COMMENTS ON SESSION 4
ENVIRONMENTAL ISSUES AND SUSTAINABILITY REPORTING IN THE POLICY DEBATE

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Discussion on two papers on climate change issues

Introduction

The two papers I have been asked to comment stand out as the only ones in this workshop that tackle sustainability issues related to climate change. The two essays, however, focus on rather different aspects of this issue. In their paper, Heipertz and Nickel assess the effects on public budgets by some extreme weather events that occurred in the recent past, such as the flooding in the summer 2002 of central European rivers, affecting especially the Czech Republic and Austria, and the hurricane Katrina in 2005, affecting the South-eastern states of the US. The underlying idea in that paper is to draw the inferences on public finances by possible future extreme weather events related to climate change. In addition, policy recommendations related to insurances and public savings are proposed. Honkatukia and Stenborg, on the other hand, analyze – in a general equilibrium model – the long-run effects of a 20 per cent cut in greenhouse gases on GDP, employment and industry structure in the Finnish economy. They draw policy conclusions for public finances and also, interestingly, for wage formation and competition.

Uncertainties but also consensus

The long-run impact on the public finances of climate change and of instruments to mitigate its effects could potentially be an issue as important as that of demographic developments and their long-run consequences, which is the main topic of this workshop. However, uncertainties about these repercussions seem to be very large. This goes for the size of the temperature increase in the coming decades and its effects on the weather, given current policies, technologies etc. How will the latter look like half a century from now and how will policy actions affect that development are further questions with uncertain answers. There is also an ongoing debate among researchers about how efficient the various policy instruments are for the purpose of reducing greenhouse emissions. Finally, as policies related to climate change must, to a large extent, be handled at the international level, there also exists an uncertainty about the possibilities to agree on efficient rules and policies. These will soon be tested in the upcoming negotiations on a Kyoto 2 agreement. The experiences from Kyoto 1 were not that encouraging, probably because several important countries did not take part in it.

Still, in recent years we have seen a consensus building up about the fact that we actually have a greenhouse problem and that policies must be implemented, and rather soon. This view is dominant among a vast majority of researchers in the area, although there exist critics. This view is most distinctly expressed in the report by the UN Intergovernmental Panel on Climate Change (IPCC) which is now the base for studies and for policy initiatives in many countries at the international level. The findings by IPCC also imply effects on the public finances, on countries'

[*] Delegation of Sweden to the OECD, Paris.

GDP and on other macroeconomic variables. This background fully justifies the studies by Heipertz and Nickel and by Honkatukia and Stenborg.

On "Climate Change Brings Stormy Days: Case Studies on the Impact of Extreme Weather Events on Public Finances", by Martin Heipertz and Christiane Nickel

The main idea in the paper by Heipertz and Nickel is to look at fiscal consequences of cases of extreme whether in recent past to better understand the fiscal dimension of consequences of climate change events. The authors discuss direct and indirect effects on public finances. The first are expenditures related to protection and repair (public investment), technical assistance, and relief in the form of transfers to private households and companies. In addition to this there's the "indirect fiscal impact" on GDP growth. The authors use model-based estimates and information provided by reinsurance companies to derive estimates of these effects. The authors are well aware of the limitations of both these methods. The model-based estimates lack time dimension and the information from insurance companies probably underreports the size of disaster effects. Given these restrictions, the authors limit themselves to estimate a minimum proxy for the fiscal costs of a certain disaster.

The estimates of the indirect fiscal impact seem reasonable and are in most cases small as percentage points of GDP. Only in the case of the 2002 flooding in the Czech Republic the estimated effects amounted to more than 1 percent of GDP in one year. A key question now follows: how far can inferences from these results related to past extreme whether events be drawn in the context of future events caused by future global warming? The estimates certainly are valuable inputs to assessments of effects on the public finances of a future climate change. But if we believe, as the IPCC does, that storms and floods will become more frequent in the future, events close in time could reinforce their effects in non-linear ways. The same goes, as is often claimed, for large changes in temperatures.

