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Abstract

Purpose – The purpose of this paper is to provide an overview of the economics of providing well-located housing in the inner city of Cape Town. The paper emphasises the need to maintain an appropriate balance between the viability and affordability of the product offered to the market and overcoming the value versus cost challenges. While developers have limited influence over value, they do have influence over cost structures through the development approach that is chosen. Moreover, local authorities influence the viability of projects through standards and regulations. The conclusion drawn from the research has considerable implications for the formulation of market-driven housing policy interventions.

Design/methodology/approach – In addition to the review of urban economics theory and the literature on the drivers and costs of inner-city, higher-density residential development, a series of interviews with inner-city residential developers was conducted to access current property development cost data and to identify the parameters that determine the viability of inner-city, high-density residential development.

Findings – Cape Town, like other South African cities, suffers from being inefficient and inequitable largely due to its low density and sprawling nature. As a result, most planning- and housing-related policy interventions advocate the provision the higher-density, more affordable residential housing in well-located areas such as the inner city. However, to date, these policies have, on the whole, been unsuccessful in achieving these outcomes. This paper argues that this is because these policies largely do not take urban economics into account and fail to address the value versus cost tension that needs to be overcome to allow for the provision of such accommodation. Based on the viability calculations provided, the research illustrates the main cost drivers associated with higher-density, inner-city residential development and makes certain recommendations as to how these cost barriers can be reduced.

Research limitations/implications – Financing arrangements and taxation implications have not been accounted for as these are often specific to the developer and thus cannot be generalised.

Practical implications – The solutions put forward by the paper offer lower-income households the ability to successfully compete with higher-income households and other land uses for well-located space in Cape Town's inner city.

Social implications – The findings of this research illustrate the type of interventions that the public and private sectors can consider to improve the viability and affordability of affordable housing units in city centres located in emerging countries.

Originality/value – While traditional urban economic concepts are drawn upon, the paper contributes to addressing the challenge of providing higher-density, more affordable accommodation in

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South African inner cities. It does this by applying these well-known concepts to the inner city of Cape Town and draws on current data and developer views to accurately diagnose the problem and, in turn, to offer pragmatic solutions.

Keywords South Africa, Inner-city housing, International housing markets, Rent or buy, Housing affordability, Cape Town

Paper type Conceptual paper

1. Introduction

The housing problem in Cape Town is multi-dimensional and complex, but it generally has three defining features:

(1) there is a significant backlog in the supply of units;

(2) houses are often built at densities that are too low to create the necessary thresholds to viably support city functions; and

(3) many settlements are poorly located in terms of access to economic and social facilities.

These features are common to many South African cities but tend to be more acute in Cape Town where the cost of well-located land, such as that found in the inner city[1], is particularly expensive.

The cause of this problem is mainly twofold:

(1) apartheid planning segregated the city and promoted a fragmented and sprawling city; and

(2) the design of the current state-led housing programme, which aims to address the backlog of affordable housing, often results in poorly located settlements (SERI, 2011). As Bertaud (2009, p. 1) explains:

> […] the current housing subsidy program, by fixing a ceiling cost, a minimum floor area and land use standards, *de facto* establishes the cost of land as the dependent variable. The more isolated is the location for subsidized housing projects, the lower is the price of land and consequently the more financially feasible is the project, all other cost parameters being practically fixed by regulations or practice. Unwittingly, the housing subsidy program, as currently designed, becomes a major factor in the dispersion of population within metropolitan areas of South African cities.

In response to this, a number of planning-related strategies such as the Cape Town Central City Development Strategy (2010) and the City of Cape Town's Densification Strategy (2012) have been put in place. To further aggravate the situation, privately driven, mortgage-financed housing has followed a predominantly low-density, suburban, private vehicle-dominated development trajectory. As a result, Cape Town has a low average population density that tends to increase with distance from the city centre (Turok, 2010). However, despite the policy intentions, very few affordable residential units have been built in the inner city of Cape Town[2]. The key question is why this is the case?

This paper addresses this question by arguing that the above strategies have failed to produce significant[3] well-located housing in the inner city because they are not based on a sound understanding of urban economics and, therefore, do not address the

economic and financial constraints undermining the provision of such housing. For housing to be developed at scale in the inner city, two imperatives must be met:

(1) the final value of new housing must exceed the cost and profits required to develop it; and

(2) this housing must be targeted at submarkets containing a large percentage of the city's households, namely, low- to middle-income households.

