Economic Models for Inland Navigation in the Context of Climate Change

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In this dissertation both public and private adaptation measures against climate change are studied for the inland navigation market in the Rhine area in North-Western Europe. Climate change is expected to cause more extreme and volatile water levels. The focus has been on extremely low water levels which result in capacity decreases for barges, and economic welfare losses due to increased costs. The optimal barge-size is derived as an example of private adaptation. As an example of public adaptation, infrastructure investments are studied, and it is found that dredging may be a cost-effective strategy to cope with climate change. As another aspect, the directional imbalances in demand for transport between the Netherlands and Germany have been studied. It is shown numerically that, due to imbalances, Germany will benefit more from infrastructure investments to address climate change impacts. Empirically, the effect of imbalance on freight prices is estimated.

Erhan Demirel (1978) obtained his Master's degree in econometrics at the Erasmus University, Rotterdam, in 2003. In 2006 he started his PhD project which was part of the Vulnerability, Adaptation and Mitigation (VAM) programme of NWO. This dissertation is the end product of his PhD project. His supervisors have been Piet Rietveld and Jos van Ommeren at the Department of Spatial Economics, VU University, Amsterdam.

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