

Energy-Saving Fiscal Policies: A Two-Sector Endogenous Growth Model

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Abstract:

This paper proposes a two-sector endogenous growth model with government to investigate the effects of fiscal policies on economy-wide energy intensity. To this end, by integrating two-sector Uzawa model with Rebelo's AK model we develop a two-sector augmented AK model, in which non-renewable resource is a factor of production. Our proposed framework enables us to derive the complete algebraic solution both at the short- and the long-run. We also derive the conditions under which the investment sector, which is the source of long-run growth, is more energy-intensive than the consumption sector. Next, we introduce proportional income taxation and subsidy to the model. Contrary to common sense, we imposed the proportional income tax on consumption sector and the subsidy on the investment sector and show that the overall energy intensity falls. Our paper contributes to the literature in two-fold. First, to our knowledge, it develops a complete solution procedure for two sector augmented AK model with and without fiscal policy. Second, under certain assumptions the paper shows the solution of the proportional subsidy in terms of the proportional income taxation.

Keywords: Relative-price, Two-sector, Uzawa model, Rebelo Model, Non-renewable energy source

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