Drawdowns and Streaks

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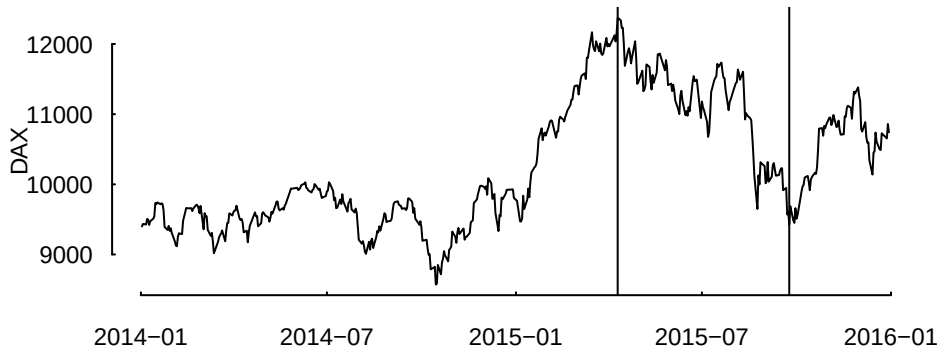
Drawdowns

The drawdowns function returns magnitudes of drawdowns, as well as their peaks, troughs, and times of recovery.

```
> library("PMwR")
> library("zoo")
> dax <- zoo(DAX[[1]], as.Date(row.names(DAX)))
> dd <- drawdowns(dax)
> dd <- dd[order(dd$max, decreasing = TRUE), ]  ## sort by size
> dd
```

```
         peak     trough    recover      max
18 2015-04-10 2015-09-24       <NA> 0.238154
9  2014-07-03 2014-10-15 2014-12-05 0.145320
10 2014-12-05 2014-12-15 2015-01-16 0.074661
4  2014-01-17 2014-03-13 2014-05-13 0.074430
17 2015-03-16 2015-03-26 2015-04-10 0.026631
12 2015-02-04 2015-02-09 2015-02-12 0.022711
8  2014-06-10 2014-06-26 2014-07-03 0.022326
11 2015-01-26 2015-01-27 2015-02-02 0.015720
5  2014-05-13 2014-05-16 2014-05-23 0.012849
14 2015-03-02 2015-03-03 2015-03-05 0.011393
2  2014-01-07 2014-01-09 2014-01-13 0.008898
15 2015-03-09 2015-03-10 2015-03-11 0.007057
13 2015-02-13 2015-02-17 2015-02-19 0.006182
7  2014-06-02 2014-06-03 2014-06-06 0.003053
3  2014-01-15 2014-01-16 2014-01-17 0.001654
1  2014-01-03 2014-01-06 2014-01-07 0.000758
16 2015-03-11 2015-03-12 2015-03-13 0.000559
6  2014-05-27 2014-05-29 2014-05-30 0.000193
```

```
> par(bty = "n", las = 1, tck = 0.01,
      mar = c(3, 3, 1, 1), mgp = c(2, 0.5, 0), ps = 9)
> plot(dax, xlab = "", ylab = "DAX")
> abline(v = dd$peak[1])
> abline(v = dd$trough[1])
```



Streaks

The `streaks` function returns a data-frame of uninterrupted up and down movements, with uninterrupted meaning that no countermovement occured of `down` (`up`) percent or more during up (down) movements.

```
> up_down <- streaks(dax, up = 0.1, down = -0.1)
> up_down
```

```
       start        end state  return
1 2014-01-02 2014-03-13  <NA> -0.0407
2 2014-03-13 2014-07-03    up  0.1122
3 2014-07-03 2014-10-15  down -0.1453
4 2014-10-15 2015-04-10    up  0.4436
5 2015-04-10 2015-09-24  down -0.2382
6 2015-09-24 2015-11-30    up  0.2073
7 2015-11-30 2015-12-30  down -0.0562
```

You may use this information, for instance, to produce charts of up and down phases, such as the following. Note that the vertical scale is a log scale, i.e. a drop of 50% takes the same vertical distance as a rise of 100%.

