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Submarkets in public sector housing

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1 INTRODUCTION

This Positioning Paper is the first output from an AHURI Policy Horizon project titled *Submarkets in public sector housing*. In broad terms, the project aims to assess the concept of 'housing submarket' in relation to its potential policy relevance for the public housing sector.

Internationally, the concept of submarkets has been much used in the analysis of private sector market dynamics, and the literature on it is voluminous. This research project hopes to extend the policy horizon of public housing by evaluating the relevance of adapting the concept to the sector.

The specific research questions of the project are:

1. What has the housing submarket concept contributed to our understanding of housing markets and to housing policy?
2. Can this concept be applied to the public housing sector and, if so, in what ways?
3. What is the range and quality of information held by public housing authorities that could be used to measure and classify public housing submarkets?
4. What are the implications of different submarkets for housing agencies, tenants and the host communities?
5. What are the policy and program implications?

This Positioning Paper concentrates on the first question in some detail and hints at the other four, although they are the subject matter of the later stages of this project. It introduces the concept of housing submarkets as used in studies of private housing markets, examines its relevance for the public housing sector and provides a preliminary discussion of possible ways of measuring submarkets in public housing.

2 HOUSING MARKETS OR SUBMARKETS

As the term suggests, a submarket refers to a component of a larger housing market and, like many academic concepts, has intuitively been around for centuries. Many novels set in the cities of the nineteenth and early twentieth centuries where class was one of the underlying themes recognised the idea that cities had submarkets, although the term was not used. The rich lived in mansions on the hills or in outer urban (suburban) estates while the working class lived in terraces or tenements on the flatland or in close proximity to the city centre. Similarly, the rich owned and the working class rented.

The conflicts between those resident in different housing markets or the struggles to break out of the 'inferior' one into the superior one has been the grist for many novels. Such images implicitly recognised that in any city there was not one homogenous private housing market but a variety of separate, overlapping markets defined by elements of location, tenure, type and price, and with different participants (renters, owners, consumers, builders and landlords) in each submarket. They also recognised, in a populist form, that households made trade-offs between access to the urban centre and space, and that this was related to price and household income.

Despite this popular recognition, it was not until the 1950s that the concept formally entered the academic agenda, at which point housing markets were still being conceptualised as large, undifferentiated abstractions (Alonso 1964; Muth 1969; Olsen 1969). It is useful to begin with two definitions of a housing market.

'A housing market area is the physical area within which all dwelling units are linked together in a chain of substitution … In a broad sense, every dwelling unit within a local housing market may be considered a substitute for every other unit. Hence, all dwellings may be said to form a single market, characterised by interactions of occupancy, prices and rents' (Rapkin et al. 1953: 9–10, quoted in Grigsby 1963: 33–4). Similarly, Bourne (1981: 73) defines a housing market as: 'a contiguous geographic area, more or less clearly bounded, within which it is possible for a household to trade or substitute one dwelling unit for another without also altering its place of work or its pattern of social contacts'.

These definitions incorporate several distinct features of housing markets, all of which have been the subject of much attention and debate in the academic literature: a housing market as a defined spatial area; household characteristics; trade or substitution of dwellings; prices and rents; relationship to labour market; and links with social networks. Central to understanding the market transactions are the notion of supply, as represented in the housing stock, and demand, as affected by the size and composition of households. A housing submarket may therefore be defined in its broadest terms as 'a quasi-independent subset of a larger housing market', leaving open to speculation or research the question of which elements create independence, and the degree of that independence.

Housing economists (for example, Galster 1996) credit William Grigsby with drawing attention to the differentiated nature of the housing market in his influential 1963 book, *Housing Markets and Public Policy*. He argued that that instead of constituting a single whole, 'the housing market in a given area consists of groups of submarkets which are related to one another in varying degrees' (Grigsby 1963: 34). Their existence flowed logically from another housing concept that was widely in use at the time – that is, filtering. This theory argues that:

> a unit of housing goes through a gradual decline, which makes it available to successively lower income groups until it becomes unlivable and is replaced.

> Thus, additions to the high-priced housing stock would cause high-income families to shift to the more desirable new housing, leaving their present units available; the surplus housing would bring a price decline, and the vacated housing would then become available to the income group next in line (Abrams 1971: 14).

