

# Spectrum range risk/return analysis

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May 2015

## 1 Introduction

This quick analysis tries to replicate what was presented during the last 2015 Q1 QIC by the Multi Asset team.

The raw data and all the relevant R scripts are published on <http://www.github.com/mcastagnaa/SpectrumAnalysis> and available there for replication to anybody interested. This is an R Markdown document<sup>1</sup>.

The relevant R packages used (with all the relevant dependencies) are:

```
require(PerformanceAnalytics)
```

## 2 The dataset

The raw data for the relevant sectors<sup>2</sup> were sourced from *Morningstar* capturing the median return and the average returns with a daily frequency.

The difference between the median returns and the average ones are substantial by construction. While the average returns are built daily by Morningstar on an unbiased basis (in terms of survivorship bias), the median ones are calculated manually by the *OMGI Investment Risk and Performance Team* filtering each sector as of today and going back in time calculating each period median returns: the result is a time series of survivorship-biased returns.

The filter admits only the oldest share class for each sector (excluding insurance funds) using (as an example for the *IA Mix 0-35* sector) the following syntax:

```
"SUPER_CLIENT:/INDEX_LISTS/PEER_GROUPS/Sector - IMA - Mixed Investment 0-35 Shares - PTX"
```

The sector averages uses the IA Methodology of the daily average returns of the most expensive share class for each fund.

Spectrum funds prices are taken as delivered by Citi to OMGI. The Spectrum prices are available by class on a Bid/Mid/Offer basis. For this exercise the Mid price was used for the OA class. Using a specific quote instead of the official one (where the quote might be subject to swings between bid and offer) seems to be the logical option in order to avoid any excess volatility; the OA class was used given it has the longest time series (TS).

From the prices TS the returns TSs are built for the Spectrum funds using the following syntax (i.e. computing simple returns):

---

<sup>1</sup>Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <<http://rmarkdown.rstudio.com>>.

<sup>2</sup>The sectors considered where *IA Mix 0-35 Shares*, *IA Mix 20-60 Shares*, *IA Mix 40-85 Shares*, *IA Mix flex*

```

FundPres$Spec3Ret <- c(NA, FundPres$Mid.SKSPEC3[2:n]/FundPres$Mid.SKSPEC3[1:n-1]-1)
FundPres$Spec4Ret <- c(NA, FundPres$Mid.SKSPEC4[2:n]/FundPres$Mid.SKSPEC4[1:n-1]-1)
FundPres$Spec5Ret <- c(NA, FundPres$Mid.SKSPEC5[2:n]/FundPres$Mid.SKSPEC5[1:n-1]-1)
FundPres$Spec6Ret <- c(NA, FundPres$Mid.SKSPEC6[2:n]/FundPres$Mid.SKSPEC6[1:n-1]-1)
FundPres$Spec7Ret <- c(NA, FundPres$Mid.SKSPEC7[2:n]/FundPres$Mid.SKSPEC7[1:n-1]-1)
FundPres$Spec8Ret <- c(NA, FundPres$Mid.SKSPEC8[2:n]/FundPres$Mid.SKSPEC8[1:n-1]-1)

```

The basic dataset is built (by matching the relevant dates) loading the sectors returns and the Spectrum funds returns.

The combined dataset is saved with name *CombByDate.Rda*.

```

rm(list = ls(all=TRUE))
load("CombByDate.Rda")
firstDate <- min(CombByDate$Date)
firstDate

