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Water taxation and the double dividend hypothesis

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ABSTRACT

The double dividend hypothesis contends that tax policies which are aimed at protecting the environment can potentially yield other benefits for the economy. However, empirical evidence of the potential impacts of environmental taxation in developing countries is still limited. This may be partly due to the limited use of environmental tax policies in economic and environmental management in many of these countries. This paper seeks to contribute to the literature by exploring the impact of a water tax in a developing country context, with Uganda as a case study. Policy makers in Uganda are exploring ways of raising revenue by taxing environmental goods such as water. Whereas their primary focus is to raise revenue, this study is aimed at demonstrating how taxes on environmental goods can potentially yield other benefits beyond addressing a country's fiscal needs.

This study employs a computable general equilibrium model to shed light on the impact of a water tax policy when a tax is accompanied by a plough-back scheme of the same magnitude. We seek to establish whether a water tax policy that is accompanied by a revenue plough-back scheme can induce more growth, employment and industry output. Whatever the degree of regressivity resulting from the tax, it is possible to design a policy that benefits the economy. The policy was also checked for sustainability using a long-run water demand scenario. The results show that water demand remains more or less on the same trajectory and in fact, a higher level of dividends is realized.

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1. Introduction

A number of developing countries are experiencing both economic and environmental challenges. Similarly, the ability for these countries to pursue their development goals is often inhibited by a lack of resources. In order to realize their goals, several countries have employed a combination of measures which have instead altered their patterns of production and consumption, leading to substantial economic costs. This has necessitated the need to put into place measures that are capable of minimizing the costs of environmental regulation while achieving the desired economy-wide behavioural changes [1]. As a result, policy-makers are increasingly paying attention to the potential for incentive-based environmental regulation, i.e., through economic instruments. This is because this approach has the potential to generate additional government revenues – in the form of environmental tax receipts or the proceeds of auctioned emissions trading allowances, depending on the setting. This has led to the need to develop a closer link between environmental policy and tax policy [2]. This need is borne out of the recognition that on the one hand, the new government revenues may provide an opportunity for tax reform. On another hand, the availability of environmental taxes alters the constraints and costs of a prevailing tax policy. Specifically, the new taxes in addition to the existing ones may have a distortionary impact on the labour and capital markets.

In line with the developments in the economic and environmental policy arena, this paper analyses the impact of a tax on water in a developing country context with Uganda as a case study. During the 2013/14 fiscal year, the Ministry of Finance Planning and Economic Development (MFPED) proposed to apply a Value Added Tax on water. This tax measure was aimed at improving tax administration and generating revenue (see [3], page 44). Since the use of environmental tax instruments has not been a common policy measure in Uganda, the proposed intervention constitutes an interesting policy research issue and has therefore partly motivated this study. The study is aimed at investigating the benefits of environmental taxation beyond revenue generation. It is critical to undertake a study that assesses the impact of such an intervention from an economy-wide perspective. First, empirical evidence suggests that taxes on water resources can yield multiple benefits for the economy if implemented on the basis of equity (see e.g., [4–7]). However, the economy-wide impacts are most likely to vary depending on the context and cannot therefore be known apriori [8]. In this regard, policymakers need to understand these impacts in order to balance between the need to maximize the aggregate gains from these tax reforms and the rights to equitable sharing of the associated costs and benefits.

Second, water resources are increasingly becoming stressed in terms of quantity and quality across the globe. These strains are emanating from economic activity, demographic trends as well as severe changes in climate [9,10]. Projections indicate increased rainfall in high altitudes, and decreased rainfall in the low lying areas [11]. In addition, the increase in temperatures implies larger water demand and higher rates of evaporation, all of which combine to aggravate the problem. In Uganda, changes in climatic conditions are being experienced through increased rainfall volatility across seasons and rising temperatures [12]. These changes in climate have implications for future water resources availability with ramifications for poverty reduction, employment and food security [13].

Whereas the adverse effects of these climatic changes have become central to the debate on issues of long-term global, social and economic stability, the policy interventions in Uganda do not seem to be paying adequate attention to the long term impact of water resource availability from an economic point view. In fact, most of the existing studies on water resources in Uganda have focused mostly on hydrological aspects. This is despite the fact some of the country's economic challenges seem to be emanating from developments in the water sector (see [14], p.80). Amidst these challenges, Uganda has a substantial volume of water resources that could be utilized to mitigate the water related challenges in the economy. For instance, approximately 25 percent of country's surface area is covered by fresh water lakes and rivers [15]. However, critical sectors such as agriculture are still rainfall dependent. This is largely because the existing infrastructure to ensure optimal water use is limited. It is therefore critical that measures are put into place to harness resources that can be used to finance the development and expansion of water infrastructure. In this regard, a tax on water may therefore be one of the options.