A tool to calculate covered office parking rentals – anywhere

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Ever since the first quarter of 1993, *Rode's Report* (*RR*) has been publishing average monthly parking rentals for office buildings by grade. In this issue of the report, we attempt to quantify the relationship between office parking and office rentals.

We postulate a positive relationship between these two variables, viz. that higher-quality office buildings with good facilities and in better locations (which command higher office rentals) also achieve higher parking rental rates. This is so in spite of the fact that parking – being utilitarian space – cannot really be graded.

In our analysis, we regressed achievable monthly rental rates per bay for covered reserved parking in grades-A$^+$, A, B and C office buildings in the various office nodes — as reported in **Tables 5.1** and **5.3** of this issue of *RR* — against their corresponding market office rental rates. All the data is for the first quarter of 2015.
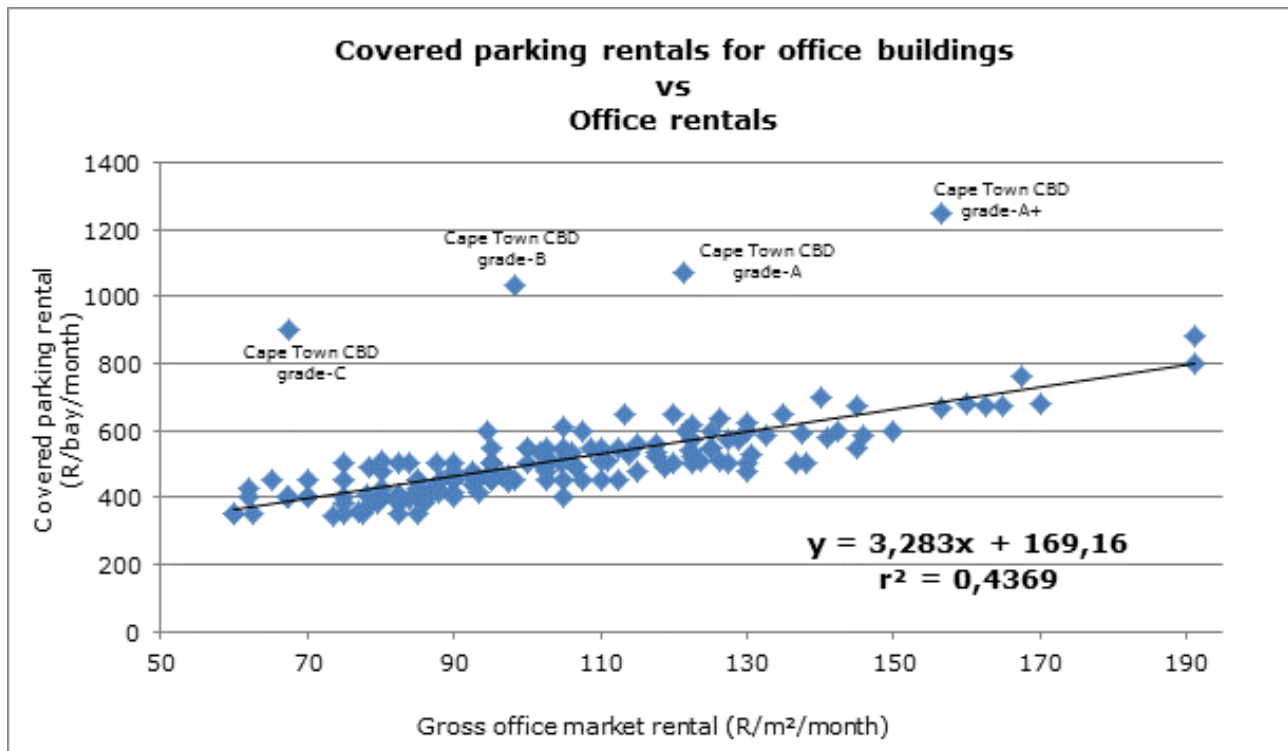
Table 1 summarizes important descriptive statistics of the dataset that was used.

As the table shows, 1159 observations were used in the analysis. This consisted of 35 grade-A$^+$, 44 grade-A, 44 grade-B and 36 grade-C observations. The mean parking rental was R511 /bay/ month and the mean gross office rental was R104/m²/ month. The parking rental standard deviation of R130 implies that there is a 68% chance that true parking values will lie between R511 – R130 = R381 and R511 + R130 = R641. Similarly, there is also is a 68% chance that true office rental values will lie between R104 – R26 = R78 and R104 + R26 = R130. The highest (maximum) parking rental of R1.250 was for parking in grade-A$^+$ office buildings in the Cape Town CBD, while the highest (maximum) rental of R191 was for grade-A$^+$ office buildings in the Sandton CBD. The corresponding graph shows the positive relationship between office rentals and parking rentals.

