```r
# Generates a stochastic row with parameterized sparsity of p
.stoch_row_erdos <- function(N, p){
  # Sample a vector of probabilities
  row <- runif(n = N, min = 0, max = 1)
  # Sample the vertex degree so that it is ~ Bin(n,p)
  degree_vertex <- rbinom(n = 1, size = N, prob = 1 - p)
  # Sever a random selection of edges to set the vertex degree
  row[sample(1:N, degree_vertex)] <- 0
  # Return normalized row only if non-zero (cannot divide by 0)
  if(sum(row) != 0){
    row / sum(row)
  } else{
    .stoch_row_erdos(N, p) # Otherwise, try again
  }
}
```