Introducing the use of assessment based indicators of capital and site value to measure the economic benefits of urban renewal

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Abstract

Urban renewal describes the up grading of government housing stock which is considered obsolete in terms of meeting the needs of existing tenants. Such stock may or may not be in poor physical condition but as an asset class has almost certainly shown significant depreciation. Projects associated with urban renewal are often undertaken as public private partnerships with considerable on-selling of homes either to former tenants or to new residents. This feature of urban renewal is taken as a positive indication of success as such development seeks to improve the 'liveability' of an area by reducing concentrations of public housing and creating home purchase opportunities. The fostering of home ownership also seeks to encourage the maintenance of asset values and the creation of sustainable communities. Economic success in terms of asset value is also important to ensure continued involvement by the private sector.

Typically the economic success of urban renewal has been based on evaluating changes in house prices, often using median prices or indices after the development has finished. However indicators that measure the increase in values in a renewal area compared to surrounding spatial areas may work against project objectives to increase or maintain high levels of affordable housing. As well a set of property transactions for a suburb typically represent a "sample of convenience" of the total housing. It is rarely a representative sample and often suffers from significant sample selection bias. Over very large samples (e.g. whole cities) the bias tends to balance out, but in the smaller locations often associated with urban renewal projects can be quite extreme. Also certain sectors of the housing stock will often be overrepresented in transactions. This paper introduces a new method to measure the economic impact of urban renewal by using government assessments (valuations) as against sale prices to investigate the distribution of property values after development and shows that such an approach can provide a better indication of "success" in terms of providing home purchase opportunities across a spectrum of purchasers as well as ensuring the economic viability of the asset class.

Keywords: urban renewal, economic indicators, assessed value

Introduction

Urban renewal describes the up grading of government housing stock which is considered obsolete in terms of meeting the needs of existing tenants. Such stock may or may not be in poor physical condition but as an asset class has almost certainly shown significant depreciation. Projects associated with urban renewal are often undertaken by government as public private partnerships with considerable on selling of homes either to former tenants or to new residents. This feature of urban renewal is taken as a positive indication of success as such development seeks to improve the 'liveability' of an area by reducing concentrations of public housing and creating home purchase opportunities. The fostering of home ownership also seeks to encourage the maintenance of asset values and the creation of sustainable communities (Randolph, 2006). Economic success in terms of asset value is also important to ensure continued involvement by the private sector.

In Australia the evaluation of urban regeneration has been dominated by benefit cost analysis (Stubbs & Sorer, 1996) especially in states such as New South Wales (Beer et al 2005). In states such as Western Australia (Walker, 2000) and in South Australia (SA) attempts have been made to include a greater level of social and community evaluation into the process both through survey and focus groups (Spiller Gibbons & Swan, 1999; Randolph & Judd, 2000; 2001; 2006). Spiller Gibbons and Swan (1999) suggest that a performance orientated approach can be effective in providing quality control in service delivery, and, as an example of best practice, can provide a consistent information base for managers and consumers. Examples of performance based studies in SA include those for Rosewood (Social Policy Research Group 1997) and for Mitchell Park (URPS 2006), two of the earliest urban renewal projects in SA, and for Westwood (Beer et al 2005), one of the most recent urban renewal projects in SA, and one of the largest in Australia. In each of these studies it has been important to identify performance indicators that have a clear purpose and indicate whether clearly defined outcomes have been achieved. To this end it is important to have access to a consistent set of data items which can be easily and regularly translated into indicators of performance in terms of urban renewal. This paper takes up this government requirement by suggesting a performance indicator that is able to be consistently measured over time and is based on a set of readily identified data items. However the validity of the overall objectives attached to government sponsored urban renewal such as improved economic opportunities for the local community, a better choice of housing, capital asset growth and sustainable neighbourhoods are not under discussion. Nor is there any attempt to put these objectives within a neo-classical theoretical framework as the government is not profit seeking. Rather this paper recognises urban renewal as a government imperative and from this position proposes an alternative measurement of success for one objective common to all the urban renewal projects so far undertaken in Australia; that of improved economic viability for the local community.

Typically the economic success of urban renewal has been based on evaluating changes in house prices, often using median prices or indices after the development has finished. However indicators that measure the increase in values in a renewal area compared to surrounding spatial areas may work against project objectives to increase or maintain high levels of affordable housing. As well a set of property transactions for a suburb typically represent a "sample of convenience" of the total housing. It is rarely a representative sample and often suffers from significant sample selection bias. Over very large samples (e.g. whole cities) the bias tends to balance out, but in the smaller locations often associated with urban renewal projects can be quite extreme. Also certain sectors of the housing stock will often be overrepresented in transactions. This paper introduces a new method to measure the economic impacts

of urban renewal by using government assessments (valuations) as against sale prices to investigate the distribution of property values after development and shows that such an approach can provide a better indication of "success" in terms of providing home purchase opportunities across a spectrum of purchasers as well as ensuring the economic viability of the asset class.

