



Leibniz Institute for Financial Research SAFE  
Sustainable Architecture for Finance in Europe (<https://safe-frankfurt.de/>)

## SAFE Finance Blog

### Natural Disasters May Affect all Areas of the Economy

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10/04/2018

In this interview, Christian Schlag talks about the economic effects of climate change



**You are concerned with the economic effects of climate change. How far is the research in this area?**

There are several branches of economic research that deal with different aspects of this subject. One example is to study climate-driven migration, which is triggered by climate change because, e.g., certain farming sectors no longer provide sufficient harvest. This creates migration flows with pronounced economic effects. In our own research, my co-authors and I deal with even more basic economic issues. For example, there are negative productivity effects and, consequently, welfare losses due to climate change. Research in this area is picking up now, not a least due to the fact that the problem has arrived in

public consciousness.

### **Climate change also may have negative effects on the financial markets. What does that mean for investors?**

First, there is the economic effect of falling productivity. Overall economic output decreases, and only this output can be distributed to investors via financial markets in the long run. Second, there is research that deals with the question whether climate-related risks and climate-related behavior of companies influence the valuation of shares. It is very well possible that pressure from investors causes a change in the behavior of companies. Climate change could therefore have some positive impacts on companies via the capital markets. However, certain lines of business can hardly be made climate-neutral. This is the case, for example, in the energy sector. However, factors such as environmental and social issues are becoming more important. Many players in the investment industry have started scrutinizing firms' behavior in these areas carefully.

### **Does the correlation between falling productivity and rising temperatures apply for all economies?**

There is variance in terms of intensity, with economies largely dominated by agriculture probably being affected most. Technologically developed countries have better opportunities to isolate their economies from climate shocks or to develop new strategies. The problem is that in order to achieve sustainable improvements, you have to start tackling the causes of the problem. In addition, as we show in our research, it is not just about the temperature increase in the context of "global warming", but also about temperature volatility. The more the weather deviates from the "normal" cycles, the more negative the economic effects are.

### **In your studies you argue that with temperature shocks, spending on research and development will decline. Does the state need to step in?**

Spending for research and development is falling as standard technology becomes less productive and attractive. It would be desirable that innovations are made in areas that have not yet been heavily promoted. It becomes more difficult to find the social willingness for it. One problem is that the costs of external effects with negative environmental impacts are poorly distributed to the polluter. In some areas, we do not pay the prices that would be reasonable to cover the resulting environmental damage. This could speak for state action. If regulatory measures are adopted, adaptation in the manufacturing industry is usually rapid. This is shown by experience, for example in catalytic converters for cars. Better than regulation, however, would be intelligent, incentive-based solutions. These would have to provide incentives to behave optimally from self-calculus. That is better because not so much energy is invested in the circumventing regulations.

### **Is awareness strong enough in companies and governments?**

We have definitely advanced considerably compared to ten years ago. Think of the so-called "Green Bonds": these are bonds issued by companies that can present themselves as particularly environmentally conscious. Interestingly, even countries have also started issuing Green Bonds, e.g., France. Of course, this is at least in part related to marketing. But this fact nevertheless shows that consciousness has grown. Of course, not all that glitters is gold. Nevertheless, things get moving.

### **How can companies prepare for climate change?**

It depends on the respective industry. Reducing energy dependence often makes sense. Companies should also be aware that, for example, climate-induced natural disasters are factors that affect all areas of the economy, e.g., by deteriorating the capital base of insurers and reinsurers. These businesses

consequently become more expensive, which is why certain economic activities are probably not pursued anymore due to excessive risk. This has the potential to undermine investment and thus growth.

### **Where do you see the most pressing questions for future research?**

The cooperation of different disciplines is important. Natural scientists have a better understanding of climate change and related processes. Economists on the other hand are experts at investigating how scarce resources should be optimally allocated for competing uses. The collaboration can prove very fertile, also with other disciplines such as the social sciences. The necessary measures must be implemented politically without scaring voters. Social and political acceptance is crucially important for change and therefore expertise from social science may help a lot. The challenge will be to create sensible economic incentives for “good” climate-related behavior in as many areas as possible.

*Christian Schlag (<https://safe-frankfurt.de/research/researchers/researchers-details/showauthor/91-schlag.html>) is Program Director for "Financial Markets - Trading and Pricing" at the SAFE Research Center.*

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