Housing Rights Assessment Mission to Papua New Guinea' (Report, 31 December 2010) <https://pacific.ohchr.org/docs/PNG_Housing_Rights_Mission_Report_2010_July2011.doc>.

³ Ezebilo, 'Evaluation of House Rent Prices' (n 1).

⁴ Thomas Wangi, Justin Ondopa and Eugene Ezebilo, 'Housing Allowance for Public Servants in Papua New Guinea: Does it Meet Housing Affordability Criteria?' (2017) 10(3) *National Research Institute Spotlight* 1. Ron Mahabir et al, 'The Study of Slums as Social and Physical Constructs: Challenges and Emerging Research Opportunities' (2016) 3(1) *Regional Studies* 399.

⁵ Sababu Kaitilla and William Sarpong-Oti, 'Employer-Provided Housing in Papua New Guinea: Its Impact on Urban Home Ownership in the City of Lae' (1993) 17(4) *Habitat International* 59 ('Employer-Provided Housing in PNG').

⁶ Ibid.

The justification for a government decision made in 2017 to increase the housing benefit tax present in PNG in order to address equity issues provides the original motivation for this study. These changes were deemed necessary in order to keep up with the appreciation of housing costs and rents over the years. Therefore, in order to also increase the taxable component of employer-provided housing benefits, the government introduced two very expensive property valuation tiers for upmarket and high-cost houses to specifically target affluent and high-income earners.⁷ In addition, modest accommodation previously assessed as low or medium cost were thenceforth to be assessed as high cost, and some cities previously classified as low cost were elevated to high-cost areas.

Consequently, this study uniquely examines the characteristics of those who receive such benefits and identifies the socio-economic inequities in access to employee housing support as a subset of the broader issue of inequity in PNG society. Considering housing fringe benefit discrimination as a form of wage discrimination, the study investigates what policy level indicators are predictive of access to benefits and examines key interactions between these predictors using novel individual level data from a multi-site survey of formal sector employees.

Against this background, Part II outlines the unique historical and legal circumstances that cause extreme housing scarcity in the case of urban PNG. Part III then proceeds to examine the incentives that have guided housing fringe benefit provision via an overview of the available literature on equity in access to housing fringe benefits among formal sector income earners. This is followed by a brief description of the research methodology employed in Part IV and the subsequent presentation of the statistical results and data analysis in Part V. Part VI provides a discussion of the findings in relation to the literature and outlines some potential housing policy implications while Part VII concludes before noting the paper's limitations and avenues for further research.

II PAPUA NEW GUINEA IN CONTEXT: LAND OWNERSHIP, EMPLOYEE HOUSING AND URBAN HOUSING STOCK

PNG has an urbanisation rate of 13 per cent across its 8 million inhabitants — considered low by global standards — with the majority of its urban population living in the major cities of Port Moresby and Lae.⁸ Despite this, scarcity of developed urban land contributes to chronic housing shortages, especially for lower income earners but also among those who are relatively better off.⁹ This situation has intensified in recent decades due to

⁷ Papua New Guinea ('PNG') Department of Treasury, *National Budget 2017 Volume 1: Economic Development and Policies* (2016).

⁸ Secretariat of the Pacific Community, 'Pacific Island Population Estimates and Projections' (Statistics, 2016) <https://prism.spc.int/images/Population_Projections_by_PICT.xlsx>.

⁹ Wangi, Ondopa and Ezebilo (n 4).

increasing rates of rural-to-urban migration that far outstrips available supply.¹⁰ The primary driver for this scarcity is largely the country's unique land ownership system with laws that recognise both customary land rights and common law (English) land rights. More than 97 per cent of the total land area is held under customary tenure for which there is no recorded title, with ownership rights vested in clans and extended family groups, and the rest predominantly owned by the PNG Government.¹¹

Under PNG law, customary land cannot be sold but those wanting to commercialise land may register the land in question, a process that defines title and opens it up to transactions.¹² Landowners seeking to bring their land to the formal land market would need to organise themselves as a group that is registered as an Incorporated Land Group ('ILG'). The ILG can then register their land through voluntary customary land registration, which provides the ILG with a customary land title. However, the customary land title is not yet fully recognised by financial institutions such as commercial banks and as a result, customary land in PNG cannot be used as collateral for accessing a bank loan.

Property development on customary land with long-term (generally 99 year) leases is permitted. However, such exchanges are conducted via collective agreement among owners with complex and lengthy procedural barriers often resulting in disagreements over title and the reclamation of land leased or sold without full consent of the lessee or purchaser. These institutional factors present effective barriers to the commercialisation of land and have resulted in a scarcity of lawful residential dwellings within urban areas. Consequently, formal housing costs have become comparable to much wealthier countries, contributing to substantial socio-economic disparity between those able to access legally constructed dwellings with security of title, and access to government infrastructure provision and those residing in informal slum settlements.¹³

A historical norm in PNG — where people retain ongoing cultural ties to their home villages — has been for employers to provide temporary urban housing for their employees.¹⁴ A justification provided by nearly 50 per cent of respondents in Kaitilla et al's study¹⁵ was that employer-provided housing increased job stability and removed the worries of urban accommodation. The employer-provided housing was effectively part

¹⁰ Ed Kopel, 'Problems of Housing Resources in Papua New Guinea' in David Kavanamur, Charles Yala and Quinton Clements (eds), *Building a Nation in Papua New Guinea: Views of the Post-Independence Generation* (Pandanus Books, 2003) 329. Wangi, Ondopa and Ezebilo (n 4).

¹¹ Satish Chand, 'Registration and Release of Customary-Land for Private Enterprise: Lessons from Papua New Guinea' (2017) 61 *Land Use Policy* 413.

¹² Paul Sillitoe and Carl Filer, 'What Local People Want with Forests: Ideologies and Attitudes in Papua New Guinea' in Emma Gilberthorpe and Gavin Hilson (eds), *Natural Resource Extraction and Indigenous Livelihoods: Development Challenges in an Era of Globalization* (Routledge, 2016).

¹³ Eugene Ezebilo, 'Evaluation of Affordable Housing Program in Papua New Guinea: A Case of Port Moresby' (2017) 7 *Buildings* 73 ('Evaluation of Affordable Housing Program').

¹⁴ Kaitilla and Sarpong-Oti, 'Employer-Provided Housing in PNG' (n 5); John Gibson, 'The Papua New Guinea Household Survey' (2000) 33(4) *Australian Economic Review* 377.