A Swedish Governmental Office Report, *Sweden Facing Climate Change*, discusses the impact on Swedish public finances of the global heating scenario given by IPCC. This is done for a time horizon of a hundred years from now.[1] The same type of events as discussed by Heipertz and Nickel dominates the report, *i.e.* flooding of lakes and watercourses, costal erosion, damages brought by storm fires and felling of forests, problems with drinking water supplies and increased cooling need when temperatures rise. However, this report also emphasises the potential increased needs in the health care sector, an effect which Heipertz and Nickel do not touch upon. Problems with water supply and sewage leak into water sources and water pipelines could potentially feed the spread of infections. When the climate gets warmer diseases like ticks, borrelia and TBE could spread more extensively compared to now. In the report the expenditure increase in the health care sector is seen as one of the most important threats to the public finances. However, this report also discusses some potential *positive* effects of a warmer climate in Sweden, a northern country whose territory spreads even within the polar circle. Obviously, there will be a reduced need for indoor heating. A warmer and possibly more humid climate will increase growth of forests and increase yields in agriculture. Hydropower production would increase. And tax receipts from these sectors will grow, bringing positive developments for public finances as a consequence. The report's rough calculations of these positive effects are more or less of the same size as the negative effects

[1] Swedish Governmental Official reports (SOU 2007:60), Stockholm, 2007.

discussed earlier. It goes without saying that the effects would be very different in countries where a warmer climate means severe drought.[2]

Heipertz and Nickel conclude, very reasonably, that countries with sound public finance positions and resilient economies will deal with extreme weather much better than countries that already suffer from problems of sustainability. This view must of course be supported. To that it could be added that, in addition to sustainability pressure stemming from upcoming demographic developments, long-term meteorological effects could in many countries constitute another substantial factor of strain. There could emerge a "double sustainability problem".

On "The Effects of Long-run Emission Targets on the Finnish Economy" by Markku Stenborg and Juha Honkatukia

In their paper, Stenborg and Honkatukia deal with very different problems related to greenhouse effects. They evaluate the long-run effects of a possible abatement of greenhouse gases on the Finnish economy. The authors use a general equilibrium model to assess the effects of reducing greenhouse gas emissions by 20 per cent up to 2025. The assessment is carried forward in comparison with a baseline scenario with no climate policies. The model also allows analyses of branch-specific effects, which are of special interest in the case of Finland where some branches of the economy are very energy-intensive.

The dynamic features of the model implemented give rise to interesting analyses. Introduction of greenhouse instruments change relative prices in the economy. In the medium run real wages would be a candidate to take a large part of the adjustment burden. However, wages in Finland are, according to the authors, relatively rigid. This means that there is a risk for unemployment and hysteresis when prices on greenhouse emission are increased, with the result of a high and persistent structural unemployment. This is an interesting result, but the authors could perhaps have provided background information on the Finnish wage rigidities and on how they have been accounted for into the model.

Stenborg and Honkatukia find rather large effects on the Finnish economy of mitigation policies: their effects are more conspicuous compared to those found by the EU Commission in other studies. Mitigation policies would, according to the results presented in the paper, cause GDP to fall by over 3 per cent in the short run and that would cause the loss of 60,000 jobs. And GDP would fall around 2 per cent in the longer run, with increases in structural unemployment as a result.

In the gradual adjustment process towards a long-run equilibrium, the Finnish economy would be more labour- and service-intensive. Capital-intensive industries could diminish in importance and possibly move abroad. These are interesting results and they go against the view held in many quarters that increased taxation on greenhouse emissions, or high prices on emission permits, not only lead to a more labour-intensive economy but also to a higher level of employment. The authors show that this is probably not the case. The introduction of rigidities in the wage formation process enriches the analysis, which points to the need of a well-functioning labour market. Improvements in productivity in labour-intensive sectors, such as the service sector, are also needed so as to absorb the workforce coming from capital-intensive sectors, where employment will drop. Another interesting result is that a gradual phase-in of an emission reduction policy would provide a smoother transfer of the workforce compared to an early action.

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[2] Swedish Governmental Official reports (SOU 2007:60), summary in English, p. 12-29.

Stenborg and Honkatukia's contribution enriches the analyses and the debate on these issues. Further research along these lines would be very much welcomed as the effects of future climate change and of policies introduced to mitigate such effects are for the moment uncertain.