Filtering models, therefore, implicitly acknowledge that different submarkets of demand and supply exist at any point in time. Moreover, over time, the ageing of the stock and changes in the value of property for different locations means that the submarkets are not immutable. The degree to which filtering worked was a contested issue for many years. Proponents would argue that if filtering were left to the market, there would be little need for subsidised housing for lower-income groups as affordable housing would trickle down to poorer households, yet the concept itself intrinsically pointed to the existence of separate markets for different socioeconomic or racial/ethnic groups. Others were much more sceptical of its alleged practices, either through theoretical analysis based on different assumptions than its proponents (Rothenberg et al. 1991: 241 ff.; Galster 1996) or simple empirical observation of the realities of the housing markets.

Submarkets are also conceived as interconnected in that 'the effect of a price or rent change within one submarket is diffused among numerous submarket channels' (Grigsby 1963: 35). This being the case, 'the size and number' (Grigsby 1963: 39) of submarkets are in a constant state of change. In other words, the concept is a dynamic one and 'stresses the evolving structure of housing opportunities and transactions in any urban area and the ever changing needs of households' (Bourne and Hitchcock 1978: 11).

There has been wide support for Grigsby's viewpoint, hence the sustained literature over the years. For example, Quigley (1978: 25) wrote that '*"the"* [author's emphasis] housing market is really a collection of closely related, but segmented, markets for particular packages of underlying commodities, differentiated by size, physical arrangement etc. and location. These submarkets are connected in a complex way'. Bourne (1981: 86–7) defined submarkets as 'quasi-independent subdivisions of an urban housing market' that are 'homogenous clusters of housing types or household characteristics in which there is a unique set of prices (or rents) and between which there is little substitution of one unit for another'.

3 METHODS OF ANALYSIS

This section reviews the different approaches to putting some methodological rigour into identifying housing submarkets. There are three broad approaches, two of which emerge out of neoclassical economic analysis and one out of economic sociology/anthropology. The two neoclassical ones we can label as a static approach concerned with measurement of the demand and supply attributes of a submarket, and the other as a *dynamic* approach which concentrates more on the processes that underpin a housing market, whether they be price changes or household mobility. The economic sociology/anthropological approach pays much more attention to people, not as consumers with a set of almost robotic behavioural responses to a limited set of economic variables, but as living and feeling beings with beliefs, values and emotions, operating in a world constructed with certain specific power and social relationships.

3.1 Static measures

The most common approach to defining submarkets is to classify using a set of key characteristics (Bourne 1981) but, of course, the question is what the most appropriate collection of characteristics are. The three sets of measures used are those of supply or dwelling attributes, demand or household attributes, and locational attributes.

3.1.1 Supply or dwelling attributes

While there is academic debate over the question of whether consumer attributes, dwelling attributes or location indicators provide the best measures, researchers agree that dwelling characteristics are centrally important. Dwelling characteristics can include tenure, material of construction, number of rooms and price. The submarket identified may have no necessary spatial base and may in principle be scattered over a wide metropolitan area (although given that dwellings, unlike consumers, are considerably less mobile and fixed in place, this method is more likely to connect with location).

3.1.2 Demand characteristics

Demand characteristics are those that reflect housing needs, requirements and preferences. Household size and composition, stage in the life cycle and socioeconomic status all indicate the likelihood of different housing preferences. The consumer segments receive a great deal of popular attention, as they are segments for a particular product: housing. ‘Empty nesters’, young singles, family households, retired households and so forth are often mentioned in association with a particular housing submarket. Watkins (2001) considers demand segments a ‘fairly crude’ approach and considers that ‘none of these classifications performs well’. Instead, after empirically testing a number of models, Watkins concludes that the combination of spatial and structural factors are foremost in determining submarkets.

3.1.3 Classifying submarkets by location: spatially defined submarkets

Both the previous classifications represent aspatial approaches and, it can be argued, overlook an intrinsic quality of housing – that is, its ‘locational fixity’. The spatial characteristics of housing units are ‘purchased jointly with structural characteristics’ (Quigley 1978: 25). As Bourne and Hitchcock (1978: 11–12) described it, housing markets differ from other markets in ‘the terms of trade’; as a consequence, ‘because of immobility, the housing markets of geographically distant regions can demonstrate substantial independence, at least in the short term’. Grigsby (1963: 48) agreed with

this and pointed out that 'the link distance between two submarkets is determined by the proportion of families in the first market who would react to a given change in the second submarket or vice-versa'. This would suggest, for example, that a boom in Sydney's inner city housing market would not affect the Adelaide market.