¹⁵ Kaitilla and Sarpong-Oti, 'Employer-Provided Housing in PNG' (n 5).

of a social contract to help employees meet their housing needs and signal job security in return for enhanced productivity and firm loyalty. Providing housing was also deemed essential for employers in a more traditional sense, in retaining senior and experienced national staff who generally receive higher levels of pay.¹⁶

In PNG's post-colonial era (beginning with the nation's independence in 1975), the continued prevalence of employer-provided accommodation ensured that urban home ownership in PNG did not increase significantly. A lack of finance and the desire of nationals to retire in their home villages provided strong incentives to avoid ongoing urban home ownership¹⁷ while simultaneously, heavily subsidised government rental housing disincentivised participation in the property market.¹⁸ The quality of the stock of residential buildings was also impacted by employer participation in the urban housing market, driven both by incentives to provide accommodation fit for temporary use, as well as to invest in low-cost housing to minimise the financial burden upon business. As such, investment into housing stock of a higher build quality that was suitable for long-term habitation was discouraged.¹⁹

Ultimately, with the provision of formal urban housing in PNG grappling with the issues of land shortage and affordability,²⁰ as well as a lack of suitable housing stock, the relative value of employer remuneration in the form of housing benefits has increased over time. Initially, in the government sector, allocations of government rental subsidies aggravated inequality, with the better paid upper-level public servants paying a more heavily subsidised rent to live in expensive, relatively luxurious, modern housing.²¹ More recently, in tandem with the concessional treatment of housing benefits in tax terms that favour higher income groups who live in employer-provided housing,²² access to employer-provided housing (rather than rental assistance), has become closely associated with people's wages. In particular, high-income earners tend to receive substantial housing fringe benefits in the form of employer-provided housing in existing accommodation, and lower income earners build or rent homes, almost exclusively, in

¹⁶ Sababu Kaitilla and William Sarpong-Oti, 'An Overview of Housing Provision in Papua New Guinea: The Role of the Private Sector' (1994) 18(1) *Habitat International* 13 ('Overview of Housing Provision in PNG').

¹⁷ Kaitilla and Sarpong-Oti, 'Employer-Provided Housing in PNG' (n 5).

¹⁸ Alan Stretton, *Urban Housing Policy in Papua New Guinea* (Institute of Applied Social and Economic Research Monograph 8, 1979).

¹⁹ Kaitilla and Sarpong-Oti, 'Overview of Housing Provision in PNG' (n 16).

²⁰ PNG Ministry of Housing, *National Housing Policy* (1994); PNG Ministry of Housing, *National Housing Policy* (2002).

²¹ Hal Levine and Marlene Levine, 'Review: Stretton, Urban Housing Policy in Papua New Guinea, and May (ed.), Urban Household Survey: Town Profiles' (1982) 91(2) *Journal of the Polynesian Society* 323.

²² Timothy Sharp et al, 'The Formal, the Informal, and the Precarious: Making a Living in Urban Papua New Guinea' (Discussion Paper No 2015/2, ANU State, Society and Governance in Melanesia, 2015).

the informal urban settlements without long-term security of tenure or legal claims to land ownership.²³

As a consequence, through the lack of suitable dwellings, in addition to institutional structures and practices that favour higher income earners, housing in urban PNG has become both unavailable and unaffordable for a large portion of the urban population (60 per cent in 1993).²⁴ Relevantly, this has not changed in recent years.²⁵

III EQUITY IN ACCESS TO HOUSING AND EMPLOYEE HOUSING SUPPORT FOR MODERATE INCOME EARNERS

While the state of affairs in PNG may be magnified by its unique institutional and cultural idiosyncrasies, housing affordability is a common theme in urban growth where residents can be priced out of housing near their usual places of work. Moderate-income households experiencing such affordability challenges are often ineligible for government support, which usually caters to those outside the labour market.²⁶ Notable exceptions to this include various 'First Home Buyer' schemes seen in Canada, Australia and PNG, which, far from making housing more affordable, may have the unintended consequence of pushing prices up by the benefit amount, thereby stimulating housing markets further where property is scarce.²⁷ A consequence of a lack of affordable housing in urban centres is the incentivisation of moderate-income households to reside elsewhere in the region.²⁸ Where transport infrastructure is well developed, these households face additional commute costs while retaining employment in the urban core.

In PNG, where transport infrastructure is less developed, enforcement of land rights is haphazard and where the formal urban core is relatively small, this spatial mismatch may also incentivise habitation in informal settlements. These settlements may impart additional costs that affect vulnerable populations, particularly in terms of uncertain tenure, lack of security, and lack of access to government services and essential infrastructure. In other settings, individuals have also been found to experience stress

²³ Charles Yala, 'Land Reform in Papua New Guinea: Quantifying the Economic Impacts' (Discussion Paper No 108, National Research Institute, 2015) 5–36.

²⁴ Kaitilla and Sarpong-Oti, 'Employer-Provided Housing in PNG' (n 5).

²⁵ Wangi, Ondopa and Ezebilo (n 4); Thomas Webster, Sadish Chand and Lindsay Kutan, 'Property and Housing Policy Development' (Discussion Paper No 149, National Research Institute, 2016).

²⁶ Noel Morrison, 'Securing Key Worker Housing Through the Planning System' in Sarah Monk and Christine Whitehead (eds), *Making Housing More Affordable: The Role of Intermediate Tenures* (Wiley-Blackwell, 2010) 120.

²⁷ David Blight, Michael Field and Henriquez Eider, 'The First Home Buyer Grant and House Prices in Australi' (2012) December *Deakin Papers on International Building Economics* 1.

²⁸ Rebecca Lazarovic, David Patton and Lisa Bornstein, 'Approaches to Workforce Housing in London and Chicago: From Targeted Sectors to Income-Based Eligibility' (2016) 31(6) *Housing Studies* 651.

related to reconciling work and family — this especially affects single parents and women where home duties are dominantly gender imbalanced.²⁹

Similarly, employers in high-cost areas are also known to experience problems of recruitment and retention, particularly for lower skill sectors or sectors where skills are easily transferable.³⁰ Furthermore, recruitment and retention difficulties in public sector services such as health, education and policing have negative effects on local service provision and the local economy which depends on those services.³¹ Increased travel distances can be especially problematic for those employment sectors where employees are on-call and must be able to reach their workplace quickly.³²

Hence, it is no surprise that employer-provided housing support for employees has a long history going back to the industrial revolution, with its genesis as factory housing for unskilled and line workers. Modern equivalents of these mass-housing projects persist today, for example, employee dormitories in the electronics manufacturing industry of China³³ and Vietnam.³⁴ In these instances, maintaining the characteristics of temporary accommodation has shifted the focus of firms to maximising worker hours while restricting labour mobility and negotiating power.

