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Climate Lecture 2009: "The Economics of Climate Change"

In Recognition

Address (Laudatio) on the bestowal of the Honorary Doctorate Dr. rer. oec. honoris causa (h.c.) on Professor Lord Nicholas Herbert Stern of Brentford

by Prof. Ottmar Edenhofer, TU Berlin, November 4 2009

President,
Madam Senator,
Mr. Hatakka,
Dean,
Ladies and Gentlemen,
The Right Honourable Lord Stern, dear Nick,

A cynic knows the price of everything and the value of nothing. Oscar Wilde's bon mot expresses how some environmentalists and philosophers view the guild of climate economists. Admittedly, this perception is an exaggeration and in many cases misleading. Nevertheless there lies some truth in it. At first glance, climate economists focus primarily on the costs of emission reduction and underestimate the risks of dangerous climate change. Therefore, many ecologists and other concerned people have perceived economists as cynics because of their tendency to emphasize the price of climate policy and discount the value of a functioning natural environment. If these economists were challenged, they would even ask how much consumers are willing to pay for the existence of planet Earth. Even if some economists try to prove that people would pay for a well-functioning Earth system, not only non-economists feel that there must be something wrong with a profession analyzing these kinds of questions.

Lord Nicholas Stern was not the first but the most prominent economist who blamed his own profession for applying inappropriate concepts to the economics of climate change. The Stern Review, published in 2006, did not mark the conversion of a hard-nosed economist to a green activist but offered a methodological foundation for the application of sound economics to climate change. The Stern Review has not only been written by an excellent economist but also by an outstanding policy adviser who has a profound understanding of the political process.

Nick's professional achievements are too numerous to be all pointed out here. I can only mention a few. As Chief Economist of the European Bank for Reconstruction and Development, Nick focused his research activities on the economic development of Eastern-European countries in transition. He developed strategies for a tax reform and has analyzed the role of states in this transformation process. In his position as chief-economist of the World Bank, he became famous beyond the narrowed circles of economists because of four important reports. In particular, his book "A Case for Aid: Building Consensus for Development Assistance", has been perceived as a breakthrough. It summarizes the results of the UN-Conference on Financing for Development in Monterrey 2002. This publication was not only the official publication of the World Bank for the Monterrey-Consensus but it also has been crucial in facilitating the international debate on aid and development.

Nick is an economist who emphasizes that economics has a normative as well as a descriptive part. These are two sides of the same coin. He has published outstanding contributions on the methodological foundation of cost-benefit analysis, on optimal taxation, on growth theory and development economics: He has explored not only the application of cost-benefit analysis to different public domains such as tax-, tariff or income distribution policy. He has also developed a theoretical framework for cost-benefit analysis which has enhanced our understanding how and when this tool should be applied for policy advice. Together with Tony Atkinson, he explored the provision and the financing of public goods in second-best settings where lump-sum taxes are not feasible. In his review article on economic growth, Nick has synthesized economic growth theory and pointed out that it is of limited value for policy advice because it is too much focused on capital accumulation, population growth and knowledge. He wisely recommended a revised research agenda in which infrastructure investments and institutional determinants should be the pillars of new theory of economic growth. He also highlighted the necessity of a broader understanding of welfare indices. His engagement in the Stiglitz-Commission which proposed new indicators for human-well being and revision of the predominant GDP is nothing more than a logical consequence of conclusions he derived two decades before the Stiglitz commission has been installed.

As one of the reviewers for the honorary doctorate put it, Nick Stern is the ideal-type of an economist who combines normative philosophical insights, the highest level of mathematical sophistication and the capability to advise policymakers effectively. Nick's fellow countryman John Maynard Keynes once claimed that economists either want to advise governments or become very rich on the stock market. Quite unsurprisingly, Keynes himself achieved both with bravura. Admittedly, I have no deeper understanding of Nick's financial constitution. But I do know that he has been one of the most influential political advisers. Many academics believe that the most important way to influence science is publishing papers in peer-reviewed journals. They are right. However, there are a few scientists who have been able to change both the scientific agenda as well as the political agenda. For example, the Meade Report, published in 1978, has changed the way economists and governments think about tax policy. The IPCC has changed the way governments and the public think about climate change. The Stern Review has changed the way we think about the

economics of climate change. Without the Stern Review, eminent main-stream economists would not as much focus their research on the economics of climate change as they do now. Without the Stern Review, the Technical University and the Michael Otto-Foundation would not have established a new chair on the economics of climate change. Without the Stern Review, the IPCC would probably not have decided to have a stronger focus on the economics of mitigation and adaptation. Without the Stern Report, the IPCC would not have elected an economist as one of its co-chairs. In other words, without the Stern Review, I would probably be unemployed.