While the significance of spatial location to submarket analysis would seem fundamental, analytical difficulties have stemmed mainly from the issue of how best to determine the spatial units and boundaries (Watkins 2001). One method – an a priori one – is for the researcher to predetermine the geographical areas or locations for which data is to be gathered, e.g. postcodes, census tracts, local government boundaries or government planning regions, and, for the nominated variables, to seek to find which areas have the highest degree of relationship. The alternative is to have no predetermined notion of area and to let the data and method generate and thus define the relevant areas. Bourassa et al. (2003), in an empirical study of submarkets in Auckland, concluded that the segmentation developed by local property appraisers proved the most accurate.

Table 1 shows the typical variables that have been used in the three static submarket categorisations, recognising of course that they are not immutable categories; many studies, particularly those attempting to identify locational or spatial areas, may choose from all three. Moreover, within these variables, more specific choices are made – for example, household type might use 'single person households' as a key descriptor, while in tenure 'percentage of owner-occupation' may be the key, and in employment status 'the percentage unemployed' might be seen to be crucial. Choice of relevant variables becomes a key part of the conceptualisation process and will drive the findings. A good exemplification of the latter is the research of Adair et al. (2000: 1091) who, with reference to Craigavon in Northern Ireland, added religious affiliation (Catholic or Protestant) to the set of classificatory variables and found that in this case the submarkets are sharply defined by religion.

Table 1: Summary of submarket classificatory measures

Demand/Household Attributes	***Supply/Dwelling Attributes***	***Locational/Spatial Attributes***
Income	Housing type	Proximity to public transport
Household type	Housing tenure	Proximity to schools
Employment status	Material of construction	Number of private schools
Ethnicity	Age of stock	Open space
Educational status	Housing quality	Population density
Recent arrivals	Number of bedrooms	Distance from CBD
Welfare beneficiaries	Lot size	Method of journey to work
Mobility rates	Garage or carport	Mobility rates
Religious status	Type of heating	Workplace accessibility
	Overcrowding	

3.2 Dynamic methods

An alternative way of distinguishing submarkets is by concentrating on the dynamic process by which consumers and suppliers negotiate the housing market. If these processes can identify key elements of difference between housing markets, then it can be seen as a submarket. There are three broad ways in which the literature has categorised such dynamics: the degree to which people are willing to substitute one dwelling form or location for another (substitution method), the choices people make

about where they move to and when (household mobility method), and changes in dwelling prices or rents (hedonic price method).

3.2.1 Substitution method

The term that keeps appearing in the submarket literature is 'substitution' (or its counterpart, 'substitutability'). This construct was central in Grigsby's foundational conception of submarkets. 'The test of whether two dwelling units are in the same submarket', Grigsby (1963: 34) argued, is in the substitutability of dwellings. This refers to the degree to which properties are substitutable for one another by consumers. For example, do two housing units (perhaps a two-bedroom house and a two-bedroom apartment, or an outer suburban detached house and one in the middle suburbs) compete with one another for the same consumer segment? Grigsby also noted the role of location (despite the fact that the specific boundaries between two submarkets tend to be blurred rather than clear-cut): 'nevertheless, where the distance between two units on the continuum is large, they become weak substitutes and the price and rent behaviour of one does not affect the other'. If there is a low rate of substitutability between properties or locations, they can be said to be in different housing submarkets.

Despite its centrality in determining submarkets, substitutability is not easy to define:

> functions of comparison and substitution are more difficult and less perfect in housing than in other markets … partly because no two buildings and no two sites are identical, each having its own factors of location, convenience, amenities, and neighbourhood; partly because the housing market is composed of many small buyers and sellers each trying to create his own terms; and partly because the typical buyer enters the market only once or twice in his life-time, and thus has little knowledge or experience on which to base his decision (Abrams 1971: 141).

