

# Financial Side of Global Warming

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**ABSTRACT:** *With the accelerated growth of the disaster bond industry, a steady development a drop in their risk premiums was noted. If this latter pattern is in line with the evolution of the probability of natural catastrophes remains an unanswered mystery. Indeed, a substantial percentage of outstanding risk capital on the market for cat bonds tends to be vulnerable to some climatic conditions. Change-related risk, such as hurricane risk, which is anticipated to be global warming reinforce. This paper discusses the topic above by analyzing the facts of global warming, its impacts on the natural environment, and the drivers of risk premiums for cat bonds. We find that radioactive forcing, i.e. the net insolation consumed by the Planet, drives the warming trend of natural phenomena such as ENSO and Atlantic hurricanes in temperature fluctuations and cycle evolution, increasing their destructive effects. Therefore, in view of the current contributions of human activities to radioactive forcing, i.e. emissions of greenhouse gases, there tend to be a growing trend in the probability of natural disasters. Nevertheless, the latter does not seem to have been appropriately priced in the market for pet bonds so far. In fact, while we find that the decreasing trend in multiple cat bonds is accounted for by the Fed's expansionary monetary stance; we also find evidence of substantial undervaluation of the probability of natural disasters.*

**KEYWORDS:** *Kyoto Protocol, carbon emissions, allowable emissions, abatement costs, fossil fuel, nuclear power.*

## INTRODUCTION

In a shocking growth, on 23 July 2001, 178 out of 179 countries agreed in Bonn, Germany, to go forward with the adoption of the Kyoto Protocol. The last holdout was the United States, which, under the Clinton administration, moved from being a leading champion for global warming policies to a solitary skeptic under the Bush administration[1]. If all proceeds continue as planned, the Kyoto Protocol will proceed with the enforcement of the initial commitments of all countries other than the United States. This Policy Platform explores the effect of the current agreement on the climate and the economy and contrasts it with the initial Kyoto Protocol. In addition to its original provisions, two additional elements were added to the Kyoto Protocol as amended in Bonn: First, countries are permitted to subtract such rises in carbon sequestered in 'sinks' such as forests from their manufacturing carbon emissions.

However, these offsets for the period 2008 to 2012 are limited to a total of 55 million tonnes of carbon per year. Given that the total annual allowable emissions for that period are about 2500 million tonnes, this amounts to a relaxation of about 2 percent of emissions (all these statistics exclude the United States) (all these statistics exclude the United States)[2]. A second key provision involves the ability to trade emissions allowances. Economists have stressed that

enabling countries (and exchanges within countries) to buy and sell carbon allowances will minimize abatement costs by between 50 and 75 percent. Those who object to trading have argued that in developing countries there should be limits on "supplementary measures" arising from purchased emission permits or programs. This dilemma remains unanswered, except that no credits would be approved in developed countries to substitute fossil fuel for nuclear power[3]. The present study indicates that the accord would do relatively little in emissions reductions without U.S. involvement limiting global carbon-dioxide emissions by around 1 percent compared to no strategy in the first period, 2008 to 2012. The United States was scheduled to pay the greatest share in the initial protocol, and its expenses are now insignificant. Notwithstanding its high costs, the agreement could still be useful as an exercise in structural creativity, or as a first step towards more effective approaches focused on harmonized carbon taxes[4].

### RICE MODEL APPLICATIONS

I have focused on a revised version of the 'RICE' model (Regional Consolidated Climate and Economy Model) of global warming economics to quantify the economic effects of the Kyoto-Bonn Accord. The RICE model is an advanced evaluation model integrating an eight-region economy and greenhouse gas emissions model, along with a carbon cycle and climate change module. The model is based on a traditional neoclassical model of development strengthened by the externality of the climate and the environmental market. Governments here curb emissions either through the use of carbon taxes or through pollution permit auctions. The framework is an improved variant, called the RICE-2001 model, of the RICE-99 model[5]. The new edition uses the same framework as the original in economic and environmental terms, but introduces two sets of improvements. First, to reflect the most recent results, it updates the carbon and economic forecasts. Faster expected economic growth in the United States and Europe and marginally higher rates of autonomous carbon-saving technical transition in the United States are the main improvements. Second, both with and without U.S. intervention, it operates the RICE-2001 model.

Note also that the simulations presume that the boundaries of Kyoto continue to the same extent after 2010. Economic models, whether of global warming economics or other factors such as business cycles, have significant trouble combining the various "frictions" that exist in real-world economies. In the present case, friction is likely to plague the emissions market and prevent carbon price equalization (i.e. carbon dioxide release license prices) in all participating countries and industries[6]. Significant frictions include impediments to trade, such as the limitations on supplemental steps discussed above; the inability of countries to get full credit for "forestry" alternatives if rules are closely written; limits on the selling of permits by countries to ensure that "overbooking" of quotas does not occur; and a variety of features such as transactions prices, regulatory and tax discrepancies, risk and confusion, and unfamiliarity. Such frictions would cause carbon markets to diverge in various areas or sectors and thus lead to higher costs of attaining the accord's pollution mitigation goals. Frictions are omitted from the present simulations, despite their

relevance. The RICE model is only one of many that examine the economic effects of climate change policies. It is especially difficult to model agreements such as the Kyoto Protocol because the effect depends on the disparity between targeted pollution and a highly unpredictable variable; emissions in the timeframe from 2008 to 2012. Therefore, like much forecasting in economics, the conclusions can be seen as suggestive rather than definite and continually subject to revision as new evidence arrives.