Literature Review

Evaluating the success of urban renewal relies heavily on the use of performance indicators although their selection, quality and application have been questioned (Rogers & Slowinski 2004). Performance indicators in terms of urban renewal have been defined as measuring tools that can be used to evaluate an issue or condition over time. Spiller, Gibbons and Swan (2000) have described a performance indicator as "standardized information by which progress towards efficiency and effectiveness objectives may be measured". In practical terms most urban renewal projects seek to replace obsolete homes with a better choice of housing forms more suitable to the local demography, increase levels of home ownership, offer a better mix of private and public rental housing and promote affordable house price levels. The redevelopment and subsequent shedding of public housing should result in a largely self funded capital housing program by government (SA DF&C 2005) who are therefore keen to ascertain the economic success of such projects.

Performance indicators are only one of three common evaluation methodologies applied to urban renewal projects. Rogers and Slowinski (2004) have identified these as economic analysis, usually incorporating some form of benefit cost analysis, the qualitative approach, which uses surveys to measure levels of client satisfaction after project completion and finally the managerial approach, which uses performance indicators to measure progress against project objectives. While such measures have been described by Randolph (2000) and Randolph and Judd (2001) as often "patchy" and both poorly developed and implemented assessment of urban renewal projects is considered a necessity for policy evaluation.

As discussed earlier a common indicator of economic performance is that of change in house price. In the UK Bramley et al (2007) concludes that government sponsored urban redevelopment may increase house prices through improved social and environmental outcomes especially if associated with an increase in the level of home ownership within a neighbourhood. Zielenbach (2003) suggests that in the US the mix of private dwellings and rehabilitated public housing may improve property values with positive ripple effects on surrounding areas. However such increases may in turn work against project objectives in that what was once affordable housing has now been replaced by more expensive homes that are out of reach for some residents. Yates (2001; 2006) has recognised that house prices change as the result of urban renewal and can give rise to an 'uneven' result in terms of housing affordability. Forster (1991; 2006) too considers the potential of urban renewal to increase social polarization as government processes of urban regeneration and economic forces cause house price appreciation and loss of affordability. As such governments have the problem of needing to ensure capital growth within their project areas in order to maintain their programs but are also anxious to know the extent to which housing affordability may have been compromised by any new development. In a diverse community in which residents are encouraged to live long term, even as they become upwardly mobile, there is therefore a need for a diversity of stock that includes both affordable and "aspirational" housing.

The paper seeks to address this issue by proposing an alternative to the commonly used indicator of median price which may in fact mask the opportunities that exist for both low and higher incomes groups within a renewal area. The indicators proposed in this paper reveal that the objectives of affordable housing and that of aspirational housing may both be achieved within areas of urban renewal.

Method

The indicators introduced in this paper will add to the existing pool of indicators that are available to authorities wishing to assess urban renewal projects against their objectives. These particular indicators can be used to address two economic objectives; the diversity of housing that result from the renewal and the relative improvement in "added" value to properties above the site value. They are appropriate for these uses and none of the existing indicators perform this role adequately. The indicators used in this paper to measure economic outcomes are a capital value diversity ratio and a capital value to site value ratio. A comparison is made between the capital value diversity ratio when based on assessed capital values and on prices from sales transitions. For this paper an example is used and this is based on the Marion Local Government Area (LGA) in Adelaide, South Australia and in particular the suburb of Mitchell Park. A major portion of Mitchell Park was a part of an urban renewal project lasting almost 20 years from the mid 1980's.

Each indicator makes use of the Valuation List from the Valuer General and in particular uses assessed capital and site values from 1986 to 2006. Such data is not widely used in the assessment of urban renewal projects and the paper in part considers the advantage of using this type of data over simple transaction prices that is more widely adopted.

An important aspect of all indicators used in the review of urban renewal projects is that they should be easy to calculate, reproducible over time and easy for policy makers to understand. These ratios are aimed at meeting these requirements.