While this forms an important part of the literature, this is not applicable to the situation in PNG where manufacturing dormitories are not prevalent. Notwithstanding, there are housing programs such as those in the United Kingdom (London) and the United States (Chicago) that provide 'intermediate' housing for targeted sector employees of essential services, for example, where a quick response time and short commute is desirable for the employer.³⁵ While these programs could form part of the mix for government sector provision in PNG, it is more likely to constitute a small part of wider employee housing assistance provision. Elements of the abovementioned incentives for employee housing could likely influence the situation in PNG, however there is little comparison to the historical PNG narrative of a social contract in housing provision where housing fringe benefits are the norm.³⁶ As such, little is known about the inequity in access to housing fringe benefits from the perspective of income earners, and even less so in the context of non-industrialised economies.

²⁹ Richard Wener, Gary Evans and Pier Boatley 'Commuting Stress: Psychophysiological Effects of a Trip and Spillover into the Workplace' (2005) 1924(1) *Journal of the Transportation Research Board* 112.

³⁰ Kathleen Scanlon, 'Targeting Groups: Key Workers' Needs and Aspirations' in Sarah Monk and Christine Whitehead (eds), *Making Housing More Affordable: The Role of Intermediate Tenures* (Wiley-Blackwell, 2010) 165.

³¹ Morrison (n 26).

³² Scanlon (n 30).

³³ Noel Morrison, 'Building Talented Worker Housing in Shenzhen, China, to Sustain Place Competitiveness' (2014) 51(8) *Urban Studies* 1539.

³⁴ Chris Smith and Pun Ngai, 'The Dormitory Labour Regime in China as a Site for Control and Resistance' (2006) 17(8) *The International Journal of Human Resource Management* 1456.

³⁵ Lazarovic, Patton and Bornstein (n 28).

³⁶ Kaitilla and Sarpong-Oti, 'Employer-Provided Housing in PNG' (n 5).

Nonetheless, one basis of comparison may be with that of Japanese corporations, which have typically provided their employees with low-cost rental housing, as well as financial assistance towards acquiring their own homes. In particular, while the corporate sector has played a crucial role in improving overall employee welfare in Japan³⁷ — in terms of equity in access to housing — the distribution of this welfare has been less than impartial due to cultural norms with much of this support provided to single, male workers. In contrast, welfare to single female labour force participants is severely limited.³⁸ While different in many respects, PNG also retains similar patriarchal cultural norms and therefore may also suffer from a similar access to housing inequity.

Taking a step further, if one considers housing support as part of a broader set of fringe benefits that form part of the value of an individual's wage, it is easy to consider access to housing support as determined by factors that affect wages in general, such as education and experience. Likewise, when considering inequities in access to employer-provided housing support as a form of wage discrimination, a much broader literature is available that indicates characteristics including gender,³⁹ ethnicity⁴⁰ and age,⁴¹ are substantive determinants of wage outcome. From a policy and planning perspective, these are relatively accessible demographic indicators that highlight high risk groups. In particular, these factors are also known to interact; for example, the bulk of the decline in gender discrimination in the 21st century, is due to better labour market endowments of women (i.e. better education, training and work attachment) which has led to shifting attitudes in compensation.⁴²

IV MATERIALS AND METHODS

This study investigated the dwelling, and employer and employee characteristics associated with the provision of housing benefits in PNG. This section briefly outlines the survey instrument, sample selection and data collection procedures adopted in the study.

A Survey Instrument

The survey instrument, or questionnaire, comprised two sections. Section A specifically focused on various fairness/equity dimensions with regards to housing benefits. Section

³⁷ Ian Sato, 'Welfare Regime Theories and the Japanese Housing System' in Yosuke Hirayama and Richard Ronald (eds), *Housing and Social Transition in Japan* (Routledge, 2006).

³⁸ Koichi Fujimoto, 'From Women's College to Work: Inter-Organizational Networks in the Japanese Female Labor Market' (2005) 34(4) *Social Science Research* 651.

³⁹ For a review see Doris Weichselbaumer and Rudolf Winter-Ebmer, 'A Meta-Analysis on the International Gender Wage Gap' (2005) 19(3) *Journal of Economic Surveys* 479.

⁴⁰ Arthur Goldsmith, Darrick Hamilton and William Darity, 'Shades of Discrimination: Skin Tone and Wages' (2006) 96(2) *American Economic Review* 242.

⁴¹ Geoffrey Wood, Adrian Wilkinson and Mark Harcourt, 'Age Discrimination and Working Life: Perspectives and Contestations – A Review of the Contemporary Literature' (2008) 10(4) *International Journal of Management Reviews* 425.

⁴² Weichselbaumer and Winter-Ebmer (n 39).

B captured demographic factors of the participants including age, income, gender, occupation and education, as well as accommodation-specific information and whether the participant received housing support from their employer. The survey instrument was pilot-tested amongst a small group of 20 individuals associated with the University of Papua New Guinea in Port Moresby. After the survey was refined and edited, it was endorsed and obtained the prerequisite ethics approval from Monash University.

B Sample Selection and Data Collection Procedures

Sample selection was conducted in two stages. The first stage of sample selection sought to identify the areas where the survey would be best conducted. Accordingly, four cities were selected where the prescribed taxable component of employer-provided accommodation benefits were the highest in the country but similar across all four cities. Port Moresby and Lae were preferred due to their status as the only two metropolitan cities in PNG where formal sector employment is concentrated. Goroka and Madang were included from among the country's second tier towns since they also have relatively large formal sector employers. The survey targeted individuals who currently had paid employment in the formal sector for three reasons: first, these participants were more likely to have incurred taxes on their employment income; second, they were more likely to receive a cash housing allowance or live in employer-provided accommodation; and third, they were more likely to be able to read and complete the questionnaire that was written entirely in English without the need for assistance.

The second stage of sample selection was judgemental, in that relatively large public, private and church or non-government organisations ('NGOs') were selected as they were likely to employ a large number of employees in different but clearly distinguishable grades. While government departments and churches or NGOs were relatively few and therefore easy to identify, the private sector organisations were selected from the company register maintained by the Investment Promotion Authority ('IPA'). Introductory letters were sent to the chief executives of the selected organisations seeking their consent to allow the survey team to approach their employees who would be asked to voluntarily take part in the survey. Some chief executives did not respond while others refused access to their staff. The participation of employees of organisations that had not been contacted earlier were also canvassed to increase the sample size. The employing organisations in the sample were therefore selected based on the ease of access to their staff.

C Sample Return

In total 2,000 questionnaires were hand delivered, 800 in Port Moresby and 400 each in Lae, Goroka and Madang either directly to consenting employees or through the human resource officers in each of the consenting organisations. Some human resource officers did not return questionnaires completed by some or all of the employees who had agreed to participate in the survey. A final sample of $n = 1,652$ (response rate 83 per cent) was obtained and distributed throughout the four cities as follows: Port Moresby $n_1 = 606$ (response rate 76 per cent); Lae $n_2 = 371$ (response rate 93 per cent); Madang $n_3 = 352$ (response rate 88 per cent); and, Goroka $n_4 = 323$ (response rate 81 per cent).

