

Ville Inkinen

PhD Candidate

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EDUCATION	PhD Economics, University of Gothenburg Expected graduation: June 2023 Supervisors: Associate Professor Jessica Coria and Professor Mikael Lindahl MSc Economics, University of Gothenburg Master of Laws, University of Helsinki	2018–2023 2016–2018 2008–2014
FIELDS	Environmental economics; Public economics	
EMPLOYMENT	<i>Research Assistant</i> , IVL Swedish Environmental Research Institute <i>Research Assistant</i> , Department of Economics, University of Gothenburg <i>Legal Advisor</i> , The Finnish Defence Forces <i>Legal Intern</i> , The Ministry of the Environment, Finland <i>Research Assistant</i> , Faculty of Law, University of Helsinki	2018 2017–2018 2015 2013–2014 2012–2013
DISSERTATION CHAPTERS	Using Markets for Environmental Offsetting: Evaluation of Wetland Area Gains and Losses under the US Clean Water Act (<i>Job market paper</i> ; with Jessica Coria, João Vaz, and Yann Clough) The Effect of Water Resource Protection on Construction Employment in the United States (<i>Work in progress</i>) Analysis of Distortions in the US Wetland Compensatory Credit Market (<i>Work in progress</i> ; with João Vaz and Jessica Coria)	
PRESENTATIONS	Nordic Annual Environmental and Resource Economics Workshop Scandinavian PhD Exchange Seminar, Uppsala University Ulvön Conference on Environmental Economics Environmental Economics Workshop, Toulouse School of Economics Ecological Restoration Business Association Virtual Industry Research Day, US Biodiversity Group Seminar, Lund University	2022 2022 2022 2022 2022 2021
TEACHING	Thesis supervisor (BSc level) Teaching assistant, Environmental Economics (BSc level) Teaching assistant, Intermediate Statistics I & II (BSc level)	2022 2020 2020–2022
SERVICE	Referee for: <i>The Journal of Law, Economics, and Organization</i>	
LANGUAGES	English (fluent), Finnish (native), Swedish (proficient)	
PROGRAMMING	R, Python, Stata, Matlab	
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Dissertation Abstract

The uncertainty and risks associated with catastrophic biodiversity loss require urgent and effective action from national governments (Dasgupta, 2021). Although biodiversity conservation imposes costs in terms of forgone economic opportunities, market-based conservation schemes have strong potential to reduce these costs (OECD, 2016). My research contributes to designing these markets such that they simultaneously mitigate market distortions and ensure environmental integrity.

In my dissertation, I study market-based biodiversity conservation policies using microeconometric methods, quasi-experimental research designs, and geospatial data. The analysis focuses on the wetland compensatory mitigation program under the US Clean Water Act. The program requires developers to compensate for adverse impacts on wetlands by purchasing credits that specialized firms have generated in advance from wetland conservation activities. As a result, the program has created a thriving private conservation industry. However, it is unclear whether the program is achieving its long-standing goal of no net loss of wetland area or functions.

In my *job market paper*, “**Using Markets for Environmental Offsetting: Evaluation of Wetland Area Gains and Losses under the US Clean Water Act**” (with Jessica Coria, João Vaz, and Yann Clough), we evaluate environmental outcomes in the compensatory credit markets. We measure wetland area gains at 400 compensation sites over 1995–2020 using a combination of high-resolution satellite imagery and land cover change data. Comparing realized compensation projects to planned but withdrawn projects in a difference-in-differences framework, we find that the majority of the gains would have not occurred without dedicated conservation activities. We also find that the market mechanism allocates the type and location of conservation activities according to the opportunity cost of land use. Nonetheless, the wetland area gains appear insufficient to compensate for the wetland area losses regulated within the program. This makes it unlikely that the program will achieve its environmental goals in the long term.

Our analysis is based on an optimistic scenario where the compensation activities perfectly succeed in recreating natural environments comparable to those that were lost due to economic development. Deviations from this assumption will render the implications of our results even less favorable. Further research on the program should scrutinize the degree of ecological equivalence between the lost wetland resources and the compensation projects.

In the second chapter of my thesis, “**The Effect of Water Resource Protection on Construction Employment in the United States**” (work in progress), I analyze the economic effects of recent changes in the geographical coverage of the Clean Water Act. The requirement to compensate for impacts to water resources constitutes a substantial compliance cost for regulated firms. Most of the compensation is financed through the compensation credit market embedded within the regulatory program. A major limitation of

the scheme is that the short-run credit supply is inelastic. In August 2018, a policy reform increased compensation requirements and, consequently, compensation credit demand in 22 states. I examine the effects of this policy reform on construction activity in a difference-in-differences framework. I find an overall reduction in construction employment in counties where compensation requirements increased. Counties adjacent to untreated counties are driving the effect, suggesting a spillover effect where firms relocate their construction activities to counties with lower regulatory stringency. My results also show that the decrease in construction activity is most prominent in counties where compensation credit supply was low or nonexistent at the time of the policy change. The regulator should take steps to avoid supply shortages and monopolistic conditions in the compensation credit market without compromising its environmental integrity.

In the third chapter of my thesis, “**Analysis of Distortions in the US Wetland Compensatory Credit Market**” (work in progress, with João Vaz and Jessica Coria), we develop a theoretical model of a market approach to compensating ecological damages. This paper offers an analysis of the US compensatory credit market under no-net-loss regulation from both an economic and ecological perspective. Compensatory mitigation markets differ from previous wetland policies that allow land developers to simultaneously develop and attempt restoration on the same site where wetlands are impacted. Concerns about ecological performance and cost of on-site restoration led to the implementation of off-site restoration by third-party firms. The effectiveness of no-net-loss regulation through a market of wetland restoration should account not only for ecological differences between on- and off-site restoration, but also for how the features of a market that trades in ecological units might impose economic distortions that mediate ecological and economic efficiency gains. We develop a model of a market for ecological offsets that examines how ecological uncertainty and economic distortions, such as insufficient/excessive market entry and market power, dictate ecological and economic outcomes. We test some of the key model assumptions and perform a numerical simulation using data from the US wetland compensatory mitigation market.

References

- Dasgupta, P. (2021). The economics of biodiversity: the Dasgupta review. (HM Treasury, London)
- OECD (2016). Biodiversity Offsets: Effective Design and Implementation. (OECD Publishing, Paris)