However, the low effective demand for housing at market-related prices/values by low- to middle-income households results in the final house values often been lower than the costs and profits required to develop them and, therefore, very little affordable stock is developed in the inner city. As effective demand is a function of household income and this is a function of education, skills and the state of the economy, it is unlikely that the level of effective demand will increase in real terms in the short to medium term. Consequently, any strategy aimed at increasing residential development in the inner city needs to address the factors driving the costs of such developments. For this reason, this paper identifies the main costs associated with developing affordable housing in the inner city of Cape Town. Following this, the paper looks at existing state strategies to increase housing in the inner city and why such strategies have generally failed. Lastly, the paper makes recommendations as to how the cost of developing residential stock in the inner city can be reduced and, hence, made more feasible for developers to deliver at scale.

2. Research methodology

To identify the main costs associated with the development of housing in the inner city, a review of the literature was undertaken to understand the theory of urban economics and to identify the main cost elements in a building's development. Using this as a platform, five inner-city developers were interviewed to, firstly, confirm this broad elemental cost break down. Secondly, to identify what they viewed as the main cost drivers. Thirdly, to attain current building costs and market values so that the value versus cost challenge could be illustrated in the paper and, lastly, to identify any strategies used by the developers to reduce the cost burden.

The interviews and data collection occurred over a six-month period between 2011 and 2012. Actual property development costs and values have been used to illustrate points, where "current" market conditions refer to the period over which the data were collected. While these figures are bound to escalate over time, the relationships and ratios between them are unlikely to change significantly. Financing arrangements and taxation implications have been excluded in the examples to simplify the equations and emphasise the key relationships under consideration. Furthermore, these arrangements and implications will often be specific to the developer and are thus not generalisable.

3. Value versus cost

A development will only proceed when the estimated market value of the completed project exceeds the total development cost, including profit. The relationship between value and cost is therefore critical to understanding what type of development will take place, when it will occur and the form that it will take. In fact, the very reason for conducting a feasibility study is to assess the interplay between these two elements, which are discussed in detail below.

3.1 Value

The market value of a property is the present value of its net income earned over its economic life (Appraisal Institute, 2008). The value of a residential building will therefore be a function of the rentals and selling prices that households are able and prepared to pay to occupy it. Importantly, the market value must include the profit required to compensate the developer for the associated risk of undertaking the development, as well as profit arising from foregone investment opportunities. Lower-income households have limited spending power and, due to the competing needs on their smaller incomes, are only able to spend a small amount on housing. This amount, although large relative to the household's total income, will often be too low to compensate the developer for the costs incurred to supply the units. This can be illustrated as follows:

> Discussions with developers suggest that the current cost of development in the inner city (including profits required) ranges between R15,000/m^2 and R20,000/m^2. The Affordable Land and Housing Data Centre (alhdc, 2010) defines affordable housing as that priced below R500,000. However, to deliver the accepted 45 m[2] unit for R500,000 means that one would have to build at a rate of about R11,000/m^2, which is substantially below current development cost levels. Alternatively, at current development cost levels, for value to exceed total costs, the required selling price per unit will be in the region of R800,000, which is about 60 per cent above the R500,000 al+hdc limit for affordable housing.

The above calculations reveal that, in light of current market conditions, the lack of affordable residential stock in the inner city is not surprising. Although household incomes are unlikely to change significantly in the short to medium term, reducing transport costs can increase the amount allocated for housing, either rental or the servicing of a mortgage bond. The reduction in transport costs can be achieved through improved public transport networks and by developing housing in better locations. However, whilst these measures are important, their ability to substantially affect households' ability to afford higher rentals and purchase prices, and, hence, influence the value-side of the feasibility equation, is likely to be relatively limited. Therefore, in this context of relatively fixed values at the affordable income level, the provision of well-located, affordable housing is only likely to occur if total development costs can be affected. To understand how these costs can be better managed and reduced, it is first necessary to understand what the components are and what drives them.

3.2 Development costs

The costs of development include those relating to land, construction, professional fees, financing, marketing, contingencies and the developer's profit (Cloete, 2005). Table I below outlines the typical cost structure as a proportion of total costs, though these ratios may vary somewhat from project to project.

3.2.1 Land costs. Land costs incorporate the purchase price of the site and related transaction costs, such as transfer fees, legal fees, pro rata rates and taxes, bank valuation fees, bond registration fees, interim interest on the land and professional fees associated with surveying the site. The costs incurred in acquiring the development rights also need to be accounted for in the total cost of land. Thus, to ascertain the amount a developer is prepared to pay for the land, the value of the land will need to be determined. In a reasonably efficient market, and assuming planning regulations

permit, a site will be developed to its highest and best use, where this use is that which, from a set of financially viable, physically possible and legally permissible uses, generates the highest return (McDonald and McMillen, 2011). Therefore, it follows that planning regulations and infrastructure provision can be important determinants of a site's highest and best use.