V RESULTS

Empirical results and analysis from the survey questionnaire data are presented in two stages. First, a descriptive analysis profiles the survey participants against the survey metrics. Second, results of a Multinomial Logistic Regression of Housing Benefits are presented to examine the propensity of receiving housing assistance based on participant characteristics.

A Participant Profile

Descriptive statistics presented in Table 1 (below) show that the sample was evenly distributed amongst males and females, with the majority aged between 31–40 years (35 per cent), married and of PNG nationality. Generally, the participants were well-educated (46 per cent Bachelor's degree or higher), with a large proportion of employees from public sector employers. About one third (36 per cent) of the respondents earned between PGK700 and PGK1,300 gross per fortnight (approximately USD200–380). It was also evident that over two thirds (71 per cent) were not residing in employer-provided accommodation but rather in their own house or home.

TABLE 1: PARTICIPANT CHARACTERISTICS

CHARACTERISTIC		FREQUENCY	PERCENTAGE (%)
Access to Employer Support for Housing	No	852	55
	Employer-Provided Housing	383	25
	Employer-Provided Allowance	305	20
Gender	Female	703	46
	Male	837	54
Age	21–30	415	27
	31–40	555	36
	41–50	374	24
	Over 50	196	13
Nationality	PNG National	1,516	99.9
	Other	24	0.1
Marital Status	Divorced/Separated	131	9
	Married/De facto	1,061	77
	Single/Never married	300	19
	Widowed	48	3
Education	Year 12 or below	279	18
	Diploma or Certificate	574	37
	Bachelor or Postgraduate Degree	687	45
Income per fortnight	Less than PGK400	110	7
	PGK400–PGK700	287	19
	PGK700–PGK1,300	561	36
	PGK1,300–PGK2,700	404	26
	PGK2,700 or more	178	12

Employer Category	Church or NGO	121	8
	Private Sector	489	32
	Public Sector	930	60
City	Goroka	306	20
	Lae	342	22
	Madang	336	22
	Port Moresby	556	36

B *Multinomial Logistic Model of Housing Benefits*

Respondents were asked whether they received employer-provided housing and if they did not, whether they received a cash allowance for their housing needs. The responses to these two questions were re-encoded into a single variable to represent the level of benefits received (1 = 'Employer-Provided Housing' and 2 = 'Cash Allowance'). The following analysis employed list-wide deletion of missing values with a total of 1,540 complete responses analysed. A multinomial logistic regression was fitted to model the propensity to receive the different types of benefits against participant characteristics collected through the survey and the results are summarized in Table 2. The case of receiving 'No allowance' was used as the base case and a set of interactions against gender included to account for correlations driven by gender inequality.

TABLE 2: MULTINOMIAL LOGISTIC REGRESSION

VARIABLES		(1)	(2)
		EMPLOYER-PROVIDED HOUSING	EMPLOYER-PROVIDED ALLOWANCE
MAIN EFFECTS		COEFF. (S.E)	COEFF. (S.E)
What is your gender?	Female	-	-
	Male	-0.0157 (0.877)	0.178 (0.968)
Education	Year 12 or below	-	-
	Diploma or Certificate	-0.102 (0.335)	-0.347 (0.321)
	Bachelor or Postgraduate Degree	0.651* (0.363)	-0.208 (0.342)
Age	21-30	-	-
	31-40	0.275 (0.315)	-0.480* (0.267)
	41-50	0.487 (0.347)	-0.778** (0.328)
	Over 50	1.066*** (0.399)	-0.488 (0.407)
Fortnightly income	Less than PGK400	-	-
	PGK400-PGK700	0.399 (0.522)	1.589** (0.68)
	PGK700-PGK1,300	0.474 (0.506)	2.381*** (0.675)
	PGK1,300-PGK2,700	0.510 (0.547)	2.773*** (0.709)
	PGK2,700 or more	1.126* (0.627)	3.292*** (0.733)
City	Goroka	-	-
	Lae	1.137*** (0.205)	0.0392 (0.236)
	Madang	0.685*** (0.205)	-0.0639 (0.23)
	Port Moresby	-0.533** (0.214)	-0.211 (0.195)

	Church and NGO	-	-
Employer category	Private Sector	-0.758* (0.446)	-0.252 (0.395)
	Public Sector	-0.128 (0.388)	-1.515*** (0.399)
INTERACTIONS WITH GENDER			
Age	31-40×Gender, Male	0.424 (0.402)	0.903** (0.379)
	41-50×Gender, Male	1.019** (0.438)	1.386*** (0.451)
	Over 50×Gender, Male	0.477 (0.517)	1.398*** (0.539)
Education	Diploma or Certificate×Gender, Male	0.593 (0.45)	0.395 (0.455)
	Bachelor or Postgraduate Degree×Gender, Male	0.468 (0.477)	0.830* (0.469)
Fortnightly income	PGK400–PGK700×Gender, Male	-0.267 (0.71)	-0.754 (0.889)
	PGK700–PGK1,300×Gender, Male	-0.340 (0.696)	-1.504* (0.887)
	PGK1,300–PGK2,700×Gender, Male	0.600 (0.732)	-0.779 (0.923)
	PGK2,700 or more×Gender, Male	-0.185 (0.816)	-1.279 (0.961)
Employer category	Private Sector×Gender, Male	-0.004 (0.586)	-0.501 (0.548)
	Public Sector×Gender, Male	-0.552 (0.526)	0.119 (0.541)
Constant		-2.292*** (0.681)	-1.952*** (0.73)
Observations		1,485	1,485
McFadden's Psuedo R ²			0.155
SMALL-HSIAO TESTS OF IIA ASSUMPTION		χ^2	$p > \chi^2$
No Employer-Provided Assistance		37.397	0.166
Employer-Provided Housing		40.696	0.092
Employer-Provided Allowance		29.401	0.497

