How much rent do I pay myself?

Methods of estimating the value of imputed rental for the weights of the South African CPI

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Statistics South Africa

Ottawa Group
Copenhagen
2013
For Sale
Price: R980,000
Features:
The tiled living area consists of an open plan lounge and dining area with double French doors leading out to the patio. Beautiful kitchen with modern finishes and granite tops and ample cupboards with sufficient space for appliances. 2 Beautiful carpeted bedrooms with built in cupboards. 2.5 Modern en suite bathrooms with granite tops and beautiful finishes. The MES consists of a bath, shower, basin and toilet. Second en suite is equipped with a shower, basin and toilet. The guest toilet and basin is near the reception area.

To Rent
R 6300 pm
2 BEDROOM APARTMENT TO LET IN CRESTA
Lovely spacious 2 bedroom, 2 bathroom apartment
The problem

- Imputed rental is chosen method of OOH in South African CPI
- Little formal guidance on method to calculate weight
- Housing and rental markets vary across countries but generally large weight in CPI (10.9% in SA total country index)

“estimating how much owner-occupiers would have paid in the weighting base period to rent their dwellings... is not something that owner occupiers can normally be expected to estimate reliably in a household expenditure survey.”

ILO manual
South Africa has run 3 diary-based expenditure surveys - 2005/6; 2008/9; 2010/11

Relevant questions for housing are:
- If you had to rent this dwelling, how much would you pay for it per month?
- What would you estimate the value of the dwelling unit to be?
- Amount paid on mortgage bond – split between capital and interest?

Additional questions on dwelling characteristics asked in 2010/11 survey
Three methods

Paper tries to derive weights using three different methods

W1 – Rental yield (used in 2008)
    – Apply a rental yield to the estimated value of the house

W2 – Weighted sum of owner’s estimated rentals

W3 – Matching of characteristics to link actual rentals with houses in owner occupier group
Three methods

Variables use for matching in method w3

<table>
<thead>
<tr>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province</td>
</tr>
<tr>
<td>Type of settlement</td>
</tr>
<tr>
<td>Type of dwelling</td>
</tr>
<tr>
<td>Area/size of dwelling</td>
</tr>
<tr>
<td>Bedrooms</td>
</tr>
<tr>
<td>Bathrooms</td>
</tr>
<tr>
<td>Kitchen</td>
</tr>
<tr>
<td>Multi-purpose rooms (important for informal dwellings)</td>
</tr>
<tr>
<td>Garages</td>
</tr>
<tr>
<td>Living room</td>
</tr>
<tr>
<td>Dining room</td>
</tr>
</tbody>
</table>
## Results

**Method w1 – Value of house x external rental yield**

<table>
<thead>
<tr>
<th></th>
<th>2005/06</th>
<th>2008/09</th>
<th>2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of housing stock (Rm)</td>
<td>1,278,456</td>
<td>2,570,841</td>
<td>3,207,860</td>
</tr>
<tr>
<td>Yield</td>
<td>6.90%</td>
<td>6.32%</td>
<td>8.00%</td>
</tr>
<tr>
<td>Result (Rm)</td>
<td>88,213</td>
<td>161,963</td>
<td>256,708</td>
</tr>
<tr>
<td>Total expenditure (Rm)</td>
<td>784,350</td>
<td>1,015,385</td>
<td>1,473,816</td>
</tr>
<tr>
<td>CPI weight</td>
<td>11.25%</td>
<td>15.95%</td>
<td>17.42%</td>
</tr>
</tbody>
</table>

- Massive increase in perceived value of housing
- Significant change in weight for OOH
## Method w2 – Perceived rental values

<table>
<thead>
<tr>
<th></th>
<th>2005/06</th>
<th>2008/09</th>
<th>2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated rental value (Rm)</td>
<td>110,980</td>
<td>157,766</td>
<td>256,734</td>
</tr>
<tr>
<td>Total expenditure</td>
<td>807,117</td>
<td>1,011,188</td>
<td>1,473,842</td>
</tr>
<tr>
<td>CPI weight</td>
<td>13.75%</td>
<td>15.60%</td>
<td>17.42%</td>
</tr>
</tbody>
</table>

- Massive increase in perceived rental values
- Significant change in weight for OOH
## Results

**Method w3 – Imputed value from matching**

<table>
<thead>
<tr>
<th></th>
<th>2005/06</th>
<th>2008/09</th>
<th>2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imputed value (Rm)</td>
<td>64,587</td>
<td>115,456</td>
<td>139,051</td>
</tr>
<tr>
<td>Total expenditure</td>
<td>693,755</td>
<td>968,878</td>
<td>1,236,632</td>
</tr>
<tr>
<td>Proportion of CPI</td>
<td>8.49%</td>
<td>11.92%</td>
<td>11.24%</td>
</tr>
</tbody>
</table>

- Increase in actual rental values
- Change in weight for OOH
## Results

### Overall results

<table>
<thead>
<tr>
<th>% change</th>
<th>2005/06 to 2008/09</th>
<th>2008/09 to 2010/11</th>
<th>2005/06 to 2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 – Value x rental yield</td>
<td>83.60%</td>
<td>58.50%</td>
<td>191.00%</td>
</tr>
<tr>
<td>W2 – Sum of rental value</td>
<td>42.16%</td>
<td>62.73%</td>
<td>131.33%</td>
</tr>
<tr>
<td>W3 - Matching</td>
<td>78.76%</td>
<td>20.44%</td>
<td>115.29%</td>
</tr>
<tr>
<td>FNB House price index</td>
<td>15.81%</td>
<td>9.71%</td>
<td>27.02%</td>
</tr>
<tr>
<td>Stats SA rent index</td>
<td>12.01%</td>
<td>11.00%</td>
<td>24.30%</td>
</tr>
<tr>
<td>CPI (total country)</td>
<td>24.52%</td>
<td>9.06%</td>
<td>35.80%</td>
</tr>
</tbody>
</table>