Capital Value Diversity Ratio using Assessed Capital Value

This ratio uses the $90^{th}/10^{th}$ percentile value ratio as in indicator of change in housing diversity, measured through assessed capital value but is also applied later in the paper using actual transaction prices. This indicator is particularly useful in evaluating the development or redevelopment over time when housing value diversity is of interest. In most urban renewal projects the location is characterised by poor quality housing of lower values (compared to surrounding locations) and often with little diversity. This is particularly true in areas originally developed by housing authorities with standardised housing. In the redevelopment process, median residential property values will normally increase as housing stock is revitalised, social and economic diversity improved and the community becomes more liveable.

The traditional method to evaluate the affect on the housing market following a renewal is to investigate changes in values using median transaction prices or price indices. However, simply tracking median price may suggest that affordable housing in an area has all but disappeared to be replaced by more expensive housing. This indicator of housing value diversity seeks to compare values at each end of the value spectrum to give a more accurate indicator of the level of affordable housing retained within an area after renewal. While the renewal authority may have an objective of increasing value levels in the area, a complimentary objective is likely to be to increase the range or diversity of housing choices and values in

order to ensure that both affordable and aspirational housing is included. In these instances such an indicator is useful.

The CV diversity ratio is calculated as the ratio of the 90th to the 10th percentile and can be applied to either sale prices or capital values

$$CV Diversity\ Ratio = {CV_{90thPercentile}}/{CV_{10thPercentile}}$$

Where $CV_{90thpercentile}$= the 90th percentile of the distribution of capital values or prices

$CV_{10thpercentile}$= the 10th percentile of the distribution of capital values or prices

The 10th and 90th percentiles are useful indicators of the outer bounds of the distribution of values. There are two common methods used to measure distributions in terms of the central tendency and the dispersion. The mean and standard deviation are the most commonly used, however the median and percentile ranges are preferred in situations where the distribution may be skewed or where single point values (one or two high or low values) lead to bias in the parameter estimates.   Traditionally, median rather than average house prices are used for this reason and on this basis percentile ranges are preferred to the standard deviation as a measure of dispersion. Other typical measures of distribution are less effective. The distributions skewness does not assist in understanding the diversity of the distribution but may be useful if an objective were to change the skew in values - say from primarily low value to primarily high values. The kurtosis may be useful in describing if the distribution is relatively "peaked" or "flat" but does not in itself measure the diversity. Also the dollar values of the 10th and 90th percentile and the overall ratio are easy to understand by a broad range of policy makers while statistics such as the standard deviation, skewness and kurtosis are not. An important consideration in the development of these indices is to allow a wide range of policy makers to understand the measures.

Figure 1 illustrates the concept of these points. Values are sorted from lowest to highest. The middle value is the median or the 50th percentile. Half the values or 50 percent are on either side. The 10th and 90th percentiles occur at the point where the bottom and top 10% of the values lie. Selecting these points will remove any single high or low values that might be unusual and should capture a good estimate of the value range that includes 80 percent of the housing.

Figure 1 - median and percentile concept
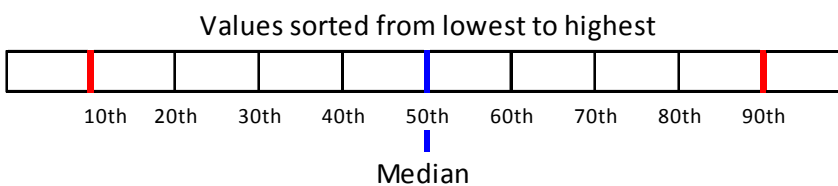
The ratio of the highest to the lowest indicates the approximate difference between high and low valued housing. A ratio of 2 would indicate that property at the 90th percentile is twice the value of the lowest percentile.

CV/SV Ratio

Both capital values (CV's) and site values (SV's) are established each year in South Australia for all properties. The CV to SV ratio can be calculated for all properties as follows.

$$CVtoSVRatio_i = {CV_i}/{SV_i}$$

Where CV=the Capital Value of the ith property

SV=the Site Value of the ith property

This ratio cannot be calculated from transaction prices as the sale price will represent either the CV (for an improved property) or the SV (for the sale of a site). The two can not occur simultaneously. While it is technically possible too use a mix of transaction prices and assessed values (say for the SV in the case of improved properties) there seems little point in this as it still requires at least one assessed value and by using both assessed values, rather than an transaction price and an assessed value there is likely to be less overall bias.

Where the CV and SV are similar the ratio will be around 1.0 [1] indicating that the improvements add no value, the property is only "worth" the value of the land and a prime re-development site is indicated. Newly developed properties generally have ratios well over 2.0; the improvements add at least the same amount as the site value. However over time the land tends to appreciate while the buildings depreciate and the ratio moves towards 1.0. The CV/SV ratio may be plotted to find locations where properties are approaching the ratio of 1 and hence becoming suitable for redevelopment.