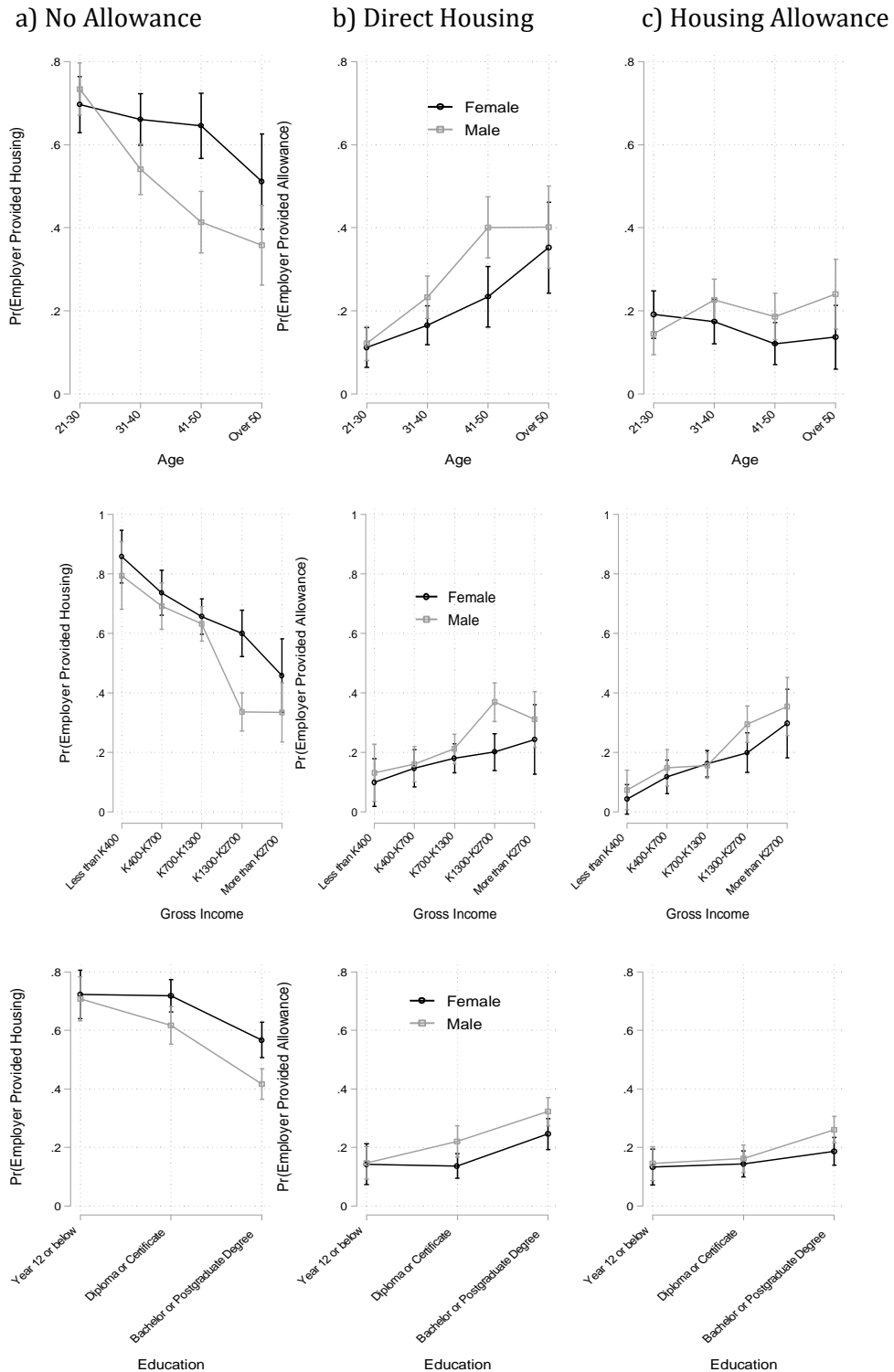
Standard Errors (S.E) in parentheses: *** p < 0.01, ** p < 0.05, * p < 0.1

An analysis of potential interactions revealed that gender played a significant role across most variables and a model including these is presented for analysis. The Small-Hsiao test was used to check for the assumption of the independence of irrelevant alternatives ('IIA') and this was not rejected for any of the dependent variable levels (for a significance cut-off of 0.05).

Assessed against the base model of receiving 'No housing benefits', having a bachelor or post-graduate level education was a significant positive predictor for receiving employer-provided housing ($\beta = 0.651$, $p < 0.1$) as was being over the age of 50 ($\beta = 1.066$, $p < 0.01$) or earning more than PGK2,700 per fortnight ($\beta = 1.126$, $p < 0.1$). Working in the private sector was found to be a negative predictor for receiving employer-provided housing ($\beta = -0.758$, $p < 0.05$) against the base case of being employed by a Church or NGO. Compared to respondents in Goroka, those living in Port Moresby were less likely to receive

employer-provided housing ($\beta = -0.533, p < 0.05$) and more likely if they lived in Lae ($\beta = 1.137, p < 0.01$) or Madang ($\beta = 0.685, p < 0.01$). Against the base case of being employed by a Church or NGO, working in the public sector was found to be a negative predictor for receiving an employer-provided housing allowance ($\beta = -1.515, p < 0.01$) while increasing levels of income predicted greater propensity to receive an allowance ($p < 0.01$). Additionally, a variety of interaction terms proved statistically significant, the effects of which are best examined graphically, see Figure 1 below.

FIGURE 1: MARGINAL EFFECTS AT MEAN VALUES ACROSS GENDER



The marginal probabilities and 95 per cent confidence intervals for receiving the different types of housing support across different levels of age, education and income calculated at mean levels across all other variables are presented in Figure 1 above. Each column of charts in Figure 1 represents a level of housing support provision (i.e. a) no allowance, b) employer housing and c) employer housing allowance) while each row of charts represents are different target variable (age, income and education respectively). The lines represent the different marginal probabilities by gender. Examining the first row, the marginal likelihood of receiving employer-provided housing increases with age, perhaps reflecting grandfathered arrangements, with new applicants needing to wait for existing recipients to vacate in the absence of new housing stock. Thus, it appears there are effective barriers to entry for younger workers. At the same time, this effect of age, observed while controlling for income and education (indicators of seniority and expertise respectively) may be seen as the value given to 'service' in an organisation and aligns with the employee retention motivation of housing provision.