3.2.2 Movements in prices and rents (hedonic price measures)

Hedonic price measures attempt to dissect the total sale price for a dwelling into individual attributes, such as the amount paid for an extra bedroom, a carport or a family room. In other words, rather than considering housing as a 'bundle of goods' with a single price, the proponents of hedonic price modelling attempt to break prices down into expenditure on specific attributes (Goodman 1981: 176; Maclennan 1982: 52,). Consequently, a submarket is said to exist when, as Maclennan (1982: 26) observed, 'the price of a unit of housing service varied across space or quality sub-groups'. Watkins (2001: 2236) refers to it thus: 'This model suggests that implicit markets exist for each independent dwelling attribute'.

A hedonic price is a statistically created house price, or rent in the case of rental properties, that relates the price to some bundle of dwelling or spatial attributes. It recognises that actual market prices as measured through Valuer General's or other official records do not reflect the different qualities of properties sold or rented. Thus hedonic price indices that adapt for spatial or dwelling attributes enable more nuanced identification of submarkets. But as one housing economist has remarked, 'the practical worth of this approach … other than to improve hedonic regression performance, is questionable' (Pryce 2004).

3.2.3 Markets defined by migration patterns

This approach is typified in the work of Jones (2002) who, in a study to determine local housing market areas in Scotland, argues that migration patterns provide the best measure of the spatial extent of a local housing market. Pryce (2004) describes

this approach as one that applies ‘the patterns of intra-urban housing flows to identify submarket boundaries’.

This approach emphasises the need to consider the geography of housing moves. It is aimed at defining housing market areas for the purpose of assisting planning authorities in preparing structure plans for future land requirements, not submarkets. Although the terms seem analogous, Jones makes a clear distinction between the housing market area and the submarket. While both are based on migration patterns, submarkets can change more frequently due to changes in dwelling stock or tenure. In other words, submarkets can exist within a housing market area, and their number and nature can vary over time within the same stable housing market area.

Central to this approach is what Jones refers to as the ‘spatial arbitrage’ principle. Derived from economics, this suggests that the spatial boundaries of housing markets should be determined on the basis of where most housing transactions (buyers and sellers) take place, rather than on predetermined administrative units. This relies on migration patterns to define the areas. Jones (2002) has used this approach to develop a system of housing market areas for west central Scotland. His analysis is based on property sales data derived from the Scottish Land Registry Office that contains not only house price sales, but the origin and destination of the movers. To smooth out price or movement variations, Jones computed averages based on ten years of transactions. It is important to point out that it is only the moves of purchasers that are considered. Moreover, the data would not signify whether or not the move was for owner-occupation or investment, a distinction that would be important in any Australian analysis.

Underpinning virtually all of the submarket studies is neoclassical market-clearing economics. The assumption here is that the market allocates dwelling units (which are a bundle of locational and dwelling attributes of the type in Table 1) on the basis of the price for the units in relation to the differential buying power of households as measured by their income. Efficient allocation occurs when all dwellings are allocated and all households accommodated, i.e. when supply meets demand. If this does not occur, a situation of market disequilibrium is said to occur.

Market disequilibrium is probably more likely than equilibrium in housing because of the distinctive attributes of housing, including its fixity, the complexity of the product (dwellings are not like apples), its relationship to space and its purchase price (most people cannot purchase out of current income and therefore rely on a mortgage and in turn on an arrangement with a financial institution). It is these attributes that can help shape and create submarkets. For example, there could be a surplus of dwellings in one part of a city, simultaneous with surplus demand in another. Even falling prices do not remove the disequilibrium, perhaps because buyers in the latter area do not have adequate information about the former area, or because there are accessibility or search restrictions that limit consumers’ capacity to seek out the market, e.g. limited public transport connecting the areas, or perceptions that the area is unsafe.

Few of the studies pay much attention to such market impediments as determinants of submarkets, although the voluminous work of Rothenberg et al. (1991) pays theoretical attention to the ‘interventions’ of US rent controls. However the term ‘market segmentation’ is sometimes used to describe that condition in which there are two submarkets between which there is little interaction, with market impediments being used as an explanation. Particularly in the US literature, government intervention in the form of planning control or building regulation is often seen as the cause of this market segmentation.

Overlaying the challenges and problems in choice of appropriate variables for submarket analysis are those that attach to the different statistical techniques used to manipulate the variables and define the relevant submarkets. This is not the appropriate location to discuss the methods, but they include variations on cluster analysis, factor analysis, principal components analysis, computer algorithms and, more recently, neural network modelling (Kauko et al. 2002). The debates evolve around which method has the most predictive capacity, is the most robust, can handle the most variables etc., but in many cases it is not hard to come to the conclusion that identified submarkets are as much statistical artefacts of the method as anything that is related to market realities. Grigsby (1963) and Watkins (2001) both provide useful overviews of a range of submarket studies and choice of statistical methods.