The CV/SV Ratio can be summarised over spatial areas by finding the mean or median (percentiles would also be possible as in the previous indicator) and these can be used to show the proportions of properties at the redevelopment stage. For consistency the Median CV/SV Ratio is calculated in this instance. Over time we expect to see the CV/SV ratio decrease until such time that the area becomes generally "ripe" for redevelopment because the site values have risen to close to capital values. At this point developers will look to demolish most existing buildings and redevelop, often at higher densities. If urban renewal is effective, locations where the CV to SV ratio are low (and falling) will show improved CV to SV ratio's as older properties are redeveloped and further private development is encouraged through an improvement in local amenity and liveability.

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[1] Technically it is possible for the ratio to drop below 1 if the improvements on the site encumber value above the site value. However this should not occur in practice as the notional value system used in South Australia should prevent this from occurring.

Results

Capital Value Diversity Ratio using Assessed Values

Figure 2 shows the distribution of capital values for residential properties in Mitchell Park in 2002.

The 10th and 90th percentiles appear roughly where the number of instances is declining rapidly and these are reasonable measures of the likely upper and lower limits of most property values. The median, 10th and 90th percentiles are then plotted over time to give an indication of how values have increased or decreased but also indicates the dispersion of values over time.

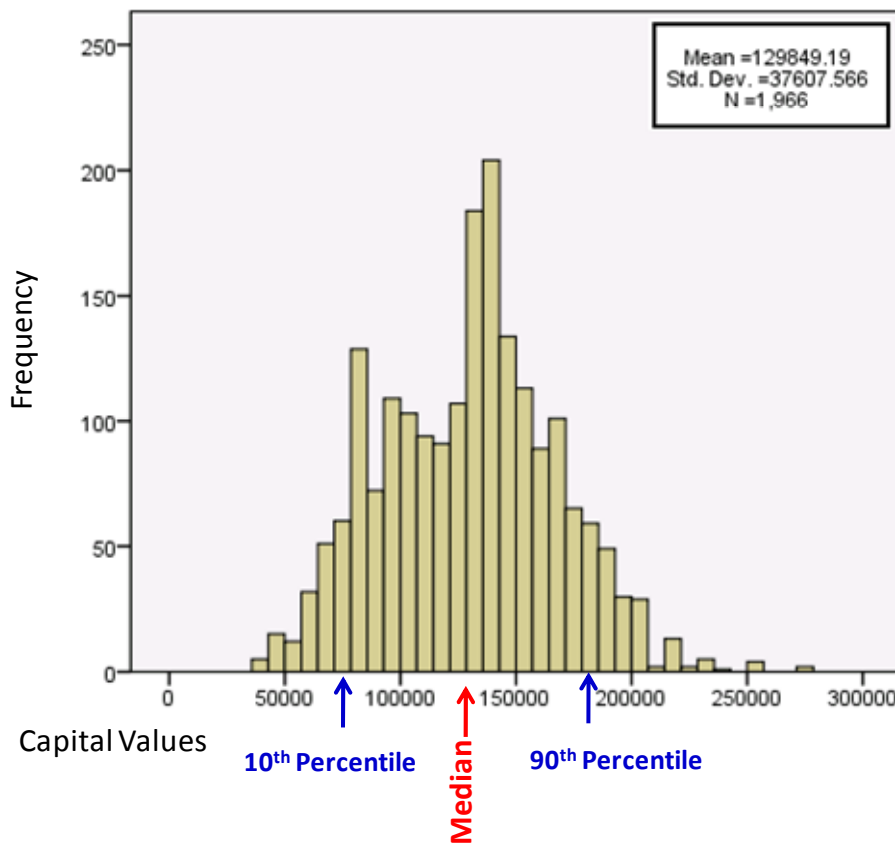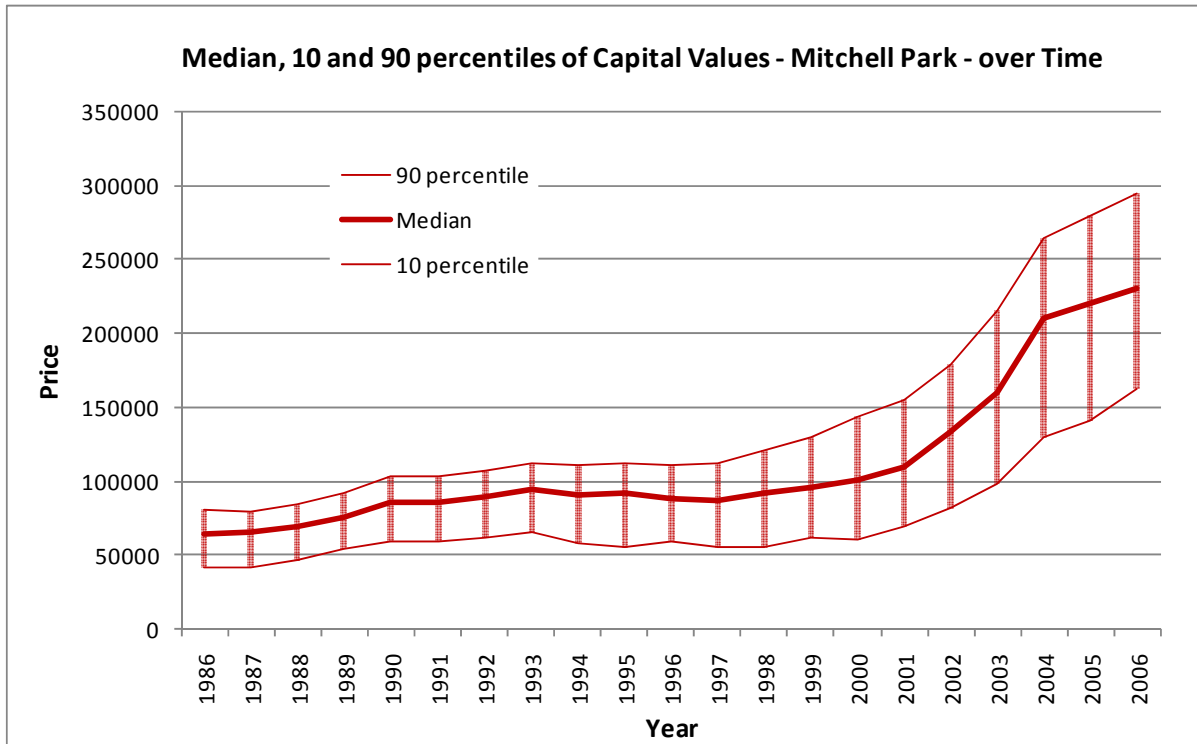**Figure 2 - Distribution of property values in Mitchell Park 2002**