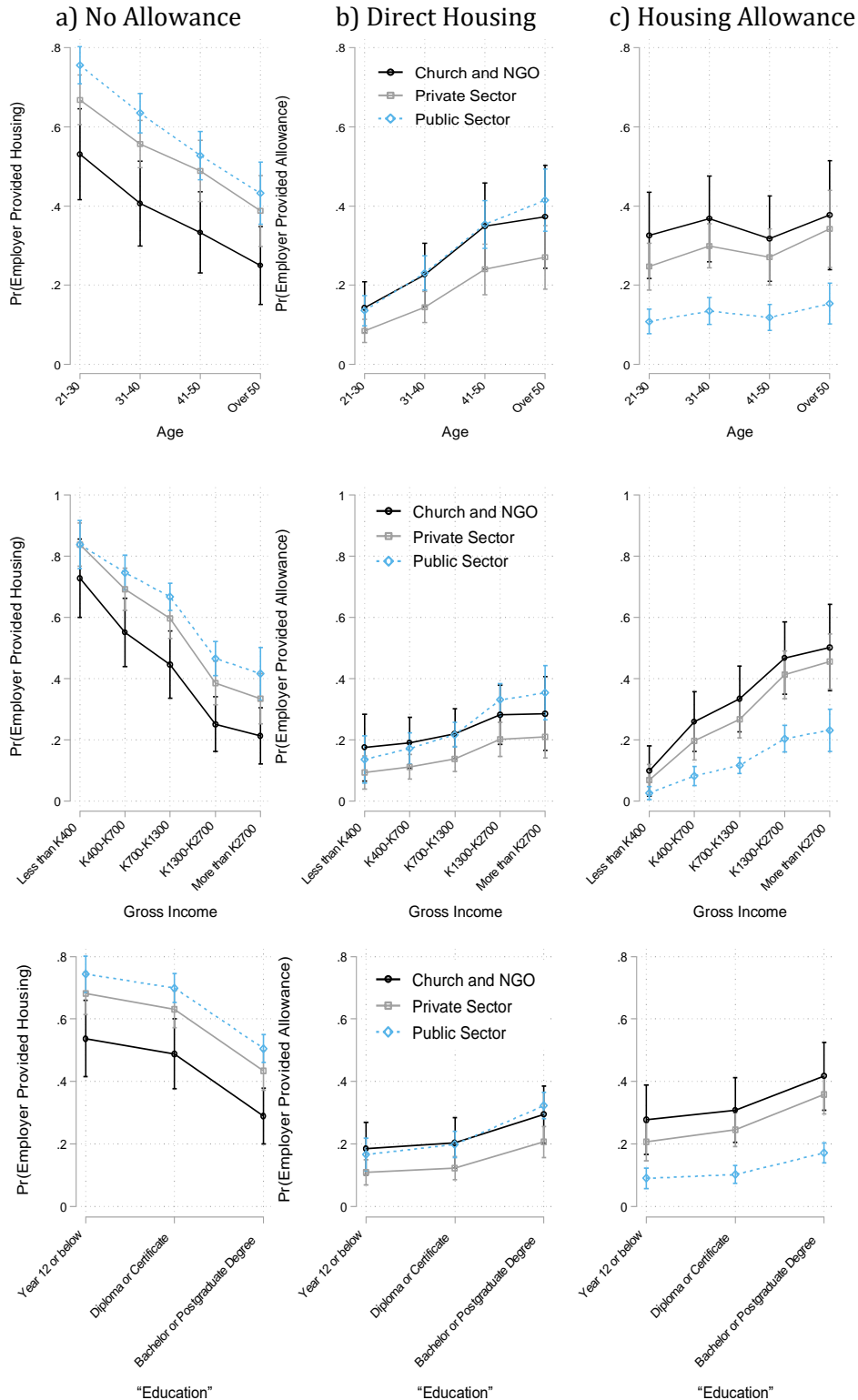
Marginal probabilities are similar between younger men and women but among older employees the gap widens substantially with men in the 41–50 age group being almost twice as likely as women to live in employer-provided housing, though this diminishes somewhat over age 50. For housing allowances, age does not appear to be as influential, though men in some older age categories are around one-and-a-half times more likely to receive an allowance than women of the same age. While the marginal likelihood of receiving either employer-provided housing or a housing allowance increases with higher levels of education (indicator of expertise) it appears to increase more so for men than for women and even then, women only appear to benefit if they have completed a higher education degree. As income increases so does the propensity to receive some sort of employer-provided housing support, with the increase more pronounced in the allowance case. This effect does not appear to be influenced by gender.

A second set of marginal probabilities and 95 per cent confidence intervals for the different types of housing support across age, education and income at mean levels are presented in Figure 2 below. Columns and rows of graphs follow the same format as Figure 1, while lines here represent the different marginal probabilities by employer type (government or public sector, NGO, private sector). Here it appears, as before, that age plays a greater role in the direct provision of housing than for allowances, and education similarly improves the likelihood of housing support in general. Overall, marginal probabilities reflect an increased propensity for government employers to provide benefits (in terms of direct accommodation) with private employers tending to favour allowances. This is reflective of the PNG Government's ease of access — and ability — to repurpose existing land holdings under its ownership. Employees of NGOs also exhibit similar propensities to that of their government counterparts for direct housing provision and propensities equivalent to their private counterparts in terms of housing allowance.

There is a gradual decline in the probability of receiving no housing support at all as income increases, with a strong positive relationship between the probability of receiving a cash allowance and increased income. There is some positive effect on direct housing provision as income increases, and these increases are similar across the three employer

types. This relative contribution of fortnightly income to the propensity to receive employer-provided housing is modest at mean levels. In other words, the income poor are broadly equally likely to receive such benefits as the income rich. In contrast, for allowances there is a step increase in probabilities across income groups for both private and NGO employees. This same relationship persists but is substantially muted for government employees.

FIGURE 2: MARGINAL EFFECTS AT MEAN VALUES ACROSS EMPLOYER TYPE



VI DISCUSSION

Given the scarcity of suitable legally recognised dwellings among available urban housing stock, employee housing support is a substantial fringe benefit for those working in the PNG formal sector. This study finds that urban PNG residents receiving employer housing support have noticeably different socio-demographic characteristics in access to such benefits. Under current arrangements where private home ownership or even suitable rental accommodation is beyond reach for lower-middle and middle-income earners, the study's results are considered in terms of policy options that target incentives for equity in housing access.

The study models a strong association between the propensity to receive a cash allowance (but not employee housing) with increasing income. Compared to the lowest income group (less than PGK400 per fortnight), those in the top income category (more than PGK2,700 per fortnight) enjoy 26.89 times the odds of receiving a housing allowance. It is clear that allowances are not considered private welfare, but rather form part of the usual employment remuneration. While the size of the allowance is not measured in our data, it is reasonable to expect that allowances for lower income individuals are quite small, in line with the size of their total earnings.⁴³ The housing allowance for public servants, for example, has been found to fail in meeting housing affordability criteria which is approximately 30 per cent of the base salary.⁴⁴ These allowances are also considered a fringe benefit under PNG tax law and are taxed as income under PNG's progressive tax system. Therefore, while equitable with regards to vertical taxation, low- and middle-income earners are disadvantaged in access to housing allowances, both in the likelihood of receipt as well as in allowance size. In contrast, no such income relationship is evident for direct housing benefits, even at lower income levels. Here also, the overall value of a housing benefit is likely to be much higher than an allowance. Consequently, the results support the findings of Kaitilla and Sarpong-Oti's earlier study⁴⁵ and also Gibson⁴⁶ in recognising and having a 'social contract' for temporary urban housing provision.

