Quantitative Risk Management
Assignment 12

Question 1: Consider the *2016 Annual Global Corporate Default Study and Rating Transitions* available on Moodle and retrieve the one-year transition rates. We want to use them to price bonds. To this end, and for each rating class, price a defaultable bond under the following assumptions:

- the bonds pay no coupons;
- the bond has a maturity of 5 years;
- the interest rate is set to zero, so that the discount is equal to 1;
- the recovery rate is zero, so that when a bond defaults it pays 0;
- the bonds have face value equal to 1.

Question 2: Now consider the errors in the estimates of the transition rates. We want to study the sensitivity of the bond prices to these errors. To this end, repeat the previous exercise in two ways:

1. Compute the bond prices by adding one standard deviation to the entries of the transition matrix;
2. Compute the bond prices by subtracting one standard deviation to the entries of the transition matrix.

The standard deviations are available in the same table as the one which shows the transition rates. In both cases, make sure you adjust the transition matrix so that each row sums to one and that each entry of the matrix is non-negative. Comment on the results.