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Bob Litterman on Climate Change in the Investment Community

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*Bob Litterman (full bio **here**) is a founding partner and Chairman of the Risk Committee at Kepos Capital, a global quantitative hedge fund manager with ~US$2 billion in assets. He was previously Head of Risk Management at Goldman Sachs.*

Bob is an advocate for addressing climate risks through financial markets by pricing carbon, and has spent significant time engaging policymakers, companies, and investors on this issue. He sits on the boards of organizations such as the World Wildlife Fund (WWF), the Commonfund, Resources for the Future, and the Climate Leadership Council. As an investor, Bob developed the WWF Stranded Assets Swap, which has returned 13% per annum since it was put on in 2014.

Bob also served as Advisor to GIC from 2004 to 2010.

In this edition of GIC Meets, Bob shares his views on climate risks, carbon pricing and potential implications for investors.

HOW DID YOU BECOME A CHAMPION FOR CLIMATE CHANGE IN THE INVESTMENT COMMUNITY?

It all started during my time as Head of Risk Management at Goldman Sachs. One of my partners, who was also the Chairman of the WWF Board, introduced me to the Head of WWF. I was interested in what they were doing, understanding more about climate change, and how serious it was as a problem.

It was obvious to me that we should be pricing in the risk of climate change. However, existing economic models on climate change are limited. For example, they do not take into account modern risk pricing. Instead, simple assumptions are made about damages, and those are discounted to the present. The right discount rate has not yet been identified nor applied.

I have since taken this upon myself as a challenge, and have written some papers in this field. The most recent was "Declining CO2 price paths", published in Proceedings of the National Academy of Sciences of the United States of America (PNAS).

THERE HAS BEEN CONSIDERABLE SKEPTICISM SURROUNDING CLIMATE CHANGE. WHAT ARE YOUR VIEWS ON THIS?

There is much less skepticism now surrounding the reality of climate change. *The science is clear that the climate is changing.*

The average global temperature is about 1°C higher since pre-industrial times. October 2019 was the second warmest October on record[1]. Increased temperatures have serious consequences, such as more droughts due to the heat, more wildfires, rising sea levels, and acidification of the oceans. This also affects ecosystems. For example, 50% of coral reefs are damaged and dying. The Intergovernmental Panel on Climate Change (IPCC) estimates that if global temperature increases by 1.5°C, we will lose 70 to 90% of coral reefs. If it increases by 2°C, coral reefs will mostly disappear[2].

We expect continued warming for many decades into the future. Not only are emissions of carbon dioxide (CO2) and greenhouse gases still rising, we also do not know what the atmosphere's capacity is to safely absorb these emissions.

Additionally, uncertainty today largely lies in the risks and consequences of climate change. Climate change is fundamentally, a risk management problem. We need to consider the worst-case scenarios, because they are plausible, but the difficultly in measuring the effects of climate change makes it difficult to price carbon risk. I outline this issue in a paper, "What is the right price for carbon emissions?" Pricing carbon risk is an urgent problem given how rapidly the ecosystem is changing.

> **"WE HAVE TO SET A HIGH CARBON PRICE TODAY BECAUSE OF UNCERTAINTY. THIS SHOULD DECLINE OVER TIME AS UNCERTAINTY SURROUNDING DAMAGES IS RESOLVED.**

TELL US MORE ABOUT THIS ISSUE OF PRICING CARBON RISK. WHAT IS THE PRICE OF CARBON THAT WE NEED TO SEE?

I see $100 a ton as the bottom line. The upper bound will be determined by the cost of pulling CO2 out of the atmosphere and sequestering it. However, we currently do not know the method nor cost of doing this at scale. Additional uncertainties exist, such as the elasticity of demand for energy, the rate of technological progress, and potential damages, which add to the difficulty of defining the upper bound.

We should be pricing emissions today. Traditional models have priced carbon at a low level, with a slow increase over time to take into account damages in the future. However, I believe that we have to set a high carbon price today because of uncertainty. This should decline over time as uncertainty surrounding damages is resolved.

If we wait, people in the future will be worse off. The model that we use in "Declining CO2 price paths" suggests large costs associated with delays in pricing emissions. If you price carbon at a low level now, rising slowly over time, you would not really worry much about whether you start today, or in five years. But when you start pricing carbon matters. Today, we are already at 1°C of warming, and we have built enough carbon in the atmosphere such that for every three years of delay, global temperatures will be one-tenth of a degree higher.