Employer-provided housing in PNG is most commonly associated with the central government, provincial governments and statutory authorities and institutions, such as universities, hospitals and NGOs, rather than with typical private sector employers. This study also observed this strong link between the employer type and the type of housing support provided. Notably, this is not to suggest that private sector employers in PNG do not recognise that recruiting and retaining qualified employees is connected to housing issues. Instead, most private sector employers prefer paying third party rental house providers or cash allowances to their employees, rather than have their own capital

⁴³ National Statistical Office of PNG, *2009-2010 Papua New Guinea Household Income and Expenditure Survey, Summary Tables* (2011).

⁴⁴ Wangi, Ondopa and Ezebilo (n 4).

⁴⁵ Kaitilla and Sarpong-Oti, 'Employer-Provided Housing in PNG' (n 5).

⁴⁶ Gibson (n 14).

investment to accommodate their workers.⁴⁷ One reason underpinning the private sector's preference towards cash allowance arrangements may be that the tax treatment of the employee housing allowance is relatively simple, being assessed as income and taxed at the relevant marginal personal income tax rate.

On the other hand, this raises another potential equity issue as the prescribed value of employer-provided accommodation⁴⁸ is taxed at concessional rates. Prior to 2017,⁴⁹ the prescribed taxable value of employer-provided, low-cost housing (in Goroka, Lae, Madang, Mt Hagen or Port Moresby)⁵⁰ which could fetch PGK400,000 or less if sold in the open market, or for which market rental was PGK1,000 or less per week, was PGK160 per fortnight. On the higher end of the spectrum at that time, the taxable value of employer-provided, high-cost housing located in any of the four major cities mentioned above which could fetch PGK800,000 or more if sold in the open market, or for which market rental is between PGK3,000 but less than PGK5,000 per week, was PGK400 per fortnight. A comparative look at these figures suggests that, in nearly all cases, more than 80 per cent of the value of the employer-provided housing benefit was not subject to tax.⁵¹

Clearly issues of horizontal and vertical equity arise in this situation. Horizontal equity, in that the tax burden is not shared equally by all taxpayers in similar economic positions, as recognised by Jackson and Milliron's⁵² extensive literature review. Also, with regards to vertical equity, where the tax system does not treat everyone equally relative to their income level. This was recognised by Reckers et al⁵³ and Moser et al⁵⁴ and further that the distribution of the tax burden is not in line with a taxpayer's ability to pay, as supported by Smith and Kinsey.⁵⁵ In addition to this, the value of house rentals in PNG is

⁴⁷ Ezebilo, 'Evaluation of Affordable Housing Program' (n 13); Ezebilo, 'Evaluation of Affordable House Rent Prices' (n 1).

⁴⁸ 'Accommodation' refers to a house, flat, unit, hotel, motel, guesthouse, etc. that an employee is provided with the right to occupy or use as the usual place of residence; but ownership of these types of accommodation does not pass from employer to employee.

⁴⁹ The prescribed taxable benefits in relation to employer-provided housing were last updated in 2011.

⁵⁰ From 1 January 2017 the list of major cities classified as Area 1 (high cost) has been expanded to include Kokopo, Alotau and Kimbe. Major urban centres included in Area 2 (medium cost) are Arawa, Buka, Bulolo, Daru, Kainantu, Kavieng, Kerema, Kiunga, Kundiawa, Lihir, Lorengau, Mendi, Popondeta, Pogera, Rabaul, Tabubil, Vanimo, Wabag, Wau and Wewak. Any other place in PNG not in Areas 1 and 2 are classified in Area 3 (low cost) where the prescribed values of employer provided accommodation is nil. The discussion in this paper is restricted to the major cities in Area 1 for illustration purposes.

⁵¹ PNG Taxation Review Committee, *Papua New Guinea Taxation Review: Report to the Treasurer* (Vol 1 and 2, 2015).

⁵² Ben Jackson and Valarie Milliron, 'Tax Compliance Research: Findings, Problems and Prospects' (1986) 5 *Journal of Accounting Literature* 125. Ned Staudt, 'The Hidden Costs of the Progressivity Debate' (1997) 50(4) *Vanderbilt Law Review* 919.

⁵³ Philip Reckers, Debra Sanders and Stephen Roark, 'The Influence of Ethical Attitudes on Taxpayer Compliance' (1994) 47(4) *National Tax Journal* 825.

⁵⁴ David Moser, John Evans and Kim Clair, 'The Effects of Horizontal and Exchange in Equity on Tax Reporting Decisions' (1995) 7(4) *The Accounting Review* 619.

⁵⁵ Kent Smith and Karyl Kinsey, 'Understanding Taxpayer Behaviour: A Conceptual Framework with Implications for Research' (1978) 21(4) *Law and Society Review* 639.

low in low-income areas, whereas houses located in the central business district reveal higher median house rent prices.⁵⁶

Consequently, those low-income earners living in areas outside the central business district are at a distinct disadvantage, if their housing allowances are subject to full taxation while higher income earners receive concessional tax treatment. In 2017, reforms to the housing benefit tax, introduced two new tiers for upmarket and very high-cost houses to target the affluent and high-income earners, increasing the taxable component of the housing benefit enjoyed by generally higher income earners. At the same time, in order to keep up with the appreciation of housing costs over the years, modest accommodation previously assessed as 'low cost' or 'medium cost' would now be assessed as 'high cost'; while some areas that were previously assessed as 'low cost' would now be assessed as 'high cost' areas.⁵⁷ While the reaction to the increase in taxable values of employer-provided housing was somewhat mixed initially,⁵⁸ there was a strong desire to find some empirical evidence to justify the government's decision.⁵⁹ As such, the findings of this study goes some way to providing further support for the government's decision.

While the aforementioned reforms may align direct housing benefits with allowances from a tax perspective, another reason why direct housing provision is more common in the government sector is because of access to land for urban housing development. The National Housing Corporation ('NHC') for example, has an ongoing role as the sole public housing agency in PNG and provides housing facilities for civil servants. It manages existing residential stock and facilitates public-private partnerships in the construction of new dwellings. As such, it also has significant influence over the quality and mix of new dwelling construction.⁶⁰ However, the NHC's projects are often undertaken on government land within the metropolitan perimeter that has been repurposed for residential construction. While this appears to be appropriate, increases in-house rent and scarcity of stock, impacts upon the affordability of homes for low- and middle-income households, and has also substantially raised the cost of acquisition for private sector organisations.

