

## In TrackMacro, the Ordinal Rules

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**TrackMacro™ is a software tool  
providing equity risk signals in 40  
countries**

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After five months of extreme cautiousness, TrackMacro drastically reversed its investment preferences to equities worldwide. Let's first try to understand how such a change of heart can suddenly appear within an artificial brain; and secondly, why this exact phenomenon occurred at the end of July.

### Cardinal or ordinal Utility

The concept of utility was initially introduced in the XVIII<sup>th</sup> century by an English philosopher, Jeremy Bentham, and his student, John Stuart Mill, within the theory of utilitarianism.

Utility was expected to measure satisfaction, later adapted by neoclassical economists to model human preference within a choice set.

Two types of utilities are presented within the academic community:

- (i) Cardinal utility intends to measure the relative degrees of satisfaction resulting from, say, the acquisition or the consumption of different assets or products.
- (ii) Ordinal utility focuses on the ranking of preferences and provides no information on the intensity of relative satisfactions.

**Illustration 1.** Examples of cardinal and ordinal utilities



### TrackMacro selected ordinal utility

Cardinal utility is a hidden variable, similar to human feelings. The only possible observation in the matter of utility is the manifestation of preferences, not, of course, their intentionality. For this reason, TrackMacro was built to calculate ordinal utilities, which directly match preferences, and to compare them with facts.

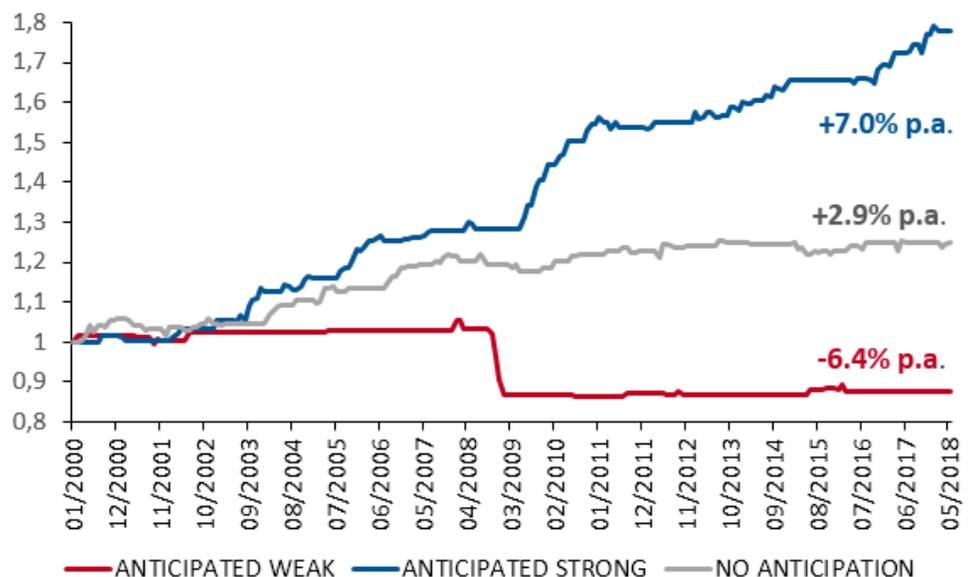
### Robustness

The main advantage of ordinal utility lies in the robustness of the testing process.

Anticipation of World Trade in volume, for instance, which is performed by TrackMacro three months in advance of publication, has proved very robust, both historically and live, over the past three years.

Imagine three separate investors, each looking to buy a structured asset indexed to world trade in volume. The first one invests only when TrackMacro anticipates a strong world trade. The investment then returns 7% annualized (the blue line in graph1). The second one, investing only when TrackMacro flashes red for world trade, loses 6.4% annualized (seen as the red line, here below). The third one, who invests strictly when TrackMacro has no opinion, makes 2.9% (grey line below).

**Graph1.** Capitalization of World Trade volume, when anticipated as 'strong' or 'weak' by TrackMacro



Source: Bloomberg data MWT VWT ticker, TrackMacro

### A change of preferences

The second consequence of ordinal utility is reflected in the current situation, i.e. an abrupt flipping of positions, during specific circumstances.

In finance, global markets arbitrate expected returns and expected risks in various investment products. The preference for an asset can result from an imbalance between a low return and a low risk, or from an imbalance between a high return and a high risk.

High returns and high risks are usually associated with systemic variables. In times of percolation, i.e. when global diffusing factors take the lead over local macro variables, the system can flip globally, mimicking human behavior.

Robustness is consubstantial to high flexibility and agility during times of stress.

