

Optimal employment in frictional business cycles and intertemporal discontinuity of production and internal prices

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The present paper studies the optimal behavior of the firm facing labor friction characterized by convex hiring cost and sufficiently differentiated output good. The problem turns out to be a singular control problem. General paths are studied including socially inefficient ones caused by the rise of demand constraint. Analysis of optimal firing behavior becomes possible with this setup. It turns out that the singularity brings costate jumps at junction points to the firing phase, which result in the discontinuity of production. Those jumps have been known to occur in problems with inequality constraints that contain only state variables. The present model shows that they can occur with inequality constraints with control variables when singularity is present.