### ACCORD'S EFFECT

Global emissions under the Kyoto-Bonn Accord will be very close to 'business as normal' according to the RICE model. Global emissions are expected to be 1.5 percent lower in 2010 than those in a situation without restrictions if the current forestry offsets are overlooked and about 0.8 percent of global emissions with forestry offsets are ignored (not shown). The reductions amount to less than half of those prescribed by the original protocol. The less aggressive goals will be expressed in carbon pricing, where carbon prices are market price indexes and marginal carbon emission removal costs in multiple countries. Carbon prices in the adopting regions are expected to be sharply lower under this version without the United States compared with the original version, falling from around \$55 per tonne carbon in 2010 in the original version to around \$15 in the Kyoto-Bonn Accord (Of course, the reduction would be from \$55 to \$0 for the United States).

With the United States out of the picture, the price of permits in Europe falls drastically (but releases declines still deteriorate sharply) (but releases reductions also deteriorate sharply). The effect of the exit of the U.S. on the cost of declines is striking. It is estimated that global discounted cost of reduction will decline by 85 percent. Most of the downturn is attributed to the nonparticipation of the United States, where discounted abatement costs over the coming decades fall from \$2.5 trillion to virtually nil. (On a per annum basis, the U.S. expense decreases from around \$125 billion each year to nearby zero) Other countries' costs (or, in the case of Eastern Europe and Russia) decline dramatically as well. Of course, the reason for the fall in costs is that the amended KyotoBonn Accord does very little in terms of lowering emissions. For reference purposes, the statistics also illustrate the measured "efficient" approach on climate change. Economic efficiency refers to an outcome where pollution reductions and carbon rates are set such that the marginal costs and marginal advantages of emission reductions can be matched. As stated in the sources, it is incredibly difficult to evaluate successful policies in this area, especially because of uncertainty about the potential harm caused by climate change[7]. An ultimate evaluation of the deal is that, with very modest reductions in greenhouse emissions, it costs a high price.

### CONCLUSION

The Kyoto-Bonn Deal would make no progress, while incurring a significant expense, in halting global warming. But make no mistake: there is trouble ahead if the Kyoto-Bonn Accord is applied

as intended. The deal is especially optimistic in believing that countries will voluntarily move tens of billions of dollars to purchase phantom carbon from Russia and other Eastern European countries. It is likely to trigger trade tensions because the already significant oil market gaps between Europe and the United States are widening. This will lead; above all, to constant pressure on the Bush administration to develop a serious strategy on what it acknowledges is a serious global problem. The economic studies of the agreement have highlighted its inefficiencies, in particular the flaws in the usage of pure quantity instruments, such as pollution constraints without price controls or tax instruments. Given the high costs and limited advantages of the agreement, redesigning the agreement along the lines of a nationally harmonized carbon tax could be preferred. Given the current emphasis on yet another "global public good"; security from transnational terrorism; it seems unlikely that, in the near term, a grand coalition will be formed to rewrite the global warming rules. The big merit of the current agreement in this situation is that it is the first experiment with business instruments in a genuinely global environmental agreement. There is no understanding of the value of such "institutional innovations," and far less appreciation of the fact that there are no systems such as global warming to deal with global economic public goods. The Kyoto-Bonn Accord can be a valuable, if pricey, guinea pig for this cause. The Kyoto-Bonn process activity would offer useful information into how complex multinational environmental schemes are going to operate. It is impossible to understand that the United States does not pay for this information along with other nations.

## REFERENCES

- [1] S. Dietz, A. Bowen, C. Dixon, and P. Gradwell, "Climate value at risk' of global financial assets," *Nature Climate Change*, 2016, doi: 10.1038/nclimate2972.
- [2] H. W. Sinn, "Public policies against global warming: A supply side approach," *International Tax and Public Finance*, 2008, doi: 10.1007/s10797-008-9082-z.
- [3] R. A. Kerr, "Pushing the scary side of global warming," *Science*. 2007, doi: 10.1126/science.316.5830.1412.
- [4] S. Feng and Q. Fu, "Expansion of global drylands under a warming climate," *Atmospheric Chemistry and Physics*, 2013, doi: 10.5194/acp-13-10081-2013.
- [5] M. Hoel and S. Kverndokk, "Depletion of fossil fuels and the impacts of global warming," *Resource and Energy Economics*, 1996, doi: 10.1016/0928-7655(96)00005-X.
- [6] R. Novy-Marx, "Predicting anomaly performance with politics, the weather,

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- global warming, sunspots, and the stars,” *Journal of Financial Economics*, 2014, doi: 10.1016/j.jfineco.2014.02.002.
- [7] C. H. Cho, M. L. Martens, H. Kim, and M. Rodrigue, “Astroturfing Global Warming: It Isn’t Always Greener on the Other Side of the Fence,” *Journal of Business Ethics*, 2011, doi: 10.1007/s10551-011-0950-6.