A Housing Policy Measures to Address Inequities

A crucial policy issue remains in the scarcity of new land for urban development. As land is also a major factor in the cost of housing rentals the government could play an important role in facilitating the unlocking of more customary land with proper titles to

⁵⁶ Ezebilo, 'Evaluation of Affordable House Rent Prices' (n 1).

⁵⁷ Papua New Guinea Department of Treasury (n 7).

⁵⁸ Charles Yapumi, 'Pruiitch Clears Misunderstanding on Housing Tax', *Loop PNG* (Web Page, 30 November 2016) <<https://www.looppng-sb.com/content/pruiitch-clears-misunderstanding-housing-tax>>.

⁵⁹ Devos et al, 'Public Perceptions About Housing Benefits Tax in Papua New Guinea' (Discussion Paper No 167, National Research Institute, 2019).

⁶⁰ Ezebilo, 'Evaluation of Affordable Housing Program' (n 13).

supplement the remaining state-owned land.⁶¹ Currently, disincentives to housing investment exist; even on available land where the provision of trunk infrastructure is not forthcoming.⁶² To this end, the current (2020) iteration of the PNG affordable Housing Program ('AHP'), if ratified, will facilitate compulsory acquisitions of land by the government on long-term (99 year) leases to be developed through public-private partnerships supported by the NHC. Although agencies such as the NHC have previously faced scandals around forced evictions and cost blowouts, they should try to ensure that this does not impact upon the smooth implementation of the AHP. If institutional trust can be maintained, the availability of new land for housing may enhance the effectiveness of other programs that improve overall housing affordability, as well as targeting those households less likely to receive support.

For example, with increased housing stock, a gradual shift from reliance on employer-provided housing to allowances — or perhaps also access to the government's First Home Ownership Scheme — could offer some reprieve for younger employees, a group identified in this study as being less likely to otherwise receive employer support. In 2013 the PNG Government had earmarked PGK200 million for first home loan borrowers under a First Home Ownership Scheme, to enable PNG citizens access to more affordable housing in the country's cities and towns.⁶³ However, with limited alienated land, and stringent loan conditions (i.e. borrowers must deposit 10 per cent of the value of the house they want to purchase to gain access to loans capped at PGK400,000 to be repaid in 40 years at 4 per cent interest), the facility has been largely unavailable to the majority of working-class Papua New Guineans to date.

This study also found women to be less likely to access housing support, which is arguably part of a much broader discussion on gender equity in PNG. Inequity is well documented with regards to access to education⁶⁴ and the legal system,⁶⁵ as well as wide-spread discrimination and violence towards women which is partly fuelled by customary practices.⁶⁶ In the case of access to employee housing support the study identifies women as having decreased propensity to access both types of employer support despite controlling for other factors such as income, education and age. The findings also reveal

⁶¹ Ezebilo, 'Evaluation of Affordable House Rent Prices' (n 1); Sillitoe and Filer (n 12); Carl Filer, 'The Double Movement of Immovable Property Rights in Papua New Guinea' (2014) 49(1) *The Journal of Pacific History* 76.

⁶² Ezebilo, 'Evaluation of Affordable House Rent Prices' (n 1).

⁶³ Ezebilo, 'Evaluation of Affordable Housing Program' (n 13).

⁶⁴ Jan Edwards, 'Gender and Education Assessment, Papua New Guinea: A review of the Literature on Girls and Education' (Report, 2015) <<https://dfat.gov.au/about-us/publications/Documents/png-gender-and-education-assessment-review-literature-girls-education.pdf>>.

⁶⁵ Committee on the Elimination of Discrimination Against Women ('UNCEDAW'), *Concluding Observations of the Committee on the Elimination of Discrimination Against Women*, 46th sess, CEDAW/C/PNG/CO/32010 (12-30 July 2010). <https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=CEDAW/C/PNG/CO/3&Lang=En>.

⁶⁶ Amnesty International, 'Amnesty International Report 2017/18' (Report, 2018) <<https://www.amnesty.org/download/Documents/POL1067002018ENGLISH.PDF>>.

that gender interacts with these other characteristics and that the gender gap is more pronounced among older employees and those with lower educational achievement. Yet, these differences — despite being statistically significant — are not altogether substantial. While it is acknowledged that certain differences in respondents may be occluded by the broad-based measures used (e.g. occupational preference, or differences across sub-groups such as single parents), there is evidence in line with global trends of labour market endowments of women (i.e. better education, training, and work attachment) leading to shifting attitudes in compensation,⁶⁷ at least in PNG urban formal sector employment.

VII CONCLUSION

This study found that those living in employer-provided housing and those receiving housing allowances tend to exhibit high levels of socio-economic advantage, though the nature of that advantage differs between the two forms of support. Thus, it appears that at present, there is weak evidence in PNG for employer-provided housing to be considered a form of private subsidised social housing defensible on equity and social justice grounds. Overall, the study found that significant inequalities exist in terms of access and support to quality accommodation, and the data examined is only for the formal sector. Inequity in the informal sector is likely to be substantially higher. Consequently, in the broader context of equity and social justice, this study finds that the recent reforms to the tax treatment of employer-provided housing are well founded. In addition, other general measures focused on the release of urban land for residential development and incentive measures to increase private ownership, including specific measures targeting disadvantaged groups, will contribute to providing equitable access to formal sector housing.

A Limitations and Further Research

It is noted that there are a few shortcomings to the data collected in this study. While the survey collected information of receipt of housing benefits, these are not necessarily associated with the income producing activities of the individuals surveyed. This is despite all respondents being in formal sector employment. For example, a spouse may be the recipient of the housing fringe benefit. Likewise, among those who receive no housing benefit from employers, it was unclear what level of desire for a housing benefit is — in that they may own their formal (legal) home or rent or live in an informal settlement. Those who already own accommodation superior to that offered, may self-select out of the recipient group in return for increased compensation. On the other hand, if such alternate compensation is not common (e.g. fixed government wages), the recipient may make available their own housing for rent and accept employer assistance. However, the study does not expect this to be a common issue given the low home ownership rates.

⁶⁷ Weichselbaumer and Winter-Ebmer (n 39).

Correspondingly, while we have an understanding of the value of the dwelling provided, the study does not measure the direct value of any transfers in the form of rental assistance, although these could be quite small. Public servants for example, may be given as little as PGK7 (approximately USD3) per fortnight as a housing allowance, where the average rental is PGK700–800 (approximately USD300–345) per week.⁶⁸ Additionally, the data does not account for other family factors, where for example, fringe benefits may vary based on an individual's housing needs, such as number of adults and children present. The research also does not assess the power relationship between an employer and employee, and the consequent impact on labour mobility where valuable access to housing is provided. An examination of this, and other variables, along with the collation of qualitative data, would potentially strengthen any future research.

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⁶⁸ UNCEDAW (n 65).

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