Sufficient market thresholds and demand (reflected in prices and rentals) exist in well-located areas due to high levels of accessibility and amenity. This enables higher order goods and a more intense built form (usually by way of multi-storey buildings) to be viably provided in these areas (Bertaud, 2010). Furthermore, the price a person is willing to pay for the site will be determined by what returns they can secure from the development (or the utility they can get[4]) net of construction costs. This implies that the land price is a residual value and, therefore, the more profitable the development, the higher the land value will be. Consequently, in well-located areas, land is in greater demand and the ability of the highest and best use to afford the higher land value results in it being able to effectively out-compete other less profitable uses for that specific location, resulting in a higher residual land value (Bertaud, 2010).

One of the factors driving the cost of development in the inner city is the high residual land value resulting from the high demand for commercial space in the area. Basic urban economics (Bertaud, 2010) states that high land prices can be overcome by substituting cheaper capital (vertical floor space) for more expensive land. Therefore, one possible way of making well-located housing more affordable is to build vertically at higher densities. However, this strategy only works if the capital costs are less than the unit cost of land in the area. For this reason, it is important to understand the drivers of the other development costs including those associated with construction, professional services, financing, marketing and the developer's profit.

3.2.2 Construction costs. Construction costs tend to be the highest cost item of a development and include the substructure, superstructure, services, finishes and fittings. Table II details the various elements that typically contribute to overall construction costs (Cloete, 2005). Provision must be made for cost escalations prior to work commencing and for the escalation of works during the construction phase. Also included in the construction costs are the contractor's costs that include both direct costs (material costs, etc.), which tend to be fixed, and indirect costs (the costs associated with

Table I.
Break-down of total development costs

Cost category	(%)
Land cost	20
Construction costs	40-42
Professional fees	6
Financing	6
Marketing	3
Contingencies	10
Developer's profit	10-15
Total costs	100

Cost category	Approximate (%)	Cost elements
Substructure	10	Foundations, piles and basement construction
Superstructure	45	Building frame and the external cladding, which will include reinforced concrete structures, internal and external brickwork, external façade and the roof structure
Services	30	Civil services (water reticulation, sewage, roads, storm-water, street lighting), electrical services (bulk and internal reticulation) and internal services (plumbing, elevators, escalators, air-conditioning and fire protection) Lifts and air conditioning are often large internal services cost items, especially in a multi-storey building
Finishes	10	Floor finishes, wall finishes, ceilings and all other specialist finishes The wall and floor finishes are normally the largest contributors, as ceiling costs can be minimised if the underside of the floor slab is considered an acceptable finish for a hanging ceiling
Fittings	5	Built-in-cupboards, countertops and other such items are usually the smallest contributor to the total building costs as they generally only relate to the kitchen and bedroom
Total	100	

Table II.
Components of total construction costs

managing the construction process), which tend to be variable and account for between 5 and 25 per cent of the total construction costs.

3.2.3 Professional fees. These include the fees and disbursements of all the professionals working on the project. This will involve the project manager, architect, quantity surveyor, town planner, land surveyor, civil/structural/electrical engineer, landscape architect and the interior designer.

3.2.4 Financing. During the construction phase of the project, financing costs will include items such as bank costs (bond registration fee and interim interest payments) and municipal costs (plan approval fee, connection fee, development infrastructure contributions and pro rata rates and taxes). Although financing agreements are not explicitly included in the calculations, it is important to note that the use of financial leverage will mean that in a bull market profits are multiplied, while in a bear market losses are amplified. This highlights the importance of correctly timing the development.

3.2.5 Marketing. This includes, but is not limited to, items such as the agent's commission, market consultant fees, presentation and sales material, advertising and sales offices.

3.2.6 Contingencies. The contingency is effectively a provision to accommodate unexpected design, cost and price changes.

3.2.7 Developer's profit. The developer's profit reflects the current return on investment opportunities with a similar risk profile, where the greater the risk involved,

the greater the expected return should be. While the feasibility of a project is based on an expected return, the actual return is influenced by unforeseen fluctuations in building costs, interest rate movements and the position in the property cycle when the development is brought to the market.

4. Cost drivers

The interview process with five inner-city developers revealed that a number of cost drivers can significantly influence the costs of the elements listed previously. These include the height of the building (which provides an indication of density), building standards and regulations, parking requirements, ground conditions, building type (whether the building is a new build or a redevelopment) and the current position of the property cycle. These factors need to be seen as a collective and there is normally no simple solution to address them individually (Heath, 2001).

4.1 Height

The cost of land is a relatively significant fixed cost associated with constructing a building. Therefore, the more intensely it can be used, the lower the land cost per unit will be and the more affordable a unit can become. How intensely a site is used is generally a function of the height of the building. The costs associated with developing higher buildings will be influenced by factors such as the size of the floor plate, the overall proportion of usable space, the shape of the site/building and the level of the internal services required. It is worth noting that as building heights increase, the floor area efficiency is reduced, as more space is required for services that increase access and flow (including elevators, fire sprinklers and air-conditioning).