Many academics would agree that the Stern Report has emancipated climate economics to become a visible and highly active research strand. They would agree that this is the most laudable impact of the Stern Review. However, some academics are extremely suspicious when scientists serve as policy advisers. They feel that they misuse their status as academics in promoting an often hidden political agenda. And indeed, there are cases where scientists have played the role of truth-tellers. However, scientists are needed for dealing with extremely complicated issues like climate policy, energy strategies and geo-engineering. Instead of prescribing decisions, they should inform decision-makers and the public about the costs and benefits of different options. The Stern Review is a role model in this respect. It is explicit about its value judgments, it is informative about the alternatives and it argues not as a truth-teller but confronts policy-makers with the consequences of their choice. Even if you disagree with the conclusion of the Stern Review, the way how it formulates policy advice is exemplary.

Let me highlight this point along four important topics which have been explored by the Stern Review and will play a crucial role over the coming years: 1) Estimating the costs of action and the costs of non-action, 2) How to value the welfare of future generations and distributional issues, 3) Technological Change and 4) The institutional requirements for an effective, fair and efficient climate policy framework.

1. Estimating the Costs of Action and the Costs of Non-Action

In contrast to public perception, the Stern Review has never carried out a cost-benefit approach where an optimal emission pathway has been derived. It has resisted doing so because the empirical basis is too weak to calculate the social costs of carbon. Admittedly, the Stern Report has used models for a stochastic cost-benefit analysis. However, the report has not applied these models for justifying policy advice but for explaining concept of the social costs of carbon. The report points out that the social costs of carbon are highly sensitive to assumptions about the model structure, carbon cycles, climate sensitivity, future technologies and, last but not least, the value we attach to future generations' wellbeing. Given this sensitivity, Stern has pointed out how careless many economists use the social cost of carbon as a basis for policy advice. Therefore, he prefers a target approach. The target approach allows for deriving the costs of emission reduction for a given concentration or temperature goal. Economists are now publishing new results on the costs of very low stabilization scenarios. Some researchers argue that achieving a 2°C-target is very ambitious, some argue even over-ambitious. On the other hand, climate scientists emphasize

the risk of dangerous climate change even if humankind will be successful to limit the increase of the Global Mean Temperature to 2°C. We will have an intensive debate over the next few years about the impacts of climate change and the costs of climate policy. Therefore, the IPCC has decided to organize its work for the next five years in a way that allows for exploring the impacts of climate change and the costs of emission reduction. The IPCC is aware that a simplistic approach of a cost-benefit analysis is not helpful to inform policy-makers and the public.

2. Technological Change

It is obvious that technological change might reduce the costs of emission reduction. The Stern Review gave technological change the attention this issue really deserves. Some might argue that the report was very optimistic about future technological change. However, even if the precise numbers are not totally convincing, Nick Stern chose the right methodological approach. He compared the bottom-up analysis carried out by sector and technology experts with macro-economic top-down models. The IPCC is now working very hard to assess the impact of technological change on mitigation costs. This assessment will be based on insights from engineering and the macro-economic patterns of technological change. In contrast to its previous assessments, the IPCC will evaluate the literature extensively which provides cost estimations when limited availability of technologies like renewables, nuclear power or CCS are taken into account.

The Stern Review had not the intention to have the final word on this important subject. It has been a starting point for a new promising research agenda. As always in science, simply asking a good question is much more stimulating than giving final answers to misleading questions.

