Analysis

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Analysis

Dispersion to Returns

We first want to look on how dispersion affects returns. We hypothesize that (future) return is higher if dispersion is lower. Therefore, we look at the mean return of the q quantil of dispersion and the mean return of its *1-q* quantil. We do this for all the sentiments in comparison with all stocks.

We depict this value. row: index, column: sentiment We also depict the ranks (higher rank = higher value). Be careful as the absolute values of returns are different across indices (therefore ranking is not really justified) Comparing in each row is justified and higher value is good (should expecially be greater than 0).

Let n be the number of periods considered (n=1: just this period, n=2: this and next period) and let m be the time lapse (m=0: returns starting right now, m=1: returns starting 1 one period behind).

```
q <- 0.1

compareDispRet <- function(n, m=0){
    res <- matrix(NA, nrow = ncol(ret), ncol = length(sDisp))
    rownames(res) <- colnames(ret)
    colnames(res) <- names(sDisp)

    for(d in 1:length(names(sDisp))){
        for(s in 1:ncol(ret)){
            dat <- data.frame(disp = sDisp[[d]][2:(nrow(sDisp[[d]])-n+1-m),s+1])
            for(k in 1:(nrow(ret)-n+1-m)){
                dat[k,"r"] <- prod(1+ret[(k+m):(k+m+n-1),s])-1
            }
            dat <- dat[order(dat$disp),] # ascending by default
            res[s, d] <- round( mean(dat[1:(q*nrow(dat)),"r"]) - mean(dat[((1-q)*nrow(dat)):nrow(dat),
        }
    }
    return(res)
}
```

actual dispersion to actual return, no lag

dispersion in connection with return of same period

So I1 seems to be able to predict returns, while P6 does not.

```
res <- compareDispRet(1)
res
```

```
##           P1     P6     I1     I6    G1     G6
## DAX    0.018  0.001  0.034 -0.004 0.027  0.001
## TEC    0.000 -0.002  0.018  0.011 0.006  0.007
## ESX50  0.012 -0.004  0.029  0.000 0.023 -0.001
```

```
## SP5    0.001 -0.001  0.017  0.004 0.011 -0.001
## NASDAQ 0.002 -0.003  0.018  0.003 0.011  0.002
## NIKKEI 0.005  0.014  0.021  0.019 0.013  0.020
## BUND   0.000  0.001 -0.001  0.003 0.000  0.001
```

```
matrix(rank(res), ncol = ncol(res), dimnames = list(rownames(res), colnames(res)))
```

```
##          P1   P6   I1   I6   G1   G6
## DAX    34.0 15.0 42.0  1.5 40.0 15.0
## TEC    10.5  4.0 34.0 27.0 24.0 25.0
## ESX50  29.0  1.5 41.0 10.5 39.0  6.5
## SP5    15.0  6.5 32.0 22.0 27.0  6.5
## NASDAQ 18.5  3.0 34.0 20.5 27.0 18.5
## NIKKEI 23.0 31.0 38.0 36.0 30.0 37.0
## BUND   10.5 15.0  6.5 20.5 10.5 15.0
```

actual dispersion to actual return, lag of 1

dispersion in connection with return of same period

```
res <- compareDispRet(1, 1)
res
```

```
##            P1     P6     I1     I6     G1     G6
## DAX    -0.008  0.001  0.001  0.012 -0.010  0.002
## TEC    -0.021 -0.007  0.002  0.012 -0.014 -0.003
## ESX50  -0.003 -0.004 -0.002  0.004 -0.008 -0.002
## SP5    -0.007 -0.008 -0.001 -0.001 -0.003 -0.004
## NASDAQ  0.002 -0.007  0.006  0.012  0.004 -0.004
## NIKKEI  0.000  0.006  0.003  0.009 -0.003  0.012
## BUND    0.000 -0.001  0.002 -0.002  0.001 -0.002
```

```
matrix(rank(res), ncol = ncol(res), dimnames = list(rownames(res), colnames(res)))
```

```
##          P1   P6   I1   I6   G1   G6
## DAX     5.0 27.0 27.0 40.5  3.0 30.5
## TEC     1.0  8.0 30.5 40.5  2.0 14.5
## ESX50  14.5 11.0 18.5 34.5  5.0 18.5
## SP5     8.0  5.0 22.0 22.0 14.5 11.0
## NASDAQ 30.5  8.0 36.5 40.5 34.5 11.0
## NIKKEI 24.5 36.5 33.0 38.0 14.5 40.5
## BUND   24.5 22.0 30.5 18.5 27.0 18.5
```

actual dispersion with future return (n=3), no lag

dispersion of one period with return over next n periods (this period up to n-1 period).

```
res <- compareDispRet(3)
res
```

```
##            P1     P6    I1    I6     G1     G6
## DAX     0.007  0.000 0.028 0.008  0.006  0.004
## TEC    -0.031 -0.008 0.013 0.037 -0.018  0.003
## ESX50   0.001 -0.012 0.025 0.000 -0.001 -0.005
## SP5    -0.010 -0.016 0.014 0.004  0.001 -0.009
## NASDAQ -0.002 -0.013 0.019 0.018  0.006  0.002
```

```
## NIKKEI -0.002  0.020 0.022 0.031  0.008  0.035
## BUND   -0.002  0.001 0.001 0.002 -0.002  0.001
```

```
matrix(rank(res), ncol = ncol(res), dimnames = list(rownames(res), colnames(res)))
```

```
##          P1   P6 I1   I6   G1   G6
## DAX    29.0 15.5 39 30.5 27.5 25.5
## TEC     1.0  8.0 32 42.0  2.0 24.0
## ESX50  19.0  5.0 38 15.5 14.0  9.0
## SP5     6.0  3.0 33 25.5 19.0  7.0
## NASDAQ 11.5  4.0 35 34.0 27.5 22.5
## NIKKEI 11.5 36.0 37 40.0 30.5 41.0
## BUND   11.5 19.0 19 22.5 11.5 19.0
```

actual dispersion with future return (n=6), no lag

dispersion of one period with return over next n periods (this period up to n-1 period).

```
res <- compareDispRet(6)
res
```

```
##            P1     P6     I1     I6     G1     G6
## DAX     0.001  0.000  0.010 -0.012 -0.004  0.001
## TEC    -0.034 -0.027 -0.008  0.066 -0.034  0.001
## ESX50  -0.010 -0.010  0.003  0.004 -0.015  0.006
## SP5    -0.010 -0.030  0.002  0.009 -0.007 -0.025
## NASDAQ  0.000 -0.030 -0.002  0.038  0.001 -0.014
## NIKKEI  0.000  0.026  0.021  0.059  0.004  0.051
## BUND   -0.006  0.001  0.001  0.006 -0.004  0.002
```

```
matrix(rank(res), ncol = ncol(res), dimnames = list(rownames(res), colnames(res)))
```

```
##          P1   P6   I1   I6   G1   G6
## DAX    24.5 20.0 36.0  9.0 16.5 24.5
## TEC     1.5  5.0 13.0 42.0  1.5 24.5
## ESX50  11.0 11.0 30.0 31.5  7.0 33.5
## SP5    11.0  3.5 28.5 35.0 14.0  6.0
## NASDAQ 20.0  3.5 18.0 39.0 24.5  8.0
## NIKKEI 20.0 38.0 37.0 41.0 31.5 40.0
## BUND   15.0 24.5 24.5 33.5 16.5 28.5
```

```
rm(q, res)
```