The costs associated with the substructure, the superstructure and the external envelope of the building also vary with height and have a major impact on the building costs of the facility (Belniak *et al.*, 2013). As height increases, larger foundations, and in some cases piles, are required to accommodate the additional weight of the building. The building frame might also need to be strengthened to counteract wind forces, although this is only noticeable when buildings exceed 20 storeys, while more basement parking is also required.

In addition to the direct costs discussed above, any increase in height will also have an impact on the rate of construction, as both the management component and the production rate of the contractor tend to rise. However, it is important to note that costs do not increase in a linear manner but rather occur in a stepped fashion, as certain heights trigger different building requirements. For example, if an elevator is required for any building greater than three floors, then from an elevator cost perspective there will be a jump in cost between a three- and a four-storey building but not between a four- and a five-storey one.

Notwithstanding the above, the unit cost of a building will generally decrease as the number of floors increases because the fixed costs will be spread across a larger floor area. This, together with the fact that the larger floor area should generate a greater rental income, means that it is often more financially viable to develop a taller building. This is particularly true of inner city-type environments where the fixed costs, such as land, are relatively high. However, economic theory suggests that a developer should only continue to increase the height of the building until the point that the additional cost (marginal cost) of the extra level is equal to the additional revenue (marginal revenue)

generated by that floor (Glahe and Lee, 1989). However, this is generally not the case, as the height of a building is often determined by planning restrictions rather than optimal economic outcomes.

4.2 Building standards and regulations

While many building standards and/or standards are designed with beneficial health and safety outcomes in mind, they can also have a significant impact on the total costs incurred and, hence, on the financial viability of a building. The costs of compliance are generally passed onto the end-user in the form of higher rents and prices, which means the imposition of such standards is, in the case of affordable housing, an additional sum that increases the financial burden for lower-income households of finding residential accommodation. If the standards are excessive and the consequent costs become too high, the development of affordable accommodation will not be feasible, forcing residents to rent from landlords in buildings that often do not comply with even the most basic of health and safety standards. Clearly, a balance has to be achieved that will allow for the profitable supply of suitable and affordable residential accommodation that is provided at an acceptable level (Remoy *et al.*, 2012).

4.3 Parking requirements

There is usually limited space on a site to provide open, surface parking and the provision of basement parking adds significantly to the costs, often making a development unfeasible. Furthermore, the provision of underground basement parking is often difficult because of the ground conditions and the existing building's age. Depending on the depth of the parking required, an underground parking bay in the inner city is estimated to cost between R100,000 and R200,000 to construct. Assuming each unit needs one parking bay and that on average a parking bay requires 25-30 m[2], almost the same amount of parking space will need to be developed as living space in a standardised 45 m[2] affordable higher-density development. In fact, in some cases parking requirements can reduce the density of a development by up to 50 per cent.

Besides significantly increasing the overall costs, the space allocated to parking does not generate a commensurate income, which results in a lower return. However, without sufficient parking the building will be less attractive and competitive, unless convenient public transport options are available. Furthermore, although car ownership is generally low for lower-income households, parking regulations are standardised across the city, regardless of the development's target market or whether walking or public transport are the main modes of movement. Therefore, in many cases, for a development to be viable, there needs to be a substantial relaxation of, and departure from, current parking regulations. Current initiatives by the city to apply the parking standards in a more flexible and targeted manner should therefore be encouraged and supported.

4.4 Ground conditions

Physical conditions can have a significant impact on the financial viability of a development. While the ground conditions and availability of infrastructure in the inner city is generally not seen as a major constraint to supply, the fact that the ground conditions tend to vary creates a level of uncertainty that is difficult to cost and factor into a feasibility study. Often, a developer will only know the extent of the ground conditions once excavations have begun, as in some areas, the ground conditions are sandy and unstable, while in others, large rock deposits exist. In the latter case, blasting

may be required, which can create several logistical and legal issues. Furthermore, basement areas are subject to high water tables and flooding, which will require pumping on an on-going basis. Developers are often unable to avoid the problems associated with ground conditions, as basement parking is generally a prerequisite in any large development. These costs have to be factored in to the feasibility equation and are usually passed on to tenants and buyers in the form of higher rentals or asking prices.