```

```
## [1] "2012-04-30"
```

```

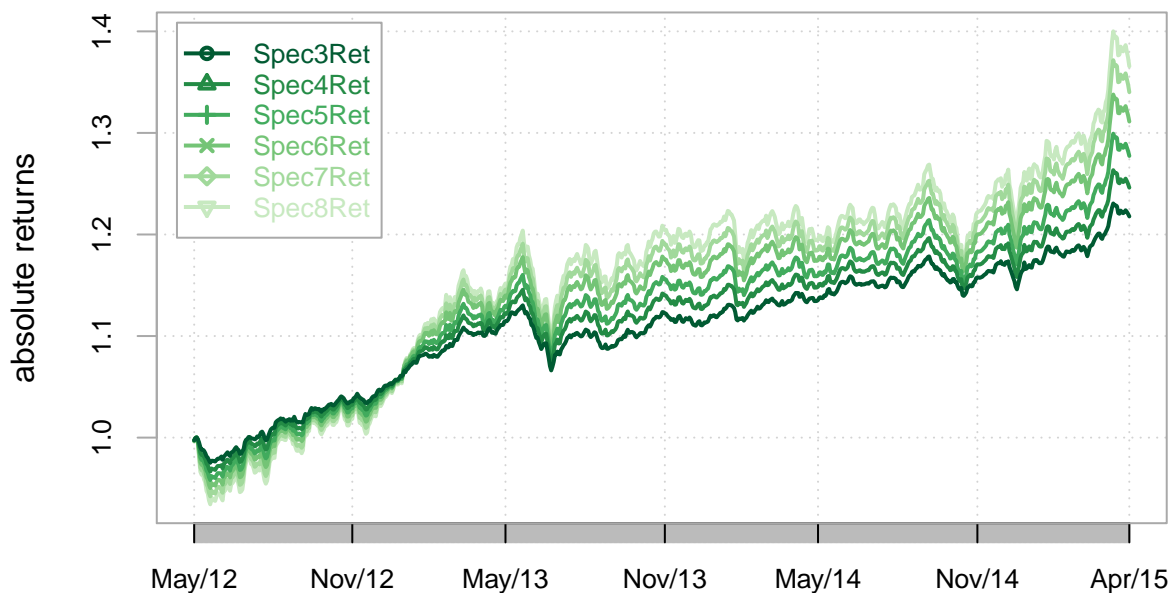
lastDate <- max(CombByDate$Date)
lastDate

