

Climate change: Implications for emerging markets

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We often hear about climate change, the impacts on the environment and the potential effect on future generations. But how does climate change impact emerging markets?

I recently attended a seminar on climate change which was hosted by CLSA and presented by Historical Climatologist, Evelyn Browning Garriss*. I found that there are a few implications for investors when long term decision making.

Top view

- Man-made climate change is a fairly linear problem. Natural climate change goes through cycles that ebb and flow. The balance of human and natural influences can vary from place to place, with climate change in cities being as much as 85 - 90% man made while remote areas of the ocean may have as much as 80% of their climate change due to natural occurrences.
- At a very top level, a change in global temperature dictates the overall theme, with very small changes in temperature having a rather surprisingly massive effect. Over the last 1000 years the temperature has changed within a 1 degree centigrade band. The warm period was in the medieval period between 1000ad to 1400ad and the cold period from then to 1900 (when we skated on the Thames). At the extremes of the 1 degree centigrade band we see as much as a 1000km difference in where freeze zones are located. We are heading to a new period, with some rural areas cooler than 1000 years ago, but with certain cities around the globe reaching temperatures not seen for thousands of years.

Moving closer

- Looking a bit closer and taking a more short-term (i.e. from decade to decade/year to year) point of view, the weather is dramatically effected by sea temperature. This is because the sea stores radiation (solar energy) and it moves this energy around the planet. We know that earth is 70% water. We need to know firstly if there is anything stopping that energy getting to the seas (i.e. volcanic ash) and changes in flow (e.g. if ice melts it not only cools the sea but it alters the amount of salt in the water - i.e. the density - and how it ultimately flows). Of course, there are persistent forces that may override the theme.

- Volcanoes and La Nina effect the weather the most in the short term.
- Solar activities have long-term cycles (11yrs) and we are about to start a new phase of increased activity (warmer). There have been cycles where some scientists estimate that the peaking activity have made as much as 0.2 - 0.3 degrees difference in global temperature.

Investors should consider (next 10 years)

- In 1995 the gulf stream started moving faster and melting the cap. We are 15 years into a 30 - 40yr cycle of faster flowing Atlantic currents and warmer weathers. This causes oscillations in air temperatures which in effect pushes cold air to the land masses in winter. In Europe and eastern portions of North America, we may see more extreme weather patterns due to this - hotter summers and colder winters and generally drier.
- Changes in the Pacific are affecting Asian monsoons. The monsoons that affect North and Central China should be stronger while there is a strong risk that the South China Sea monsoon may weaken. The south of China will experience periods of drought.
- As mentioned above, the sea moves the energy. Luckily for South East Asia (except Indonesia due to its positioning) it is very stable. Rice production, from a long-term point of view, is therefore reasonably stable. Crops that are grown more laterally tend to suffer with the changing weather patterns (wheat, soy beans), due to the changing long-term Pacific Decadal Oscillation (PDO). Indonesia is different and is dramatically affected by El Nino and La Nina effects. Thailand, Singapore and Malaysia seem to be stable. We can expect continued heavier rainfall in eastern Australia with a higher risk of flooding during La Ninas.
- South America will be drier (especially Chile and Argentina). Southern Brazil will be wetter. The weather in the Mexican Gulf will apparently be more vulnerable to tropical storms and hurricanes.
- Droughts in south China will be a factor. This could effect electricity production and potentially water scarcity (so more dams built for storage - potential for increased political problems in the Mekong Delta). Apparently monsoonal winds should be more regular in north China/Asia - improving conditions for wind farms.
- The main short-term signal that will cause a large change in the climate is a large volcanic eruption. Indonesia/Russia/Alaska are key places to watch for this. Apparently the location and size has a lot to do with the effect, but if we see a bloom of smoke greater than 15km high, located above the equator (this will thus effect the northern hemisphere due to how the wind pushes the clouds) then we can safely say this would imply colder weather = failing/reduced crop yield. Another important weather factor to consider is El Nino and La Ninas, which can shape extreme precipitation patterns.

Conclusion

Although weather forecasting is notoriously difficult, with there being few certainties, it seems that by monitoring long term climate change there are clearly implications for investors. We have recently seen a rise in coal prices due to the droughts in southern China (decreased hydroelectricity production) and the worst quarterly economic growth in Australia since 1991 due to the flooding in resource rich Queensland earlier in the year. The long term forecast is for that trend to continue and even more volatile and severe climate events. Investors would be well served by understanding these implications.



* Evelyn Browning-Garriss is the author of *The Browning Newsletter*, a monthly publication for long-term climate forecasts.

Picture source: http://upload.wikimedia.org/wikipedia/en/9/91/Severe_weather_montage.jpg