4.5 New build versus redevelopment of existing buildings

Considering that a significant cost of a building (between 40 and 50 per cent of the total cost) is associated with developing the substructure and superstructure and installing the services, it is not surprising that many developers have attempted to reduce costs by redeveloping existing buildings, where these elements are, in effect, being acquired at a depreciated rate. The physical, functional and economic depreciation of older, existing buildings and the inflation of building costs over time, means that the market value of these buildings is usually below the cost of constructing the same building under current conditions. In addition, many of the civil and electrical bulk services have already been installed and are reflected in the land value, which aids in reducing the construction costs to about 30-35 per cent of total costs (compared to the original 40-42 per cent estimation for a new build). These savings can then be passed on to the end-user through a reduced sales price or asking rental, which could enable the developer to still generate a sufficient return to financially justify providing affordable accommodation in the inner city.

Broadly, there are three types of redevelopment methods, where costs are calculated with respect to providing a R150,000 to R200,000 unit, but will be higher for units in the R250,000 to R500,000 affordable housing range. Importantly, these costs will vary from project to project. The first type of redevelopment is a simple refurbishment of an existing residential building via minor non-structural improvements that take the form of cleaning and painting. Current costs for such a refurbishment amount to approximately R50,000 per unit. The second is similar but also involves a degree of internal reconstruction to convert a building from say a three-bedroom unit to one- and two-bedroom units, which are in greater demand, where the average cost of such a reconstruction is about R80,000 per unit. The last type of redevelopment requires greater modification to convert a commercial or industrial building into residential accommodation. Redevelopment costs are quoted at about R120,000 per unit because significant changes usually have to be made to the internal services (plumbing, electrical, etc.) and partitioning of the building.

Over and above the form the redevelopment takes, as described above, numerous factors will affect the costs of redevelopment. One such factor is the street layout. The size of the average block in the central city is substantial enough to accommodate most development forms but the existing configuration of existing buildings on the block can create design and construction challenges if only a part of the block is being redeveloped. The physical nature of an existing building can impact the cost and viability of a development in a number of ways. The first relates to the structure of the existing building. Fortunately, most high-rise buildings in the inner city are reinforced concrete structures and were, on the whole, initially overdesigned, implying that the building frame could accommodate additional loading even when a number of

supporting walls are removed. Furthermore, lightweight partition walling can be used for most internal walls, which will reduce the overall load bearing on the building.

A second factor is that the costs can vary depending on the material used for the external façade. The problem occurs when concrete or brickwork has not been used, resulting in a large percentage of the external façade having to be replaced. As an example, an office development might have floor-to-ceiling curtain walling, and although this is suitable for an office, it is not acceptable for residential buildings.

A third influencing factor is the floor-to-ceiling height in a building. Too much space is not a problem because it can be solved by adding a suspended ceiling, but a problem arises when the floor-to-ceiling height creates a cramped or claustrophobic environment and structural changes have to be incorporated that could impact the structural integrity of the building.

Fourthly, the shape of the building and the position of the service lift have an impact on the internal space configuration (Remoy *et al.*, 2011; Belniak *et al.*, 2013). Deep spaces require additional lighting, ventilation and passage space. There is also a growing emphasis on installing "green" technologies such as heat pumps, "intelligent" lights, etc. to reduce the ever-rising operating costs. Although such technology can increase the total costs by up to 30 per cent, depending on the technology used, interviews with developers suggest that they are being recouped in the first few years after installation. Additionally, access points and routes of escape relate to the provision of lifts in high-rise buildings, where design factors that have an impact on lifts are waiting time, round trip time and usage.

Lastly, many of the older buildings in the inner city were not designed to accommodate large numbers of parking bays and, therefore, it is not possible to retrofit additional parking into many of the buildings in an efficient manner. For example, where the standard space requirement for a parking bay in a new building would be 25-30 m[2], an older building would require between 30 and 35 m[2] of space[5].

The above constraints can have a significant impact on the redevelopment costs and the form a building assumes. In some cases, the above constraints cannot be a viably overcome and the building would need to be demolished and redeveloped.

4.6 Property cycles

The feasibility of a development also tends to be influenced by conditions in the macro-economy and the position of the property cycle. A rise in building activity tends to place upward pressure on the demand for material and labour, but it is not usual for building cost increases to rise to levels significantly above the inflation rate during a construction boom. As the property market reaches the top of the property cycle, contractors tend to capitalise on the opportunity to increase their profit margins. As the building cycle progresses, however, building costs rise, while the increase in supply of completed units leads to a reversion and narrowing of development profits, resulting in lower levels of building activity. As a result, for the property developer reading the property cycle correctly can have considerable implications in determining the viability of a project. Starting a project too late in the cycle can result in a project reaching the market at a point when the market is oversupplied and values are depressed.