```

```
## [1] "2015-04-30"
```

### 3 Data inspection

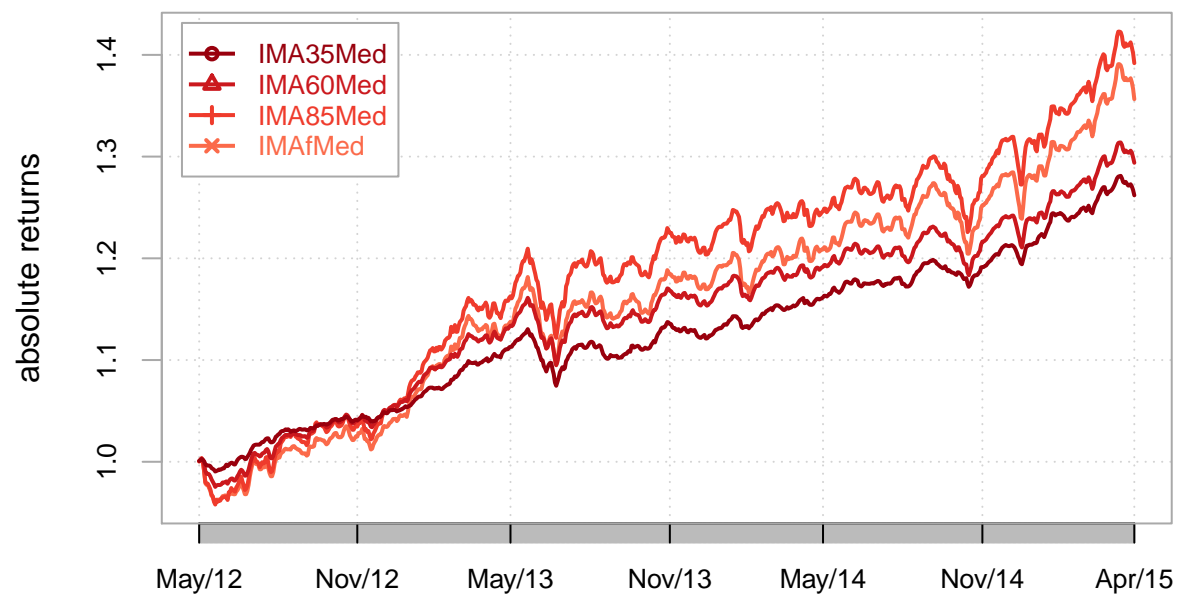
Value of \$1 – Spectrum range



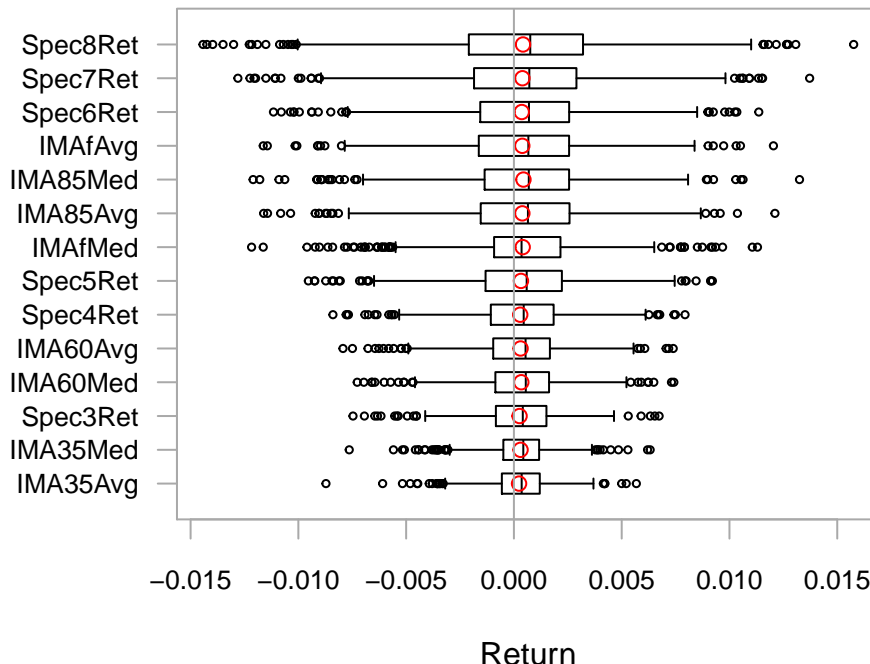
**Value of \$1 – Sectors averages**



**Value of \$1 – Sectors medians**



Inspection of the entire dataset sorted by variance doesn't show any particular outlier.



## 4 Risk/Return analysis vs. sectors medians

The first panel (Panel 1) provides evidence of where in the risk/reward space the Spectrum range is, compared with the sector medians.

Four datasets are considered (from top to bottom, left to right) where different start/end dates have been used:

