

EXECUTIVE SUMMARY

Project Overview

In this project, we conducted a comprehensive analysis to investigate the effects of an incomplete tax system on the Neo-Classical Growth model. Our focus was on the steady-state equilibrium, where capital, labour, and land are utilized in production. However, due to constraints, the government can only impose taxes on capital and labour, while leaving land untaxed. This broader interpretation of "land" includes natural resources and nature's waste-absorbing ability.

Approach

Our approach involved solving for the model's steady state and calibrating it to the Canadian economy. We then compared Canada's tax composition with that of Italy to better understand Canada's economic landscape. To determine the optimal tax policy for the long-run steady state, we conducted a quantitative analysis. Finally, we compared our findings with the results discussed in the "standard" Neo-Classical Growth model.

Key Outcomes

Through our analysis, we optimized household and firm choices while maintaining constant government revenue. This led to the determination of the steady-state output, which was influenced by the government's tax policies on labor and capital. Increasing tax rates on labor and capital resulted in higher government revenue but a decline in consumption.

Our study highlighted the substantial impact of tax rates on both firm and household utilities. Specifically, when compared to Italy, Canada exhibited a consistent increase in total tax revenue as a percentage of GDP from 1965 to 2021, reaching 33.2% in 2021. However, Italy still surpassed Canada in total tax revenue as a percentage of GDP, with a figure of 43.3%. Canada, on the other hand, had higher percentages of corporate and personal income taxes.

To achieve the steady-state equilibrium, we calibrated the model by formulating equations that considered household utility maximization, firm profit maximization, and resource and government budget constraints.

Conclusion and Policy Implications

Our research demonstrated the pivotal role of government tax policies in influencing optimal decisions for both firms and households, with the aim of maximizing their utility and profit, respectively. It became evident that a constant tax rate is impractical for efficiently determining the steady-state utility of agents.

We recommend policymakers carefully consider and balance tax policies before implementation to avoid adverse effects such as firm closures. Optimal decision-making should strike a middle ground that maintains equilibrium in the labor market and aligns with government objectives. Our findings emphasize that both capital and labor tax rates significantly impact the utility of agents, with higher tax rates leading to reduced utility. Therefore, it is advisable to avoid substantial increases in either type of tax.

Consistent with the Neo-Classical Growth model, a sharp rise in the capital tax rate results in a decline in output and capital per worker. Striking the right balance in taxation is crucial for the overall welfare of the economy, encompassing the well-being and surplus of households, firms, and the government. These implications should be carefully considered when designing tax policies to promote economic stability, efficiency, and societal welfare.