3. Future Generations and Ethical Issues

Our emission reduction effort does not only depend on how much technological change can be induced by climate policy but also on our discount rate. Even non-economists discount their future when they invest or save. One Euro received today seems to be more valuable than one Euro received in a year. The discount rate becomes a crucial parameter in standard-cost-benefit analysis because it determines how much the current generation should invest in carbon-free technologies. There is an on-going debate whether discount rates should be calibrated according to observed interest rates or according to normative arguments about justice and fairness. Nick Stern has rightly blamed economists for applying welfare theory in an inappropriate way on climate change. He argues that most economists made a fundamental mistake when they used marginal concepts for an assessment of non-marginal changes. The social discount rate depends on a given reference path for growth in consumption and will be different for different pathways. If we expect non-marginal climate damage or non-marginal technological change, then future market interest rates will be affected substantially. Therefore, the discount rate cannot be constant, it will and has to vary over time. In addition, in an uncertain world, there will be a different discount rate for each possible sequence of outcomes. In economies with market imperfections, the market interest rates are not reflecting current or future externalities. Therefore, applying a constant social discount rate calibrated on current

market interest rates is misleading because climate policy choices are non-marginal in their nature and will change the social discount rate endogenously. This insight implies that ethical reasoning is unavoidable in determining social discounting. Nick has reminded us of the normative aspects of economics and we should not ignore them. Instead, we should explore the consequences of different value judgments and discuss them in a process of public deliberation. In this context, it may be of interest to you that the IPCC has decided in Bali last week to devote an own chapter to economics and ethics in its upcoming Fifth Assessment Report. Following Nicks example, the report will explicitly explore and address the normative aspects of economics and discounting.

4. An allegory on the Global Deal

In his recent publication on a Global Deal, Nick has avoided to torture his readers with discounting, technological change and the social costs of carbon. Instead, he basically argues that climate change is an opportunity for humankind for a safer and a cleaner planet. And he convinces us that his Global Deal or Blueprint for a better planet requires a few, relatively demanding institutional innovations. He asks for a Global Emission Trading Scheme, for Technology Sharing, for Financing Avoided Deforestation and for an International Adaptation Fund. He also argues that these types of institution are required anyway if humankind wants to safeguard the provision of the most basic and vital global public goods.

There is no need to go into details here because Nick will explain it much better than I could do. Instead of explaining and praising his Global Deal, I will offer an extension of an illustrative story he sometimes tells his audience: Assume that there are ten people walking through the desert. Two of them have already used half of the water available. Meanwhile these ten people become more and more aware that water is an essential resource for all of them. The two heavy drinkers propose that the rest of the water should be shared equally among the ten. I suppose this proposal is not only perceived as problematic by you but also by at least eight out of the ten people.

Let us now assume that there are also two economists who accompany the trip through the desert. The first economist argues that he cannot help much because there is no room for a Pareto-improving policy. Instead, this purely distributional problem should be left to philosophers to solve. It is not hard to imagine that severe conflicts over the remaining water might emerge and the prospects for the group's survival become rather bleak. In the end, it does not matter for what reasons these people have died – because of a lack of water or because of the conflict this lack provoked.

The second economist, however, argues that it does not make any sense to start a war on water. She tells the group that focusing on past misdeed is not really helpful in this situation. Instead, so she argues, should the two people who already benefited from the water use their energy to swiftly find the next oasis. Now, they all hope that the exploration team will come back soon with the right directions to the nearest water well. The water will then be distributed in a way that all of them can make it to the oasis. They also hope that the water there is sufficient so that everybody can

walk even further beyond the desert to a place where water is no longer a scarce resource.

I cannot tell how this story ends; in fact nobody can. I can only share with all of you the hope that it will turn out to have a happy ending. What I do know, however, is that the second economist must have read the Stern Review. Thanks to Nick, the global debate on climate change is now moving into the right direction: away from inevitable conflict and despair towards building cooperation and finding solutions that last. It has turned out that economics is no longer 'the dismal science' but provides a road map to the oasis of a low carbon economy. This is the reason why the Technical University of Berlin awarded you, Dear Nick, the honorary doctorate and the opportunity to hold the Climate Lecture 2009. I warmly welcome their decision and thank you for the invaluable services you have rendered the global community.