Figure 3 indicates this relationship for Mitchell Park over the period of the urban renewal project.

**Figure 3 - Median, 10th and 90th percentile ranges of capital values in Mitchell Park 1986 to 2006.**

Values increase over the time frame mainly due to market forces. The dispersion from the 10th to the 90th percentile increases but this is mainly due to the overall increase in median values. However around 1994 there is a noticeable decrease in the lower 10th percentile which remains reasonable consistent until about the year 2000 after which the all indicators increase markedly. At this point the diversity in values is maximised and a wider range of residential property values is realised.

This will be highlighted in the capital value diversity ratio which is most useful when compared to a broader area (e.g. a local government area-LGA) or to similar surroundings areas of the same hierarchy level. This is illustrated for Mitchell Park in Figure 4. The chart shows that the LGA of Marion has slowly decreased in the diversity of house values over the 20 your period probably due to the development to large tracks of newly subdivided land with similar and mid-priced housing. The adjacent suburb of Marion was fully developed at the start of the period and would have experienced only small infill redevelopment over the time period. The result is a very stable diversity ratio fluctuating between about 1.6 and 1.8. Marion (suburb) reflects a low diversity of housing values which is stable over a long period of time. By comparison Mitchell Park has shown significant changes in the diversity of residential values. During the 1980's the diversity of values fell during the initial stages of renewal which would have involved more demolition than construction. The period from 1993 to 2000 is clearly evident as increasing the diversity of residential values and moving the suburb from lower than typical to above normal levels of diversity. Following 2000 the levels of diversity have decreased in line with the LGA average.