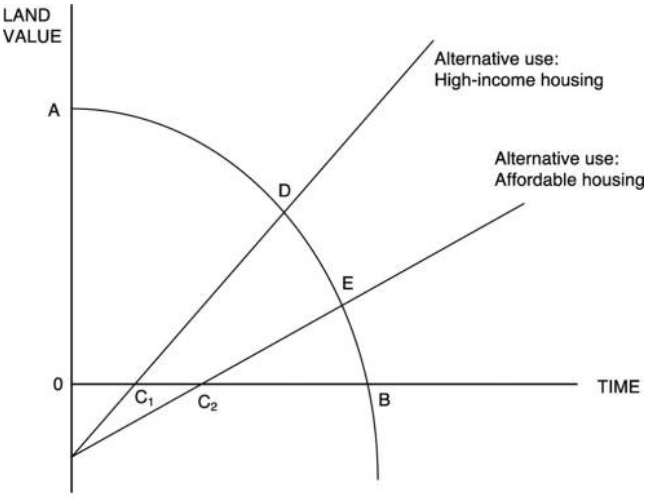
4.7 Costs are independent of specific markets

Many of the costs associated with the construction of residential space are independent of the residential market one is targeting. For example, many of the substructure, superstructure and servicing costs are generally the same, whether one is constructing upmarket apartments or affordable units. In fact, savings can only really be made on land costs and the level of finishes, which make up approximately 25 per cent of the total costs. Therefore, any savings on these two components will often not translate into a saving large enough to make inner city housing affordable at the lower-end of the market.

5. The value versus cost relationship in other South African cities

Unlike Cape Town, Johannesburg and Pretoria have been able to accommodate a certain level of affordable housing in their central cities. The key to this has been the ability of developers to redevelop highly depreciated existing stock rather than having to build completely new developments. This process is illustrated in Figure 1, where, over time, a building's value declines due to physical, functional and economic obsolescence, which incentivises and allows redevelopment of the site:

> A site has numerous potential uses, where the one producing the highest and best use is selected initially (Remoy *et al.*, 2012). At Point A, the newly developed property (say an office block) has a land value that reflects the highest and best use of the site. As time progresses and the building ages, the value of an alternative land use becomes more apparent. At Point B, the value of the land in its current state will have reduced to zero, reflecting the fact that the property fails to provide an acceptable return. This is typical of buildings that have been overrun by slumlords and is in a high state of neglect.
>
> Each parcel of land, however, has various alternative uses to which it could be put. The value of an alternative use for the land will increase over time as market conditions change and the building, in its current use, becomes increasingly obsolete. At Points C, an alternative use



Source: Modified from Harvey and Jowsey (2004)

Figure 1.
The timing of redevelopment showing the relationship between residual land value and regeneration

(excluding demolition costs) starts showing a positive value, but it is not until Point D that the highest-valued alternative use of the property will provide a land value that equals that of the existing property's function. Therefore, it is at this point that the potential for redevelopment of the site exists. As a result, Point D represents the point at which an alternative use (say higher-income residences) can start competing for the site. However, with time and assuming that no other uses have been able to compete for the site, the current use depreciates further until Point E. At this stage, the value of the property in its existing use has declined to a level that the development of affordable housing becomes possible.

Land in Johannesburg and Pretoria was able to decline to Point E in Figure 1, which made it feasible to be redeveloped into affordable housing stock. This situation was further assisted by the fact that many of these inner city buildings were already residential in nature and, therefore, only incurred costs for minor refurbishments, as described above. In Cape Town, however, due to the high physical amenity value of the inner city and the numerous urban management initiatives undertaken, the existing office and limited residential stock only declined to Point D, where it was feasible to redevelop it into higher-income, higher-density residential units.

The difficulty of converting the B- and C-grade office space in Cape Town inner city into affordable residential units is highlighted by the following calculation:

B- and C-grade office space in Cape Town's inner city fetches a net rental of between R45/m^2 and R50/m^2, translating to a value of about R5,760/m^2 at a market capitalisation rate of 10 per cent (cost of capital). However, to deliver a 45 m[2] apartment for R500,000, the costs must be limited to R11,100/m^2. That implies that after the acquisition of the property, only R5,340/m^2 remains to cover the costs of redevelopment, an amount that is substantially short of current market development costs. Thus, the only way that the redevelopment from lower-grade office space to affordable housing could be viable under these market conditions is if significantly smaller units are supplied.

The dynamic of developing smaller units to make a project viable is in fact playing itself out in Johannesburg and Pretoria, where the values of the inner city office and residential stock have increased due to urban management initiatives and successful conversions. This increase in value of the existing stock is causing developers to begin delivering residential units as small as 12-15 m[2]. One way in which developers have overcome the problem of the high costs of conversion is by creating shared ablution and cooking facilities and using internal dry walling. Ordinarily, the market would reject these measures and developers would find it difficult to find tenants prepared to live there; however, there appears to be some scope in student accommodation, as this market is generally less discerning about their accommodation requirements and place less emphasis on parking needs.