### What happened in July

The month of July provided a series of good news for equity holders. US GDP grew at an annualized 4.1% and China GDP at 6.7% (2<sup>nd</sup> quarter 2018). The People's Bank of China decided to inject additional liquidity in its financial system (\$74 billion), showing the way to easier monetary and fiscal policy. Domestic demand in the Eurozone proved resilient, i.e. demonstrated unchanged consumer confidence. US and EU have agreed to work to lower tariffs, not raise them... so far.

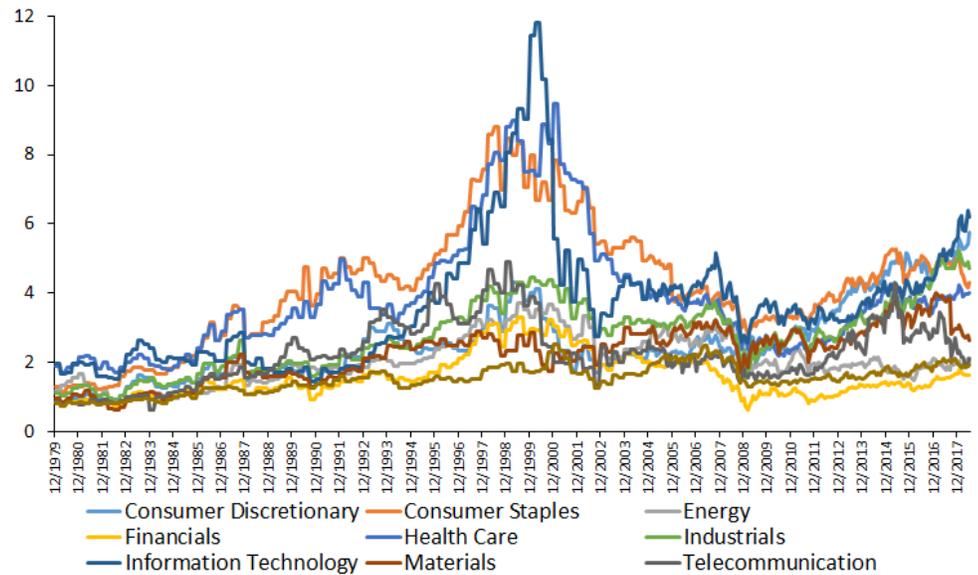
The unemotional TrackMacro AI model thus concluded that high earnings, in particular in the US, but with potential widespread diffusion to global trade, outweighed high valuations.

### High US valuations and earnings

An equity index valuation depends on its sectors' financial value weights, and therefore on the best-performing companies in the recent past. Averaging multiples across sectors mitigates trend-following biases.

In the US today, the S&P sectors' average Price-to-Book stands at 3.5, compared to a 2.7 average, since 1979. US equities are expensive, but not at historical highs, as illustrated in the following graph.

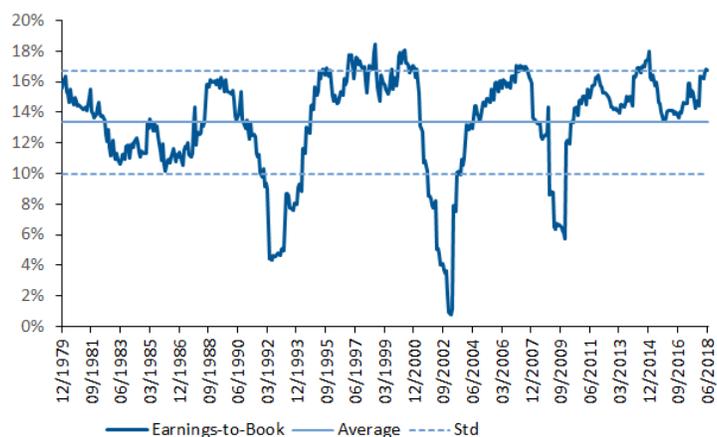
**Graph 2. S&P Price-to-Book by GIS Sector**



Source: Sibilis Research

US corporate earnings, on the contrary, are getting close to historical highs, in nominal terms, compared to book values.

**Graph 3. Average Earnings-to-Book of S&P GIS Sectors**



Source: Sibilis Research

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TrackMacro's conclusion

TrackMacro was extremely cautious during the last five months because of inflation spreading throughout the world, a potential growth deceleration in Europe and China, a shortage of USD liquidity and a world trade signal turning neutral at the end of February. The TrackMacro signal has, so far, been confirmed by official data (the CPB Merchandise World Trade Volume Index is flat at 124.2, from the end of February to the last publication date on 31/05/2018).

At the end of July, corporate America happens to be even more profitable than expected, at a level which creates substantial wealth. World trade, then, coincidentally, switched back to 'strong' in TrackMacro.

For the month of August, TrackMacro thus concludes on high risks, high traction from US returns, and an ordinal preference for profits.

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