- All methods show large increases
- Matching has smallest increases
- Increase not justified by house or rental price (or quantity) change
Possible explanations

Survey methods
Option of value or brackets in 2008/09

<table>
<thead>
<tr>
<th>Income Bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than R50 000</td>
</tr>
<tr>
<td>R50 001 – R250 000</td>
</tr>
<tr>
<td>R250 001 – R500 000</td>
</tr>
<tr>
<td>R500 001 – R1 000 000</td>
</tr>
<tr>
<td>R1 000 001 – R1 500 000</td>
</tr>
<tr>
<td>R1 500 001 – R2 000 000</td>
</tr>
<tr>
<td>R2 000 001 – R3 000 000</td>
</tr>
<tr>
<td>More than R3 000 000</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
</tbody>
</table>

- Definite over-estimation at bottom end
- Shacks: R14 600 vs R25 000
- Perceptions have weak basis in reality
- Editing and imputation procedures in survey
- Weighting structure in survey
- But what about increase using matched method?
## Actual v estimated rents

<table>
<thead>
<tr>
<th>Housing type (total country)</th>
<th>Average actual rents</th>
<th>Ave estimated rents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houses</td>
<td>1,343</td>
<td>2,041</td>
</tr>
<tr>
<td>Traditional houses</td>
<td>446</td>
<td>601</td>
</tr>
<tr>
<td>Flats/Clusters/Townhouses</td>
<td>2,684</td>
<td>3,949</td>
</tr>
<tr>
<td>Informal and backyard structures</td>
<td>458</td>
<td>856</td>
</tr>
</tbody>
</table>

IES 2010/11
## Deriving rental yield

<table>
<thead>
<tr>
<th>Method</th>
<th>2005/06</th>
<th>2008/09</th>
<th>2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield from external sources</td>
<td>6.90%</td>
<td>6.32%</td>
<td>8.00%</td>
</tr>
<tr>
<td>Perceived rental over perceived value</td>
<td>5.05%</td>
<td>6.14%</td>
<td>8.00%</td>
</tr>
<tr>
<td>Imputed rents over perceived value</td>
<td>4.25%</td>
<td>4.59%</td>
<td>4.33%</td>
</tr>
</tbody>
</table>

Treatment of informal sector rentals helps explain difference between 1 and 3
## Impact of informal dwellings

<table>
<thead>
<tr>
<th>Prov</th>
<th>Type</th>
<th>Average</th>
<th>Prov</th>
<th>Type</th>
<th>Average</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>House</td>
<td>2,098</td>
<td>1</td>
<td>House</td>
<td>5,729</td>
<td>0.366</td>
</tr>
<tr>
<td>1</td>
<td>Flat</td>
<td>1,811</td>
<td>1</td>
<td>Flat</td>
<td>3,547</td>
<td>0.511</td>
</tr>
<tr>
<td>1</td>
<td>Townhouse</td>
<td>1,960</td>
<td>1</td>
<td>Townhouse</td>
<td>4,778</td>
<td>0.410</td>
</tr>
<tr>
<td>2</td>
<td>House</td>
<td>1,060</td>
<td>2</td>
<td>House</td>
<td>5,356</td>
<td>0.198</td>
</tr>
<tr>
<td>2</td>
<td>Flat</td>
<td>1,477</td>
<td>2</td>
<td>Flat</td>
<td>3,187</td>
<td>0.463</td>
</tr>
<tr>
<td>2</td>
<td>Townhouse</td>
<td>2,993</td>
<td>2</td>
<td>Townhouse</td>
<td>4,699</td>
<td>0.637</td>
</tr>
<tr>
<td>3</td>
<td>House</td>
<td>915</td>
<td>3</td>
<td>House</td>
<td>6,497</td>
<td>0.141</td>
</tr>
<tr>
<td>3</td>
<td>Flat</td>
<td>2,263</td>
<td>3</td>
<td>Flat</td>
<td>3,048</td>
<td>0.743</td>
</tr>
<tr>
<td>3</td>
<td>Townhouse</td>
<td>1,775</td>
<td>3</td>
<td>Townhouse</td>
<td>5,712</td>
<td>0.311</td>
</tr>
<tr>
<td>7</td>
<td>House</td>
<td>1,126</td>
<td>7</td>
<td>House</td>
<td>5,404</td>
<td>0.208</td>
</tr>
<tr>
<td>7</td>
<td>Flat</td>
<td>2,113</td>
<td>7</td>
<td>Flat</td>
<td>3,070</td>
<td>0.688</td>
</tr>
<tr>
<td>7</td>
<td>Townhouse</td>
<td>3,940</td>
<td>7</td>
<td>Townhouse</td>
<td>4,491</td>
<td>0.877</td>
</tr>
<tr>
<td>8</td>
<td>House</td>
<td>1,145</td>
<td>8</td>
<td>House</td>
<td>5,814</td>
<td>0.197</td>
</tr>
<tr>
<td>8</td>
<td>Flat</td>
<td>1,972</td>
<td>8</td>
<td>Flat</td>
<td>3,418</td>
<td>0.577</td>
</tr>
<tr>
<td>8</td>
<td>Townhouse</td>
<td>4,600</td>
<td>8</td>
<td>Townhouse</td>
<td>5,071</td>
<td>0.907</td>
</tr>
</tbody>
</table>
Areas for further work

• Investigate imputation, editing and weighting structure of expenditure surveys

• Compare Census and expenditure surveys

• Alignment with national accounts on value of the housing stock
For Sale
Price: R980,000

To rent:
R 6300p/m = R75 600

Rental yield: 7,7%