1. Full three year set
2. Last 12 month
3. Year to date to end of March
4. Year to date to end of April (to make sure we appreciate the effect of the last couple of weeks)

The evidence shows the fund range well under the sector medians for the first three charts while the improvement during the last month is clearly visible in the fourth: for the year to date chart to the last data point, the fund range is aligned to the sector median risk/return points.

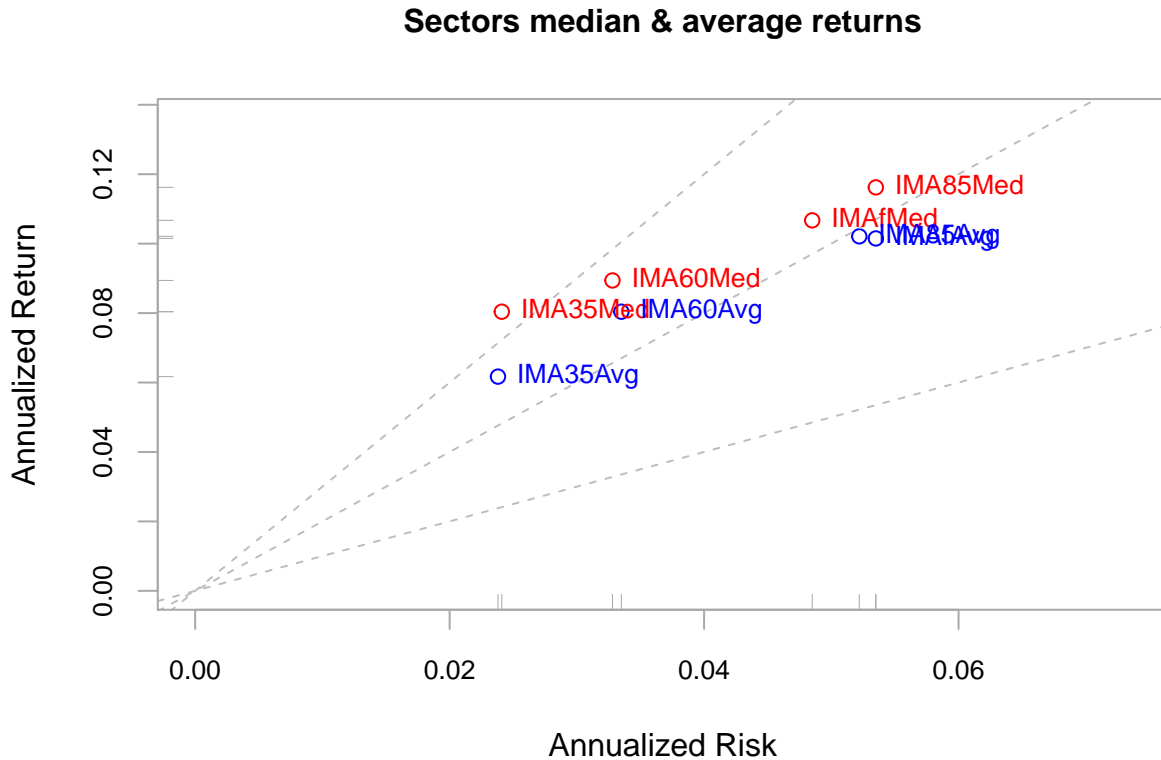
## 5 Risk/Return analysis vs. sectors averages

