

# A CES Indirect Production Function

## ABSTRACT

This paper derives an indirect production function that is, in a special case, of a constant elasticity of substitution form. This is not a contribution to the theory of aggregation generally. Instead it is a microfoundation for a specific but popular production function -- the CES -- that helps us express the important concept of the elasticity of substitution in terms of more primitive, and more intuitive concept of the returns to scale. The paper presents a simple lemma, and then shows that several and diverse applications have a common logical structure: the production function often used in growth theory, the utility function when there is household production, human capital theory, and the concept of the aggregate technology shock.

**Keywords:** Elasticity of substitution, aggregation  
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