Figure 4- Capital value diversity ratio - Mitchell Park - 1986-2006 - Based on capital value assessments
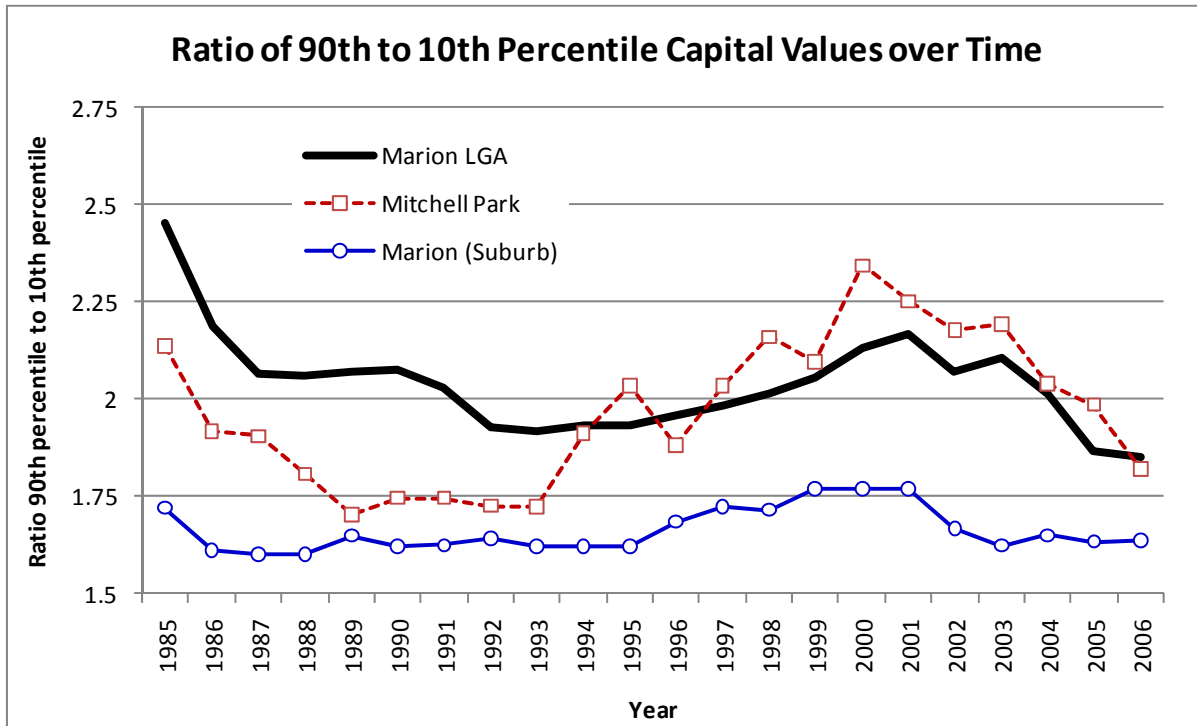
The illustrations so far have dealt with capital assessed values. In South Australia all properties are assessed with a Capital Value (full open value including improvements) and a Site Value (the implied value of the site but not including improvements on the land) every year. The advantage of this is that all properties are included. This will be particularly important in areas where there is a high percentage of public housing which does not enter the property market. There are also advantages of using the population of housing rather than a sample. However assessed capital values are not available in all locations (several Australian States do not produce Capital Values) and may not be easy to obtain. Hence under this circumstance property transaction data may be used to measure capital diversity.

Capital Diversity Ratio using Transaction Data

Property transaction prices (from actual sales of properties) have the advantage of being easily obtainable in many locations. Being market data this also overcomes issues of assessment bias that may occur in capital values. It is reasonable to consider the assessed values to be valuer's interpretation of value based on the transaction price data. However in practice, capital values will often lag the market by different amounts and some systematic bias occurs across years, e.g. they may be overly conservative one year and then need to "catch-up" in later years. Market sales transactions are current market prices which give a more direct link to the property market.

While transaction prices have the advantage of being easily obtainable and market direct, they also have a series of disadvantages. The set of property transactions for a suburb represent a "sample of convenience" of the total housing. It is rarely a representative sample and often suffers from significant sample selection bias. Over very large samples (e.g. whole cities) the bias tends to balance out, but in smaller locations it's quite extreme. This is very noticeable in the fluctuations of median prices at suburb level, which can vary dramatically from one period to the next.

Also certain sectors of the housing stock will often be overrepresented in transactions. Public and association housing rarely transacts; older property owners tend to hold properties longer; "starter

homes" which are generally most affordable transact most often and this is magnified during periods of first home owner incentives. Figure 5 shows the capital value diversity ratio using sales transaction prices for Mitchell Park over the same period as for assessed capital values that's were used in Figure 4.