3.3 Social and anthropological approach

The social and anthropological approach is the most recent contribution to housing market analysis and takes as its starting point the argument that an understanding of how markets work cannot be reached by economics alone or, more accurately, that which is based on the market assumptions of neoclassical economics. This approach is represented in the work of Smith, who argues that research needs to take into account 'the social and power-filled character of a plurality of markets: their diversity and complexity, their sensitivity to context, their passions as well as their rationality, and their part in the social construction or performance of the economy' (Smith 2004: 90). She argues that a social and cultural critique is overdue and needs to give greater attention to the beliefs, values and practices of participants in the housing system and how they might shape or work within housing markets. Smith et al. (2006) illustrate this approach via a case study of the Edinburgh home purchase market, based on twenty in-depth interviews with property professionals. The emphasis is on the role of exchange agents (e.g. estate agents, financiers, solicitors) in the owner-occupied markets and on 'a qualitative investigation of the trade in places that drives the economy of housing' (Smith et al. 2006: 82).

This harks back to the urban managerialist writings emerging out of the work of Pahl (1975). For a short time, this work initiated a flurry of research focusing on urban managers and gatekeepers, but subsequently 'institutional actors in the housing market became virtually invisible' (Smith et al. 2006: 84). The social and anthropological approach like 'urban managerialism' considers how these exchange agents position themselves in relation to the market and therefore how they behave. Smith found that agents see themselves as objective professionals reading market trends and offering consumer advice accordingly. The research found that professionals think and act as if the housing market operates in accordance with the traditional economic model, but when they see its behaviours (e.g. in a boom) operating in a way outside their expectation of the model, they adopt behaviours (e.g. setting unreasonably high bid prices) that in turn may make the market even less rational and perhaps amplify market volatility. Like the migration approach described previously, this approach considers only the market for owner-occupation.

The work of Coiacetto (2007), while not explicitly informed by the economic sociology of Smith, adopts a not too dissimilar framework and draws attention to how submarkets can be socially constructed. He interviewed developers in the Brisbane region to find out how their investment decision making both identifies and shapes housing submarkets. He illustrates their strategies for targeting submarkets but also highlights how their investment decisions may be constrained by the costs and risks associated with the land search process and by the attributes of their organisation, e.g. size, skills or the internal bureaucracy.

Developers are of course just one set of ‘agents’ that negotiate and shape housing submarkets. Considerably more work is required to provide answers to whether key housing actors, e.g. exchange agents, have different values, beliefs and practices for different client groups, locations and housing tenures that in some way may affect how a local housing market operates and thereby give it the characteristics of a submarket. For example, do estate agents steer certain types of renters or buyers away from specific areas or properties (e.g. properties adjacent to public housing) in a way that actually shapes the market attributes of that area?

4 IS THE SUBMARKET CONCEPT A USEFUL POLICY TOOL?

There is general consensus that submarkets do exist and have important implications for housing market analysis. However, one can also conclude that the concept is almost as elusive to pin down now as it was forty years ago. Submarket identification in many cases seems to be a product of statistical method, with academic debate being more about subtleties in the method than actual use of the concept. Thus it is assumed in Watkins' otherwise excellent article, like many other articles on filtering, that the ability to appropriately measure and therefore identify a submarket is a kind of Holy Grail, with little consideration given to what policy and planning uses it may have.

In the extensive literature on housing submarkets, little attention has been paid to policy and planning relevance, despite Grigsby's (1963) assertion that 'our goal is a matrix of housing submarkets which can help us predict the impact of economic and social trends, and particularly governmental actions, on various sectors of the supply'. Most of the literature reviewed has a token section at the end saying something to the effect that submarkets have important potential use for urban policy, strategic planning or evaluation of urban policy initiatives (for example, Jones 2002: 562; Varma 2004: 3) or that they could provide the framework for more effective monitoring of housing markets to assist planning and policy (Jones et al. 2004), but nowhere have we found evidence of actual use of submarkets for planning and policy design. Too often the reader is left with the concern that the analysis is more an exercise in academic gymnastics with respect to the use of housing data than the identification and development of an effective tool for policy or planning. One reason for this, of course, is that urban planning and policy requires some identified planning region or administrative area for a policy and planning focus, but many submarkets as identified by the various techniques have no necessary spatial focus, which makes it difficult to get a policy handle on them. Another reason is the highly mathematical nature of conventional submarket studies. Such reading is not accessible to most people, including, one suspects, most policy makers and planners.

