Daily RV and BPV from SP500 data

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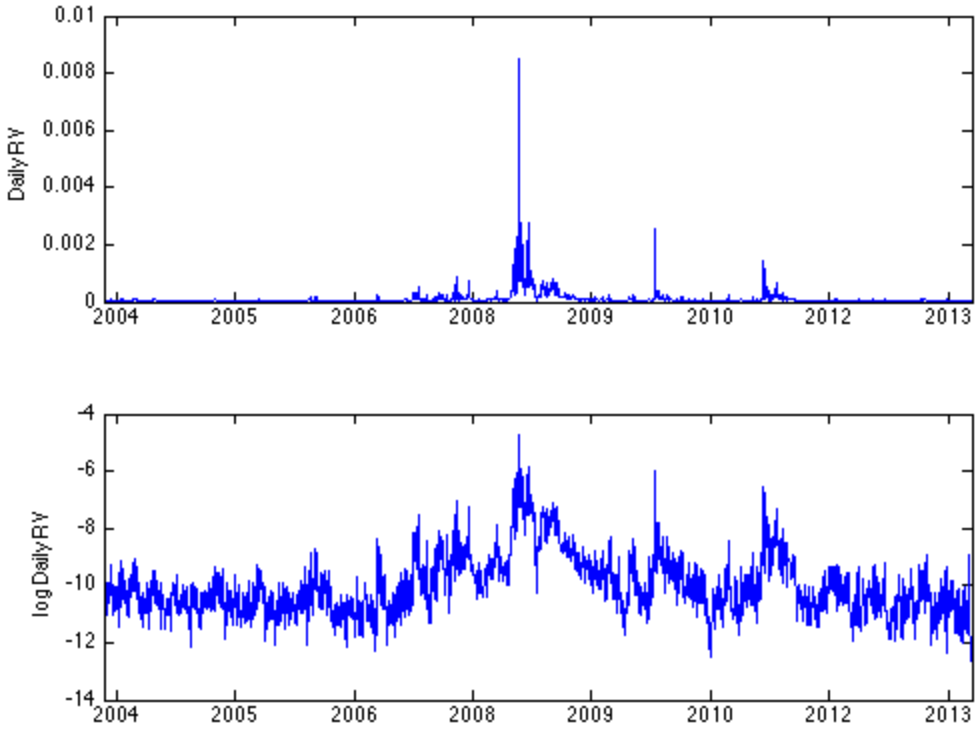
Uses a average sparse RV calculation method from minute data. Each day there are 390 minutes active for trading. The log RV and log BPV are also plotted so that the plots are more informative

RV calculation

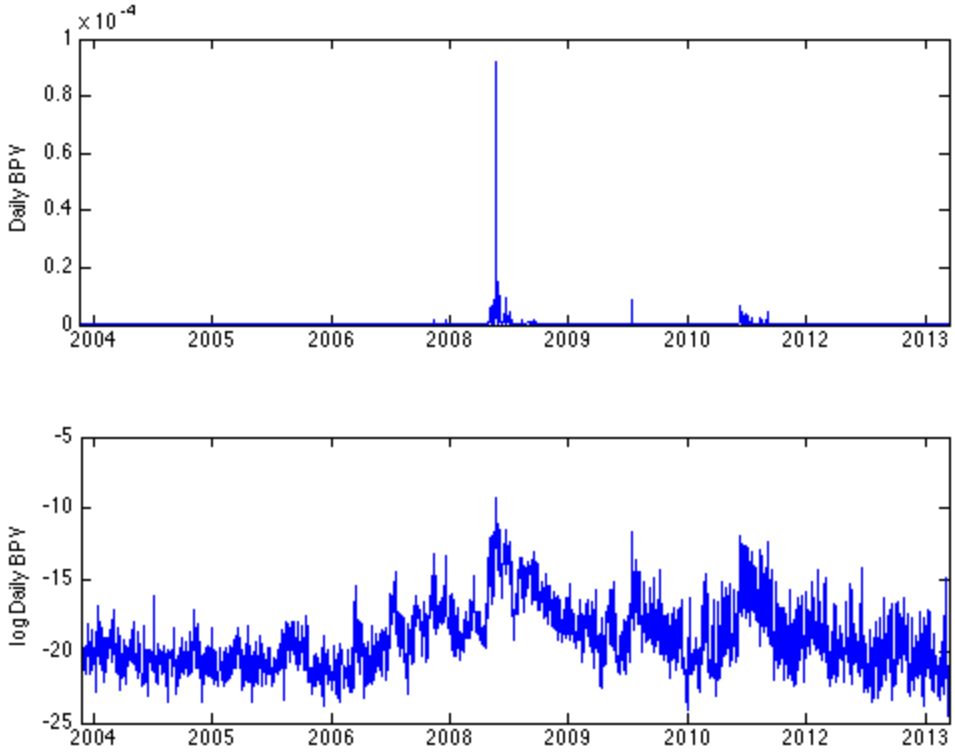
Uses an average RV with window size = 5

```
load('SP500INDEX_LNR_INTRADAY1MIN_2004_2013.mat')
group = 5; %sparse lag = 5
processed = 0;
data_l = length(sp500ret);
day_l = length(unique(sp500ret(:,1)));
i = 1;
rv = zeros(day_l,1);
dates = zeros(day_l,1);
rvg = zeros(group,1);
while processed < data_l
    di = sp500ret(processed+1,1);
    for g = group:-1:1
        reti = sp500ret(processed+1+g:processed+385+g,3);
        retig = sum(reshape(reti,5,length(reti)/5),1);
        rvg(g) = sum(retig.^2);
    end
    rv(i) = mean(rvg);
    dates(i) = di;
    i = i+1;
    processed = processed+390;
end
dates = datenum(int2str(dates),'yyyymmdd');
figure(1)
subplot(2,1,1)
plot(dates,rv)
datetick('x','keepticks','keeplimits')
xlim([min(dates) max(dates)])
ylabel('Daily RV')
subplot(2,1,2)
plot(dates,log(rv))
datetick('x','keepticks','keeplimits')
xlim([min(dates) max(dates)])
ylabel('log Daily RV')
```



BPV Calculation

```
processed = 0;
bpv = zeros(length(rv),1);
i = 1;
while processed < data_l
    reti = sp500ret(processed+1:processed+390,3);
    reti2 = reti.^2;
    bpv(i) = sum(reti2(1:end-1).*reti2(2:end))*390;
    i = i+1;
    processed = processed + 390;
end
figure(2)
subplot(2,1,1)
plot(dates,bpv)
datetick('x','keepticks','keeplimits')
xlim([min(dates) max(dates)])
ylabel('Daily BPV')
subplot(2,1,2)
plot(dates,log(bpv))
datetick('x','keepticks','keeplimits')
xlim([min(dates) max(dates)])
ylabel('log Daily BPV')
```



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