Wetland Mitigation Banking in the United States

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ACADEMIC THESIS

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ABSTRACT

In this thesis, I study market-based biodiversity conservation policies in the context of 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. In this work, I study aspects related to the environmental and economic performance of the program.

In the first chapter (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 Comparing realized compensation projects to planned but withdrawn projects in a difference-in-differences framework, we find that the majority of the gains would not have occurred without dedicated conservation activities. Nonetheless, the wetland area gains appear insufficient to compensate for the wetland area losses regulated within the program.

In the second chapter (with João Vaz and Jessica Coria), we provide a theoretical examination of the costs and benefits of the two approaches to compensate for impacts: market-based banking mechanisms that entail third-party offsets and the conventional command-and-control approach of developer-led offsets. We find that (1) if offsets by banks are of insufficient quality relative to developer-led offsets, a large enough market could compensate for the lack of equivalency due to cost-savings from market expansion, and (2) if entry costs are positively correlated with restoration quality, the market could hold banks of low quality, which is an outcome that favors the relative performance of developer-led offsets. We illustrate our results empirically in the case of the US wetland mitigation program.

In the third chapter, I examine the labor market effects of federal regulations that protect water resources in the United States. The Clean Water Rule, an executive order enacted in 2015, expanded the scope of waters that are federally protected under the Clean Water Act. I use a difference-in-differences framework to compare construction employment between the 22 states where the Rule was implemented and the 28 states where it was never implemented due to litigation in regional courts. I find that the overall effect of the Rule on construction employment was negligible. However, a negative effect appears in the four states that had unsuccessfully litigated against the Rule. Furthermore, the decrease in construction activity was most prominent in counties where low-cost compliance options through environmental offset markets were limited.

KEYWORDS: biodiversity, land use, offsetting, mitigation banking, wetlands

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