**INTRODUCTION**

Non-linear dependence between the security and the benchmark displays financial incoherence in linear risk measures. A security with negative covariance and correlation regarding the market does not imply that there will be less risk than in the market because of the negative β. A volatile contrarian security could be interpreted wrongly as a refugee value if solely assessing by the negative sign of its β.

Both relative volatility (RV) and β take arithmetic average of price oscillations which could be a mistake of undervaluation.

**OBJECTIVES**

- **Provide risk aversion approach** thanks to its magnificent effect on important market movements and collapse effect on returns considered as market noise.
- **Analyse linear market risk measures (RV & β)** and propose a complementary non-linear and non-parametric risk measure.
- **Solution for non-elliptical probability distributions** (fat failed) that invalidate linear measures of association.
- **Automatic adjustment** on high and low volatile market periods and a supply of most outstanding movements the manager should be concerned about.

**ASSUMPTIONS**

- Incomplete information.
- Market inefficiency.
- Discrete time and prices.
- Stochastic stationary process.

let $a_1, a_2, ..., a_n$ and $m_1, m_2, ..., m_n$, standing $(a_i, m_i \in \mathbb{R} : 0 < a_i, m_i \leq 1)$ and $\forall \infty > \mu > 0, n > r > 0$.

**METHODOLOGY**

Non-linear dependence between the security and the benchmark displays financial incoherence in linear risk measures. TARV accomplishes the Coherent Risk Metrics except for the translation invariance assumption.

Study of ex post returns of six Exchange Traded Products (ETPs), VIX and SPX index from 2014 until 2018.

**RESULTS**

Relevant security movements

**CONCLUSIONS**

The effect of the cosine as positive for high volatile returns and as negative for low volatile returns leads to increase the number of outliers and decrease the number of insiders.

TARV will remove the market noise and stress the significant movements.

TARV increases its application on conventional as non-conventional securities.