

Optimal Taxation of Robotic Capital with a Binding Minimum Wage

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The literature on optimal robot taxes generally uses model environments in which the displacement effect of automation does not lead to involuntary unemployment. In this paper, we study optimal taxation of robotic capital in an environment in which a binding minimum wage makes involuntary unemployment a long-run equilibrium outcome. In our dynamic general equilibrium model with heterogeneous worker groups and income redistribution, the robot tax is a key determinant of the equilibrium shares of unemployed and minimum-wage workers. Our theoretical contribution is a closed-form solution for the lowest robot tax rate that blocks automation when the minimum wage is binding. We then calibrate the model to the United States and compute optimal robot taxes. Restricted to linear income taxation, the Ramsey planner sets a positive robot tax that distorts the assignment of tasks between workers and robotic capital to the point at which no task is automated. This second-best policy maximizes social welfare along a balanced growth path, at a small efficiency cost. The aggregate welfare gain relative to the status quo is an extensive-margin effect: the robot tax reallocates some of the unemployed workers from unemployment insurance into employment. We also show that an optimized income tax-subsidy system and an optimal robot tax are complements in creating welfare gains, whereas a non-binding minimum wage closes the reallocation channel by eliminating involuntary unemployment. Alternative calibrations do not alter these findings.