Table 1		
Descriptive statistics of dataset		
	Parking (Rands/bay/month)	Rental (Gross; rands/m²/month)
Observations (n)	159	159
Mean	R511	R104
Median	R500	R98
Maximum	R1.250	R191
Minimum	R345	R60
Standard deviation	R130	R26
Source of data: Rode's Time Series; Rode calculations		

Covered parking rentals for office buildings vs Office rentals

The regression line (or line-of-best-fit) we obtained had the following equation:

Office parking rental = 169,16 + (3,283 *gross market rental)

where

Office parking rental   =   covered reserved parking in rands per bay per month.

Gross market rental =   gross market rental per rentable m² achieved on grades A⁺, A, B or C.

Note, however, that the relationship between office rentals and parking rentals is not explained very well by this linear regression equation (the coefficient of determination (r^2) is only 0,4 – which means variations in office rentals explain about 40% of variations in parking rentals).

To try to improve the fit of the equation, we considered dummy variables for the various office grades. A dummy variable is one which takes on the value of 1 or 0, depending on whether a specified condition holds. For example, for a grade-A⁺ dummy variable all grade-A⁺ parking and office rental observations will be assigned a value of 1, whereas observations for other grades of office space will be assigned a value of 0. For a grade-A dummy variable all grade-A parking and office rental observations will be assigned a value of 1, whereas observations for other grades of office space will be assigned a value of 0.

Historically, and as shown in the preceding graph, parking in the CBD of Cape Town has always

been more expensive than anywhere else in the country. For this reason, we also included a Cape Town CBD dummy variable.

We estimated the following equation:

$$\text{Office parking rental} = C + \beta_1 \cdot GMR + \beta_2 \cdot D_1 + \beta_3 \cdot D_2 + \beta_4 \cdot D_3 + \beta_5 \cdot D_4$$

where

Office parking rental = market covered reserved parking in rands per bay per month

GMR = gross market rental per rentable m² achieved on grades A⁺, A, B or C office space.

D_1 = **grade-A⁺ dummy variable**, taking on the value of 1 if observation is for grade-A⁺ office property, and 0 if otherwise.

D_2 = **grade-A dummy variable**, taking on the value of 1 if observation is for grade-A office property, and 0 if otherwise.

D_3 = **grade-B dummy variable**, taking on the value of 1 if observation is for grade-B office property, and 0 if otherwise.

D_4 = **Cape Town CBD dummy variable**, taking on the value of 1 if observation is for office property in the CBD of Cape Town, and 0 if otherwise.

C = constant or intercept term

β_1 to β_5 = coefficients to be estimated by the regression.

The reader will notice that a grade-C dummy variable is not included in our equation. This is so because we want to assess the impact of the higher office grades on parking rentals *relative to* parking space attached to grade C. As a result, the coefficients of the other dummy variables are measured *relative* to the grade-C category.

The regression line (or line-of-best-fit) we obtained has the following equation:

$$\text{Office parking rental} = 213,4 + 2,3 \cdot GMR + 87,2 \cdot D_1 + 54,9 \cdot D_2 + 34,0 \cdot D_3 + 550 \cdot D_4$$
$$R^2 = 0,9$$
$$n = 159$$

All the explanatory (predictor) variables — the variables on the right-hand side of the equation — are statistically significant, while the high coefficient of determination ($R^2 = 0,9$) implies that the relationship between office rentals and parking rentals is explained very well by the linear regression equation. How to interpret the coefficients?

- A R1,00 increase in the monthly office rental rate (GMR) will increase the monthly parking rent by R2,3.

- Grade-A$^+$ parking rentals are typically R87 higher than grade-C parking rentals, grade-A parking rentals are typically R55 higher than grade-C parking rentals and grade-B parking rentals are typically R34 higher than grade-C parking rentals.

  Parking rentals in the Cape Town CBD are generally R550 per bay per month more expensive than in the country's other office nodes.

Consider, for example, the case of a node where the current achievable **grade-A** office rental is around R110/m²/ month. What is the most likely covered-parking rental rate for this node?

Office parking rental = 213,4 + 2,3(**110**) + 87,2*(0) + 54,9*(**1**) +34,0*(0) + 550*(0)*

Office parking rental = 213,4 + 2,3(**110**) + 54,9 ≈ R521/ bay/ month*

Next, consider the case of a node where the current achievable **grade-C** office rental is around R65/m²/ month. The estimated parking rental for this node would be:

Office parking rental = 213,4 + 2,3(**65**) + 87,2*(0) + 54,9*(0) +34,0*(0) + 550*(0)*

Office parking rental = 213,4 + 2,3(**65**) ≈ R363/ bay/ month.*

Finally, assume a **grade-A**$^+$ office market rental of about R150 in the Cape Town CBD. What is the estimated parking rental here?

Office parking rental = 154,01 + 2,67(**150**) + 76,31*(**1**) + 62,22*(0) + 45,74*(0) + 567,12*(**1**)*

Office parking rental = 154,01 + 2,67(**150**) + 76,31 + 567,12 ≈ R1.198/ bay/ month.*

The reader should note that this equation should rather not be used to estimate the covered parking rental rates for nodes with office rentals of much less than R60/m², or much greater than R191/m².

Enjoy!