Figure 5-Capital value diversity ratio - Mitchell Park - 1986-2006 - Based on sale (transaction) prices
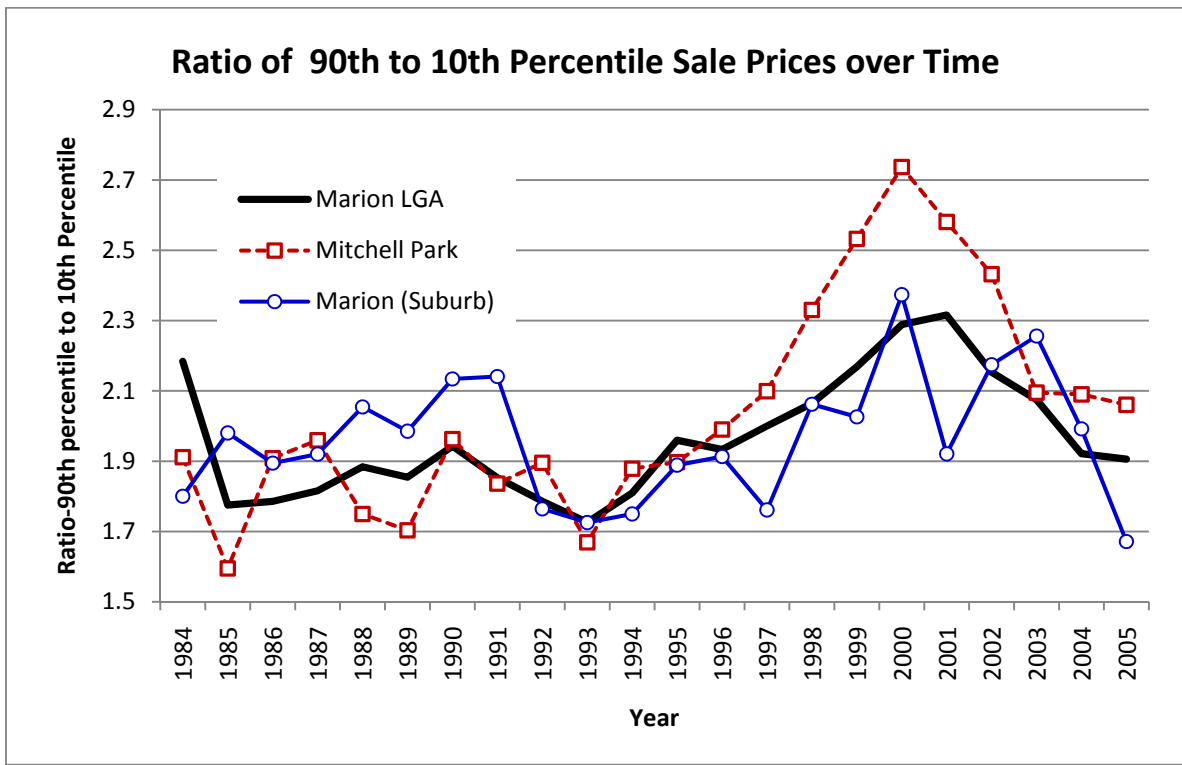

Several of the issues discussed are clearly evident in this chart. The ratio fluctuates greatly particularly in the suburb of Marion. This is the smallest of the sets of transactions, often as few as 50 per year. Marion (LGA) is less "lumpy" as it has around 1700 to 2000 transactions per year. Mitchell Park generally has a little over 100 transitions per year and lies somewhere between the other two. The chart also shows that marketed housing stock is more consistent in terms of the diversity ratio in each location. The diversity of houses that sell in the suburb of Marion is significantly greater than the diversity of the total housing stock (comparing the result in Figure 4 and Figure 5). A similar pattern emerges about the effect in the diversity in of prices in Mitchell Park. Following the major re-construction phases of the urban redevelopment within the suburb over the second half of the 1990's, the diversity in prices increases above the line of the surrounding area and the LGA as a whole. By the end of the redevelopment the price diversity is still above the LGA.

As an indicator of the change in diversity of housing prices the use of sales prices seems inferior to the use of assessed capital values. The results are more "lumpy" and are less reflective of the population of housing stock in the area. Where possible assessed capital values should be used in preference to market prices, however the use of transaction prices may be suitable if assessed capital values are not obtainable.

CV/SV Ratio

This section considers the results when using the CV to SV assessment ratio. Figure 6 indicates the median CV/SV ratio for Mitchell Park, the Marion LGA and the adjoining Marion suburb.