Where the submarket concept appears to have more policy use is in the evaluation of policy or policy issues, although there is only limited application of this role and none that we could identify in relatively recent times. This role is best evidenced in its use in evaluating filtering as a solution to the problems of low-income housing assistance. Filtering, which was briefly referred to earlier as important in the history of housing submarket research, is the idea that, over time, dwellings provided for the more affluent filter down to lower-income recipients and therefore can work to improve the housing position of the poor (Downs 1969; Lowry 1960).

Most popular in the United States, particularly in the 1960s and 1970s, filtering implied that it was better to assist (subsidise) construction of dwellings for the affluent and have it filter down over time than to directly subsidise public housing. In effect, this recognises that what occurs in one submarket (the middle and upper end) has repercussions in other submarkets (the lower end) and that the key submarket is the upper end. Various studies that used submarket research to effectively test this hypothesis found that this largely does not hold and that the benefits do not flow to lower-income tenants (Galster 1996). The most substantial and detailed piece of work

of this nature, if one accepts the assumption or propositions on which it is based, is that of Rothenberg et al. (1991).[1]

[1] The assumptions of Rothenberg et al. (1991) are in many respects no different from those of any other submarket studies within the neoclassical framework – that is, housing consumers act as utility maximisers, suppliers as profit maximisers, and hedonic prices capture the demand and supply attributes of separate but linked submarkets.

5 PUBLIC HOUSING SUBMARKETS?

It is no surprise that public housing has been left out of the submarket literature. The obvious explanation is the concept of the market and the centrality of price to market transactions in the neoclassical model. As most of the literature on submarkets is North American, the fact that the public stock was less than 1.5% of the US stock in 1971 is a reinforcing explanation. However, it does not explain why in the British context, where the public stock was considerably higher (31 per cent), there was not some effort to extend the principles of submarket analysis to the public sector.

Despite there not being a 'priced' market for public housing, the concepts of demand and supply that underpin the static measurement of submarkets are still relevant. Households still demand public housing and it is supplied, although not through consumer and producer responses to price signals. Demand and supply outcomes in the public sector are shaped by far more subtle and complex behaviours that are much more difficult to identify but are nevertheless there.

Underpinning public housing demand is need, which is defined by eligibility rules and expressed through waiting lists. It is not, however, the same as demand, particularly for specific types and locations of public housing. Expressed need can both understate and overstate the demand for public housing for many reasons, reasons that potentially give relevance to using the concept of submarkets in relation to public housing.

Public housing applicants and potential applicants negotiate and respond to a range of information at the point of application, including: perceptions of stigma associated with a particular location; potential to get accelerated access by applying for certain locations or dwelling types with low demand; ability to use or manipulate rules and procedures, e.g. priority status, to accelerate access; use of the waiting list as a safety net for some future point of access even though there may not be current need; perception of amenity or social problems associated with certain locations; and availability and cost of private market housing in the same general area.

This information may come from formal and informal contacts with friends, families and housing and support workers, and may be more or less an appropriate understanding of the actual situation. Whether a fair description of the public housing reality or not, this information, along with the underlying needs requirements of households, shapes behaviour and will affect how many households apply for public housing in total and the specific locations and types of dwellings they apply for.

Parallel with processes relating to new applicants are those of existing tenants. Here their needs, and information about the local private market and their own estate or area, may affect duration of residency and the rate of exit from public housing. The net effect of decisions to apply for specific public housing locations and decisions about exit will affect the total demand for public housing in different areas.

On the supply side, there can be the same variations as in the private market, e.g. size, quality, building material, locational attributes, amenity, age of construction and number of bedrooms. Thus within any one public housing jurisdiction in Australia, and indeed within their administrative regions, there will be major variations in housing supply attributes. The only difference is that these cannot be bundled together in a consumer's mind and reduced to a price in order to facilitate a transaction. The transaction is a bureaucratic process which in Australia has been detailed by Burke and Hulse (2003) and by Hulse et al. (2007).

