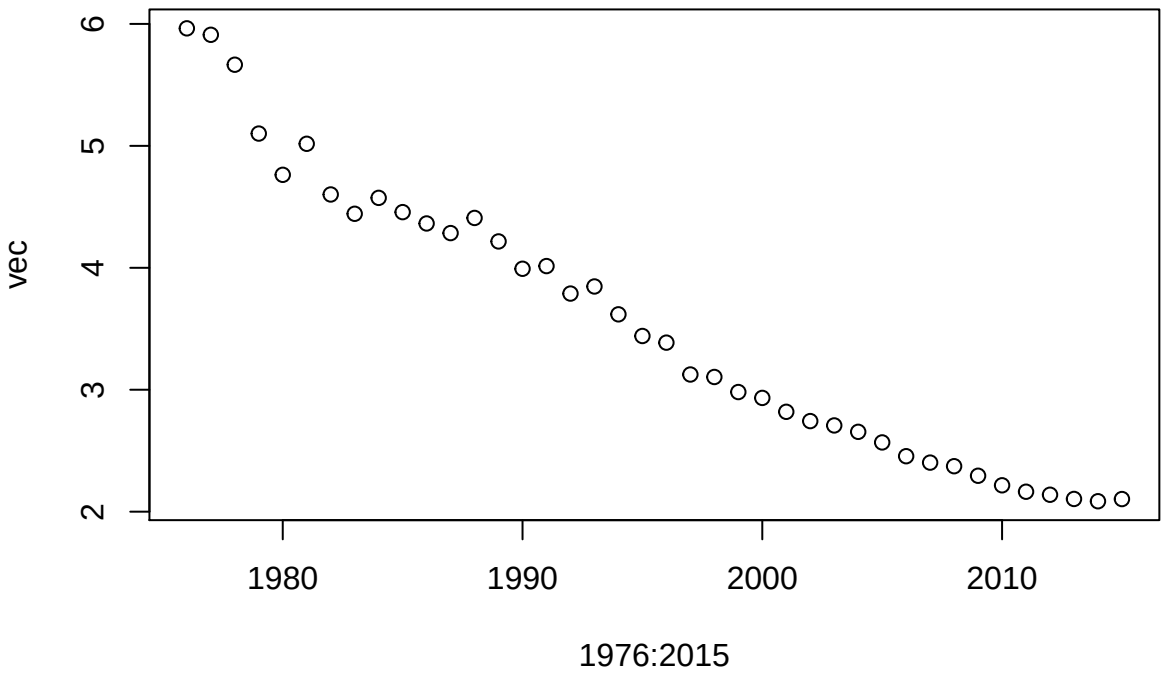
R Notebook

```
fit_pl <- function(year) {
    time <- Sys.time()
    print(paste("Processing", year))

    # Libraries
    library(poweRlaw)

    ## INITIALISE DATA ############################
    # Load data
    load("degree_distribution.RData")
    # Filter year
    ddyear <- degree_distribution_all %>% filter(Year == year) %>% group_by() %>% select(Order, count)
    # Produce tall vector (as poweRlaw interacts with)
    vec <- NULL
    for(row in seq_len(nrow(ddyear))) {
        vec <- c(vec, rep(as.numeric(ddyear[row,"Order"]), ddyear[row,"count"]))
    }
    # Remove zeros because log scale can't handle it.
    vec <- vec[vec != 0]

    ## Fit power law ########################
    m_pl <- displ$new(vec)
    est = estimate_pars(m_pl)
    est_pl <- estimate_xmin(m_pl)
    m_pl$setXmin(est_pl)

    print(Sys.time() - time)
    return(m_pl)
}
```

```
if (file.exists("power_law_fits.RDS")) {
    pl <- readRDS("power_law_fits.RDS")
} else {
    pl <- list()
    for (yr in 1976:2015) {
        pl[[yr]] <- fit_pl(yr)
    }
    saveRDS(pl, "power_law_fits.RDS")
}
```

```
vec <- NULL
for (yr in 1976:2015) {
    vec <- c(vec, pl[[yr]]$getPars())
}
```

```
par(mfrow = c(1,1))
plot(1976:2015, vec)
```


vec
2
3
4
5
6
1980
1990
2000
2010
1976:2015