Figure 6- Median CV/SV Ratio - Mitchell Park - 1986-2006 - Based on capital and site value assessments
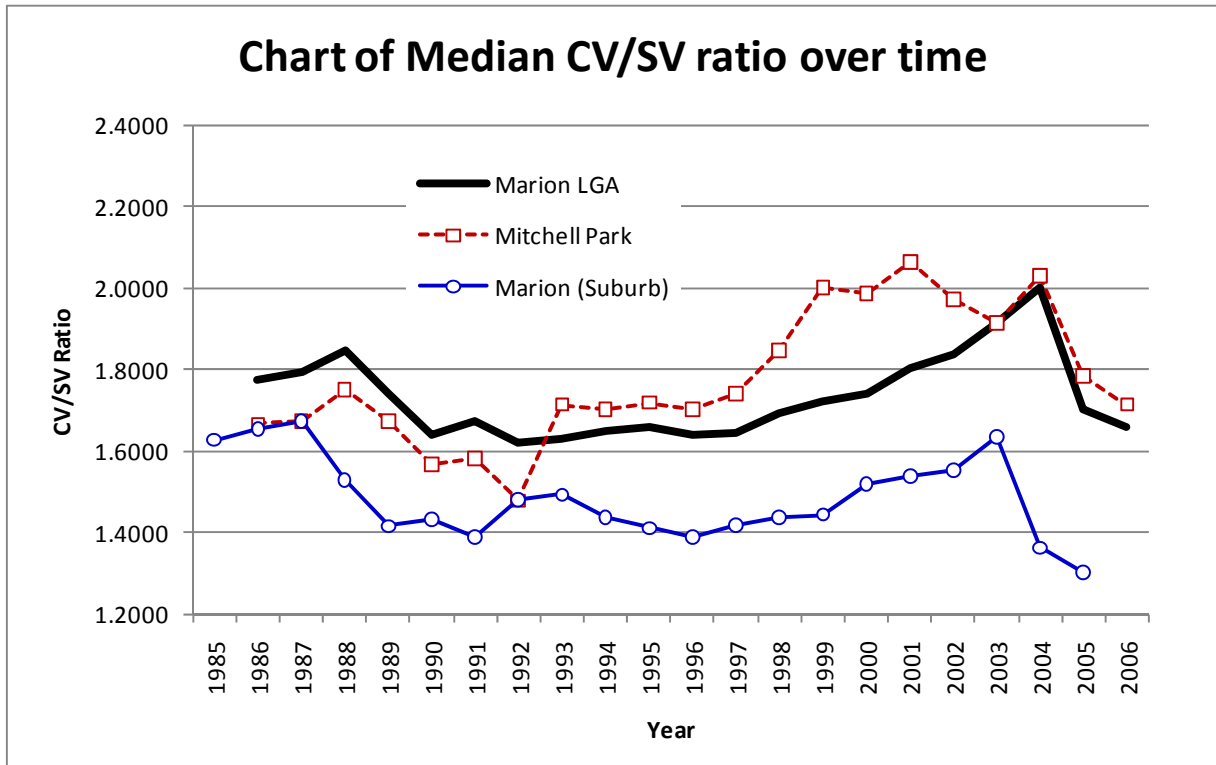
The chart shows how the CV/SV ratio increases during the major construction period of the re-development (1993-2000) particularly compared to Marion suburb which has an overall downward trend. Some assessment bias is evident in this chart. Through the late 1990's and until 2003 the ratio actually increases and this is probably due to very conservative estimates of site values. Following a broad evaluation of site values across much of Adelaide the bias was addressed in 2004 (site values were moved closer to market values and hence the ratio dropped dramatically in all locations) and ratios moved down towards the expected level. Notwithstanding this bias which is evident across most of Adelaide, Mitchell Park with its substantial urban renewal area shows significant increases in the ratio, particularly during the redevelopment phase and it now sits just above the LGA median compared to the Marion suburb which has lost ground against the LGA.

As an indicator the CV/SV ratio reflects the pattern in changing of redevelopment potential. Higher CV/SV ratios indicate more stable locations in terms of redevelopment.

Conclusion

This paper seeks to address the problem of measuring the impact of urban renewal on house values overtime in terms of home ownership opportunities. The two indicators suggested address different issues.

The CV/SV ratio is useful for tracking development potential over the period of an urban renewal project. The ratio should increase over time indicating that redevelopment has increased total assets value relative to land values and should be used as a comparison to other similar locations. The ratio will be greatest in locations where the urban renewal has encouraged other private development to occur providing a multiplier effect.

The capital value diversity ratio is particularly useful where an objective of an urban renewal project is to provide a greater diversity of housing values and is also best observed over the period of the project and in comparison to other similar locations. Increases in the ratio would suggest that a greater diversity of housing values has occurred, providing housing options to a wider cross-section of the community. While it is possible to track this diversity ratio using transaction prices the problems of selection bias suggest that using assessed capital values is superior especially in areas where there is significant public housing which is not represented in market transactions.

SA is currently seeking to increase its population base and in particular to attract a younger professional workforce. Evidence of government sponsored housing which is both affordable and aspirational is likely to be of interest to both policy makers and potential employers. Further research which tracks both the CV/SV ratio and the capital diversity ratio against more traditional indicators of affordability could offer further insights into the advantages of these ratios.

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