[1] *Global Climate Report – October 2019*, National Centers for Environmental Information
[2] *Impacts of 1.5°C Global Warming on Natural and Human Systems*, IPCC

WHAT IS YOUR VIEW ON THE ROLE OF GOVERNMENTS IN CARBON PRICING?

Bodies like the United Nations have been unsuccessful in this area as their governance structures are not suited to addressing such issues.

The world looks to the US to lead the way, but the US currently does not have a price on carbon, which makes it difficult for other countries to be aggressive about doing so. ***But I believe we will see pricing of carbon by governments very soon.***

In the US, things are changing dramatically. Political actors have acknowledged that climate change is real and needs to be addressed through innovation. The Climate Leadership Council has developed the Baker-Shultz Carbon Dividends Plan, which proposes an economy-wide fee on CO2 emissions starting at $40 a ton and increasing every year at 5% above inflation. All net proceeds from the carbon fee will be returned to the American people on an equal and quarterly basis.[3]

> **MANY INVESTORS HAVE NOT FACTORED IN THE DIRECT AND SPILLOVER EFFECTS OF CARBON PRICING.**

Corporate America – including major oil and gas, auto, and power companies – supports carbon pricing. There is also considerable support from economists, environmentalists, and the public, as well as less money behind those who oppose carbon taxing, as compared to the past.

Once governments set the right incentives in place, and carbon is priced at a significant level globally, emissions will decline rapidly.

TO WHAT EXTENT HAVE MARKETS BEGUN PRICING IN CLIMATE RISKS?

Markets have been slow to price in these risks, but the process is now accelerating.

The Stranded Assets Swap that I developed for the WWF is a measure of what has already been priced in. This is a simple instrument that is long the return on the market (in this case, the S&P 500), and short the returns on stranded assets as reflected by a basket of coal, tar sands, and oil and gas companies. That swap has generated a 13% annualised return since inception in January 2014, reflecting significant underperformance of stranded assets.

There is more room for stranded assets to fall as fossil fuel types like oil and gas have not yet fully priced in climate risks. Many investors have also not factored in the direct and spillover effects of carbon pricing.

[3] *The Four Pillars of Our Carbon Dividends Plan, Climate Leadership Council*

BESIDES HIGH-COST FOSSIL FUELS, WHAT OTHER SECTORS ARE NOT PRICING IN CLIMATE RISKS?

There are two main types of risk here – transition risk and physical risk.

Fossil fuel companies are reflecting transition risk, which is more of a short-run risk.

In the long run, there is physical risk. For example, rising sea levels have serious implications for coastal real estate, resulting in real estate re-valuation. However, this is difficult to fully price in as most damages will only emerge decades later. This process is accelerated when a key event makes risks even clearer. In California, many areas are becoming uninsurable due to high wildfire risk.

There are also spillover effects on other sectors. In the power sector, utilities that are dependent on coal-fired power plants will be affected. In the transportation sector, the internal combustion car will be affected as the transition to electric vehicles is happening much faster than anticipated.

WHERE DO YOU SEE OPPORTUNITIES?

Carbon credits are trading very cheaply in California, less so in Europe, but we expect the price to increase significantly in the next few years.

In the renewables space, it is harder to pick winners as there are so many options, but it can help to diversify the portfolio and offset short positions and stranded assets.

I also believe that asset re-pricing will likely start in the near term, as we move towards a rapid globally harmonised pricing of emissions.

> **“WE SHOULD CONTINUE TO BUILD OUR UNDERSTANDING OF A LOW-CARBON ECONOMY, AND ITS IMPLICATIONS.**

YOU SHARE THAT CARBON PRICING IS LIKELY TO HAPPEN SOON. HOW CAN WE PREPARE FOR THIS?

There is a lot of interest now in sustainability. We should continue to build our understanding of a low-carbon economy, and its implications, and also engage in discussions with like-minded peers, industry groups, and other stakeholders.

Investors should ensure that portfolios are positioned to take advantage of carbon pricing. Not only is this likely to happen soon, once it happens, there will be a rapid phase change in the economy. Emissions will decline rapidly, with significant ripple effects. Investors must be ready for this.