There is the potential to put together a whole range of variables around public housing to identify areas with distinctly different demand and supply attributes in such a way that we could talk about public housing submarkets. The next stage of this research is to explore this possibility in more detail. Appendix 1 identifies the variables that potentially could be used for this analysis. These have been classified under the headings of:

- Public housing stock/structural characteristics
- Public housing demand characteristics
- Public housing stock alignment attributes
- Local property market performance
- Area socio-demographic profile.

Using the same types of statistical techniques as in the private market (e.g. factor analysis, principal component analysis), the objective is to find clusters of public housing areas that we can define as distinctive and thus representing a submarket of the wider public housing system.

Unlike much of the private sector submarket analysis, this data analysis is not primarily an exercise in statistical manipulation for submarket identification purposes alone. The intention is to provide a framework for policy and practice reform.

Ironically, we believe it is possible to achieve this because of bureaucratic rather than price allocation. This is because the public sector stock, its tenants and potential applicants are potentially more amenable to policy or planning interventions than private sector submarkets. The latter, most notably in market liberal societies, are protected from direct interventions by values associated with the sanctity of private property, and from indirect interventions through the rawness of the price mechanism, i.e. the difficulty of effectively manipulating price by policy or planning interventions without creating unanticipated spillover effects. For example, how could a taxation or planning instrument such as negative gearing be designed to manipulate an outcome for one or more specific submarkets with confidence that there would not be unwanted outcomes in others?

What are the potential administrative or management practices that could be used to affect behaviour? These could be categorised as those that directly or indirectly affect the demand for public housing in an area and those that directly or indirectly affect supply. Table 2 provides a summary of some of the instruments potentially available and range from, on the demand side, the form of eligibility, through the degree to which applicant choice is broadbanded i.e. choice of area limited, to rent policy. On the supply side, there is the complete range of asset management strategies, from new construction to sale and transfer.

Table 2: Potential instruments for manipulating public housing submarkets

Demand		***Supply***
Direct	***Indirect***	***Direct***
Eligibility criteria	Shorten or lengthen waiting lists	Rate of new construction
Allocation method	Number of offers	Sales
Number of areas that households can nominate for	Estate renewal	Transfers
Occupancy provisions, i.e. who can occupy dwellings of certain sizes or types	Antisocial behaviour management	Stock alignment
Size of areas that households can nominate for, i.e. degree to which areas are broadbanded	Number of offers	Sales
Local area allocations		Demolition
Rent-setting policy, including rebate policy		

Why a greater knowledge of public sector submarkets and of the instruments to manipulate them is potentially important relates to what might be seen as some of the limitations of current public housing policy and practice.

The main one, as it relates to this topic, is the reliance on 'one size fits all' policies. Whether it is allocations, rent setting, arrears managements, or many aspects of asset management there has been a historical tradition of uniform policy across the geography of any jurisdiction. The reason for this was to ensure equity and transparency across the system. However, as the areas in which public housing is located become more differentiated in terms of housing costs and rents, access to services, employment prospects, perceptions of disadvantage, crime and antisocial behaviour, the 'one size fits' all model becomes increasingly problematic; parallel with areas of intense demand and lack of stock turnover can be other areas of low demand and high vacancy rates. This might suggest the need for a more nuanced policy of a type that could be informed by more effective data use along the lines outlined in this paper.

The next stage of the research is to apply the data categories and variables to one jurisdiction (Victoria) to test whether the concept of submarkets does have relevance for public housing. The second and parallel stage is a set of interviews and focus group meetings with officials in the Tasmanian, Victorian and West Australian housing agencies to tease out what they see as issues and problems within local housing area or submarkets and what instruments they believe may be used for leveraging better outcomes.

6 CONCLUSION

This short paper hypothesises that the concept of housing submarkets has as much relevance to public housing as to private housing, if not more so. The concept emerged in the 1960s in recognition of the fact that private housing markets cannot usefully be understood as large, undifferentiated abstractions. Since then there has been considerable research, most within a neoclassical economics framework, that has attempted to statistically identify submarkets. This framework assumes that difference in supply and demand attributes and the adjustment to supply and demand as signalled by prices are what defines housing submarkets. The outcome has been decidedly mixed. There is a general consensus that the concept has important implications for housing market analysis and that submarkets do exist, but the best forms of data and statistical method for defining them and their dynamics are still contested. In terms of policy, their use seems to be weak. There are a number of reasons for this, including the lack of consensus on defined areas, the lack of accessibility to a wider audience because of their mathematical nature, but perhaps more importantly, the problem of appropriately manipulating property prices through policy and planning interventions.

