# How do Knock-out Options Affect Irreversible Investment Decisions and the Design of an Efficient Investment Tax Credit?


## Abstract

This paper investigates how the existence of a knock-out option affects a firm's irreversible investment decisions and the design of an efficient investment tax credit. We assume that a government initially offers an investment opportunity to a firm but will eliminate this opportunity if its prospects are sufficiently dim. The firm's investment decisions are thus subject to the exercise of the knock-out option by the government. The existence of the knock-out option decreases the firm's opportunity costs, raising this firm's incentive to invest. We assume that the investment opportunity produces external benefits and derive an efficient investment tax credit that induces the firm to invest at a date that coincides with the first-best level for the investment in question. We find that the regulator can efficiently offer a lower investment tax credit if the firm is more uncertain about the project return, if the firm incurs lower investment costs, or if the regulator owns a more valuable knock-out option.



Keywords: American Options, Investment Tax Credits, Irreversible Investment, Knock-out Options.

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