With this in mind, an alternative opportunity may exist to deliver larger and more affordable units outside of Cape Town's inner city on the Voortrekker Road and Main Road corridors of Maitland and Salt River. Although not part of the inner city, these outlying locations provide the opportunity to deliver adequately sized affordable units without compromising on internal facilities. If old, low-rise buildings can be acquired at around R3,000/m^2 and redeveloped for approximately R6,000/m^2, this would result in a total development cost of about R9,000/m^2 or R400,000 for a 45-m[2] unit. It must be emphasised though that redevelopment at this rate is only possible if the building does not require additional plant installations, such as elevators. Moreover, due to the lower land costs in these corridors, it may be possible to construct new buildings on vacant

sites for about R11,500/m^2, provided that the land can be acquired at around R1,500/m^2, resulting in the construction of a 45-m[2] unit for R520,000. It should be noted that the redevelopment costs in corridor areas tend to be lower than in the inner city as the buildings are generally lower rise and do not need the same level of plant installation and upgrade.

6. Methods to overcome the value versus cost challenge

6.1 Current state response

The challenges outlined above have meant that there has been a relatively limited provision of affordable, higher-density housing stock in well-located areas in South African cities, especially Cape Town. In response to this, national government has identified numerous areas for intervention.

The first has been the call for affordable housing to be included in new private sector residential developments. However, the key to making inclusionary housing viable is to generate above-average returns on a portion of the development, generally the commercial or higher-end residential stock, so that the developers' overall required return is attained, despite the inclusion of lower-yielding affordable units. In this context, inclusionary housing will need to be linked to greater residential demand for middle- and higher-income housing. This poses a problem in the South African context, where only a small portion of the population can fuel market demand for higher-income units, thus limiting the potential reach of this sort of inclusionary housing policy. Furthermore, tenants and buyers have a choice of where to locate and invest and are unlikely to locate in an inclusionary development with its real and perceived negative externalities when they could locate elsewhere at a similar price.

A second intervention has seen government release state-owned land, often at reduced prices, in an attempt to facilitate the provision of well-located, affordable housing. However, this has been met with limited success, as onerous conditions are often imposed on the new holder in return for acquiring the discounted land. Additionally, the release process is often cumbersome, while the cost of land relative to total costs is small. Another aspect that is characteristic of state land release programmes is that the state usually does not want to sell the land and often wishes to "dispose" of its land through long-term lease agreements that are designated for a specific use. Discussions with developers suggest that if this is done, the leasehold period should be for a relatively long period, in the region of 50 years or more, matching the long-term nature of physical property. The first buyer will need a minimum of 10 years to amortise the loan taken out on the development and requires that after that time there be sufficient residual value in the property to induce a second buyer to invest at a price that will generate an acceptable profit. Another problem with the leasehold approach is that the developer is unable to use the land as security to raise any finance required. Moreover, the state often has a plethora of social objectives that it imposes on a development that uses public land. These social objectives, whilst often important, can place significant strain on the economic viability of a development and can serve to reduce the number of suppliers of new affordable housing stock, with it limiting competition and favouring large, established developers who can provide the necessary development capital for the project.

As a third intervention, the state has increased the supply of affordable housing by creating and registering Social Housing Institutions (SHI's) that provide high-quality,

affordable rental stock in well-located areas. The SHI's have been successful at reducing the stigma of social rental housing, but due to the highly accessible locations, size and quality of the units, they rely heavily on state subsidies to deliver these units. For these reasons, it is questionable whether the SHI's will be in a position to deliver affordable housing in well-located areas at scale.

As a final point of intervention, national government has attempted to boost the purchasing power (and, hence, increase the value side of the equation) of lower-income households through a variety of financial assistance programmes such as the Finance-Linked Individual Subsidy Programme (FLISP). Demand-side measures such as rental subsidies would help to afford higher rentals; however, these programmes have garnered mixed success due to budget constraints, administration issues and poor conceptualisation[6] (Galster, 1997; Yates and Whitehead, 1998).

Consequently, the state has largely failed to adequately address the dynamics of development value and cost, which then raises the question of how the affordability issue can be addressed and overcome. A number of suggestions are proposed and detailed below.

6.2 Proposed alternative interventions

The first alternative intervention is to boost the value side of the value–cost equation by capitalising on any transport savings that result from better-located developments, which can be in the form of increased asking prices or rentals (Goodall, 1972). The second intervention concerns land. Where it is expensive, it should be substituted wherever possible with cheaper capital inputs by developing to higher densities (Goodall, 1972; Glahe and Lee, 1989). This will allow the developer to efficiently combine and minimise the input factors of land and capital costs until the lowest total cost combination is reached.