While private housing markets have long been seen to be fragmented and diverse, public housing is still seen largely as a homogenous sector. However, all public housing jurisdictions in Australia are experiencing policy and management issues deriving from uneven demand pressures, supply shortfalls (or in some cases surpluses), quality problems, differential market values (a result of private market outcomes) and social sustainability. The diversity of performance across the public system is increasing. This is partly a function of ageing and now inappropriate stock, an increasingly diverse and complex client base, and changes in the wider economy and society (including the housing market) in which the public system is located.

Using statistical techniques borrowed from private sector submarket analysis, this study will test whether this diversity can be translated into identifiable public housing submarkets. Because the public sector has considerable capacity through a variety of management and administrative instruments to potentially manipulate submarket outcomes, we believe that the study has important policy relevance.

APPENDIX

Summary of possible variables to use in measuring public housing submarkets

Possible range of housing stock/structural characteristics

These are descriptors of the broad public housing stock attributes of an area. Data to be obtained from asset data.

Variable name	***Variable description***
Public rental dwellings	Type of dwelling, e.g. house, villa, flat, multi-purpose unit, elderly persons unit, bed-sitter
	Total dwellings by number of bedrooms
	Number of bedrooms (for each type)
Any local area community housing program dwellings	Type of dwelling
	Number of bedrooms
Public rental housing by age (when constructed)	Period constructed (pre-1945, 1945–60, 1961–80, 1981–2006)

Possible range of housing demand characteristics

These are descriptors of the broad public housing demand attributes of an area. Data to be obtained from asset and client data.

Variable name	***Variable description***
Use of public rental dwellings	Voids (vacant properties) (normal vacation, other and total)
Turnover of public rental dwellings	Total applications
	Total number of dwellings
	New applicants
	Percentage of dwellings turnover
	Number of applications by dwelling type
Dwelling mix	Total number of private dwellings
	Total number of public rental dwellings
	Proportion of public housing by suburb
Time to house by category and number of bedrooms	Average time to house in past twelve months (in weeks and months)
	Theoretical time to house an applicant (number of vacant properties in past twelve months, number of current applicants, theoretical time to house in months and years)

Stock alignment

These are descriptors of the degree to which local stock may be out of alignment with demand, and therefore an indication of how a local allocations policy may need to be addressed. Data to be obtained from asset and client data.

Variable name	***Variable description***
Portfolio alignment figures: met and expressed demand	Difference between property attributes and the applicants' and tenants' needs (percentage)
Portfolio alignment	Under-occupancy
	Over-occupancy
	Total misalignment

Local property market

These are descriptors of the wider housing market in which the public housing sector operates. The price and affordability data give a measure of first home purchase opportunities and potential pressures on the local rental market. Data to be obtained from Valuer General and Rental Bond Board.

Variable name	***Variable description***
Private housing market performance	Median house price
Purchase affordability	Threshold income, i.e. income needed to afford median-priced house
Rental market	Median rent
Rental affordability	Vacancy rate
	Rents as proportion of income for selected household types, e.g. single parent with two children receiving rent assistance

Area socio-demographic profile (secondary data, e.g. ABS)

These are descriptors of the wider socioeconomic and demographic context. They may point to the degree to which the entire area is disadvantaged, or they may show that it is an island of disadvantage in a sea of advantage. Both have implications for how a local public housing allocations strategy would operate. Data from ABS and other government agencies.

Variable name	***Variable description***
Summary characteristics	Population (2001, 2006, percentage change)
	Median age
	Proportion aged less than 15Proportion aged 65 and over
	ABS SEIFA score of disadvantage
	Median family income (annual)
Family and household characteristics	Total households
	One-parent families (percentage)
	Lone-person households (percentage)
	Households without tertiary qualifications (percentage)
	Not in the labour force (percentage)
Source of personal income	Percentage in receipt of government cash benefits
Social Disadvantage Attributes	Unemployment rate
	Unemployment rate, 15–24 years
	Rates of crime
	Educational participation
	Higher education entry rates

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