The same logic is applied using sectors averages (Panel 2). In this case we believe the reference should make the comparison less aggressive<sup>3</sup>. By using the sector average returns, we compare the funds with the sectors statistics including those funds that were closed out (or moved to a different sector) during the period. On top of this, as detailed above, the averages are calculated using the most expensive share classes for each

<sup>3</sup>I mean the reference is easier to match, particularly over the longer horizons

product. In all likelihood you would expect average returns to be less good in the risk/reward space than the one obtained with the survivorship-biased (older share class) medians.

The chart below seems to confirm that hypothesis.



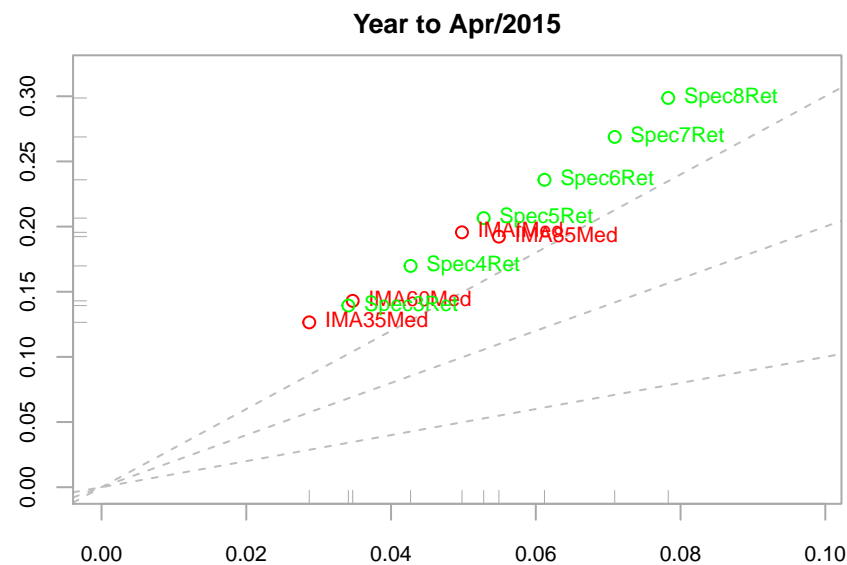
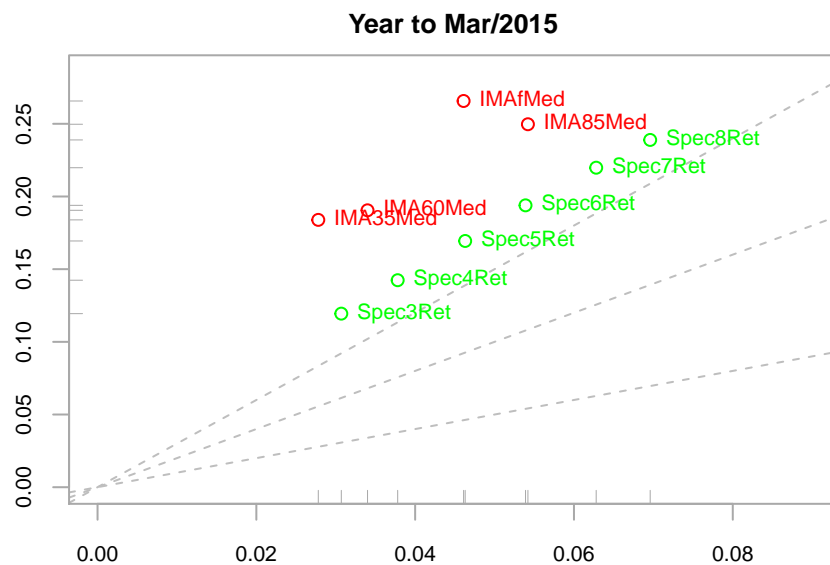
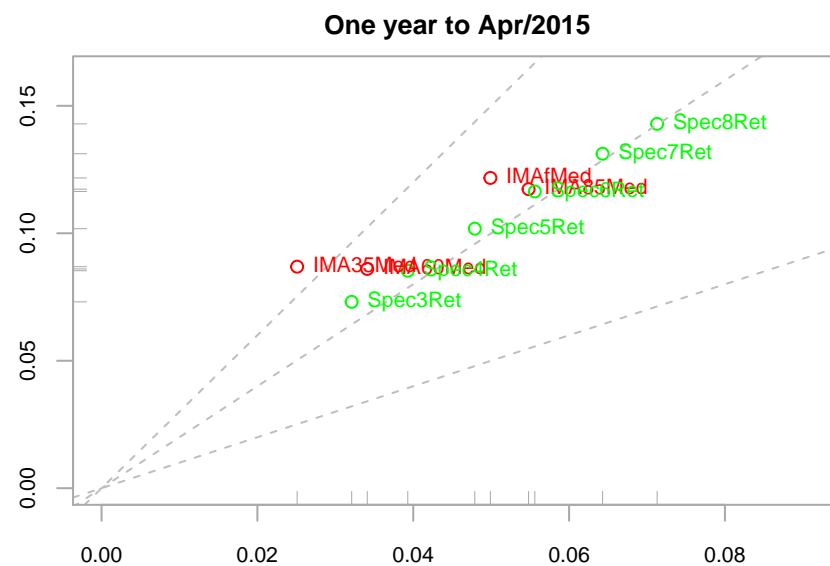
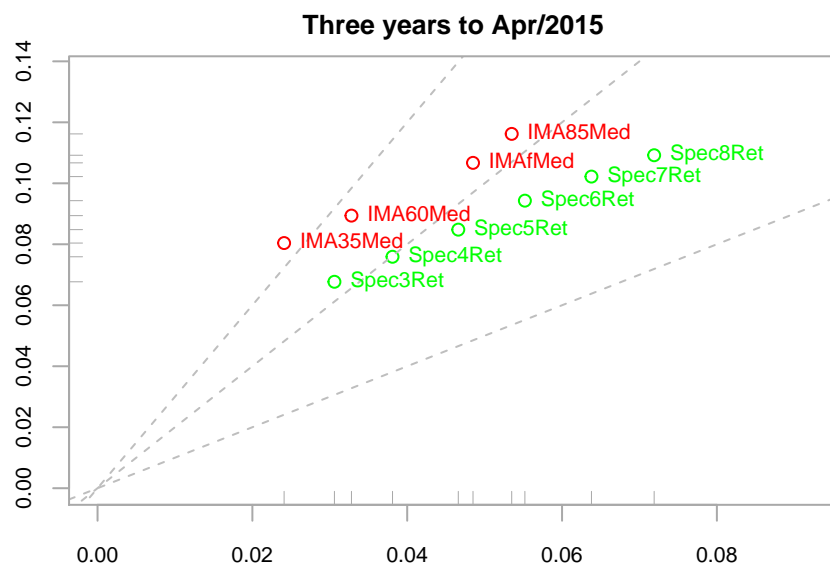
## 6 Conclusions

Last month was a good month for the Spectrum range helping the products aligning themselves with the average/median products in the sector. Over the longer periods the range is still behind that target. The comparison with sector averages (unbiased) offers a better picture as expected.

Unfortunately *OMGI Investment Risk & Performance* wasn't able to match the evidence supplied by the desk during the most recent QIC meeting.

Panel 1: Spectrum funds vs. Sector medians

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Panel 2: Spectrum funds vs. Sector averages

2