Unfortunately, however, the ability to reduce costs by substituting capital (building and construction) for land is reduced by the higher costs of construction. For this reason, it is important to use interventions that reduce construction-related costs, where high capital costs can be partially countered by households consuming less floor space. This is illustrated as follows:

> Assuming an average affordable household income is R9,250 and that this household can reasonably afford to allocate 25 per cent towards housing, then it will pay R2,300 per month on rent. At a R15,000/m^2 development cost and a required return on capital of 10 per cent, a developer would need to earn a net income of R1,500/m^2 per annum. However, assuming 30 per cent operating costs and a building efficiency of 85 per cent, then a gross income of about R2,500/m^2 per annum is required. This translates into about R208/m^2 per month. At this rate, the household can afford to rent about 11 m[2] (a small to medium size room). It is important to note, however, that at R208/m^2, this household would be able to out-compete most other uses (e.g. offices) wanting to locate in this space. Alternatively, the same outcome can be achieved by having multiple rent payers occupying larger spaces.

The need to occupy smaller spaces in well-located areas is not unique to South African cities but is common in most major cities internationally, where the square metre cost of well-located space is expensive. Therefore, any regulation, norm or practice that restricts the provision of smaller spaces or multiple occupancy undermines the ability of lower-income households to locate in highly accessible areas. The important caveat to this proposal, however, is that the provision of smaller units and multiple occupancy has

to be accompanied by excellent property management and the provision of sufficient quality public amenities.

The above example leads to the fourth intervention of reducing the total development costs so that additional floor space can be viably produced and consumed for the same required return, rental and income level. Therefore, any interventions that reduce the costs of land and construction should be encouraged. With respect to land, these could include facilitating the release of public land, streamlining development rights and the transfer processes and ensuring the availability of requisite infrastructure. Development cost interventions could include relaxing parking standards, accounting for the cumulative effect of onerous health and safety standards on costs, and apposing any cartel-type activities on tender processes and on key construction input costs such as steel, cement and labour.

Following on from the above intervention is the need to provide affordable housing through the redevelopment of existing building stock, as discussed above. This will allow significant savings to be passed on to lower-income households. It is a curious reality that the current efforts to provide affordable housing are being achieved by using the most expensive method, namely, new builds. Not only are existing buildings cheaper but they also make up the bulk of the built stock in the city and, therefore, represent the best opportunity to deliver affordable housing at scale. However, this intervention can only be adopted if there is a shift in thinking in what constitutes residential accommodation, as it might necessitate smaller units and, in some cases, shared facilities (kitchen and ablutions).

Lastly, the ability to deliver affordable housing at scale will be significantly boosted if more attention is paid to the benefits of filtering existing residential stock through a quality and income hierarchy. In this light, the interplay between value and cost suggests that to maximise the supply of housing stock and increase the functionality of the secondary housing market, new builds should target those with incomes able to afford the slightly higher price of better quality housing. In such a way, these households will free up stock at the lower end of the market that has depreciated to more affordable levels, while themselves climbing up the housing ladder. While the concept of filtering has its limitations and has been criticised accordingly, its absence from the package of housing interventions in South Africa is unfortunate as the process still has an important role to play in the widespread provision of affordable housing (McDonald and McMillen, 2011).

7. Conclusion

Housing supply deficits in Cape Town, and indeed South Africa, are both a cause and consequence of a largely inefficient housing system. While housing policies are driven by demand and supply side interventions, policymakers in South Africa have tended to apply a fairly narrow arsenal of supply-side and demand-side instruments. These have largely been concerned with Urban Development Zones and subsidies that perpetuate the type of housing delivery that we have seen in recent years. To promote increased supply of accessible and more affordable inner city housing developments, more targeted alternative interventions will need to be considered. Some of these interventions would need to be supply-side in nature, while others (such as reducing transport costs) would impact household affordability on the demand side. Affecting land prices, bulk requirements, parking ratios and densities could prove as valuable

interventions in stimulating private-sector interest in affordable housing development. Such measures would, however, require municipalities to assume a different role that would in all likelihood require a more hands-on approach based on a clear understanding of property market trends and development dynamics.

Notes

1. The inner city includes the central business district and immediate suburbs adjoining it.
2. It should be recognised that the inner city does not represent the only well-located sites in Cape Town. Other locations do exist that also provide good access to transport and economic opportunity.
3. Some middle- to upper-income housing development has occurred in the past 10-15 years, but it is limited in scale and is not targeted at the bulk of the city's population.
4. This paper presents the neoclassical theory from a profit maximisation (income) perspective, but the same principles would apply if presented from a household utility perspective.
5. This includes a portion of the driveway, turning areas, ramps, etc.
6. For example, the FLISP subsidy operates on a sliding scale where those most likely to be able to acquire a mortgage loan, receive the lowest quantum of subsidy.

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