

Optimal Allocation of Oil Rents and Public Investment In Low-Income Developing Countries: A Computable General Equilibrium Analysis

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Abstract : The recent literature suggests spending between 50%-85% of oil rents. However, there are not yet clear guidelines for allocating this windfall in the public investment system, while most of the resource-rich countries fail to improve their intergenerational mobility. We study a design of the optimal spending system in Senegal, a low-income developing country featuring newly discovered oil fields and low intergenerational mobility. We build a dynamic general equilibrium model in which rural and urban (Dakar and other urban centers henceforth OUC) households face different health, education, and employment opportunities based on their location, affecting their intergenerational mobility. The model captures the relationship between oil rents, public investment, and multidimensional inequality of opportunity. The government invests oil rents in three broad sectors: health and education, road and industries, and agriculture. Through endogenous productivity externality and human capital accumulation, our model generates the predominant position of Dakar and OUC households in terms of access to health, education, and employment in line with Senegal data. Rural households are worse off in all dimensions. We compute the optimal spending policy under two sets of simulation scenarios. Under the current Senegal public investment strategy, which weighs more health and education investments, we find that the reform maximizing the decline in inequality of opportunity between households, frontloads investment during the first eight years of the oil exploitation and spends the perpetual value of oil wealth thereafter. We will then identify the marginal winners and losers associated with this policy and its redistributive implications. Under our second set of scenarios, we will test whether the Senegalese economy can reach better equality of opportunity outcomes under this frontloading reform, by allowing the sectoral shares of investment to vary. The trade-off will be between cutting human capital investment in favor of agricultural and productive infrastructure or increasing the former. We will characterize the optimal policy by specifying where the higher weight should be. We expect that the optimal policy of the second set strictly dominates in terms of equality of opportunity, the optimal policy computed under the current investment strategy. Finally, we will quantify this optimal policy's aggregate and distributional effects on poverty, well-being, and gender earning gaps.

Keywords : developing countries, general equilibrium, inequality of opportunity, oil rents

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