

## Research Note

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### Adam Smith on the Effect of Distribution on Prices

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The object of this note is to demonstrate that the propositions in the closing sentences of Chapter IX (Book I), "Of the Profits of Stock" in *The Wealth of Nations* are formally identical to the well-known ancient-modern Ricardo-Sraffa theorem on the inverse relationship between the real wage and the rate of profit. Smith's sentences are as follows :

"In raising the price of commodities, the rise in wages operates in the same manner as simple interest does in the accumulation of debt. The rise in profits operates like compound interest. Our merchants and master-manufacturers complain much about the bad effects of high wages in raising the price and thereby lessening the sale of their goods both at home and abroad. They say nothing concerning the bad effects of high profits. They are silent with regard to the pernicious effect of their own gains. They complain only of those of others". [Smith (1776) p.88]

It may be noted before we proceed to unravel the meaning of Smith's succinct, though somewhat curious analogies that, in the sentences quoted "wages" means wage rate, "profits" means rate of profit, "simple interest" means simple interest amount, and "the price of commodities" means the prices of commodities. (See the discussion in *The Wealth of Nations* preceding the sentences quoted).

#### I

Consider a competitive capitalist economy which produces 'n' commodities. [The illustrations given by Smith in the paragraphs preceding the sentences quoted above necessitates this framework. There Smith describes an example involving the various industries which lead to the manufacture of linen such as flax-dressing, spinning, weaving etc. He then explains how the prices at these various stages of manufacture change in response to a change in the wage rate and the rate of profit]. Let  $P = (P_i)$  be an  $n \times 1$  vector of prices,  $A$  be an  $n \times n$  matrix of input coefficients required to produce unit outputs,  $L$  an  $n \times 1$  vector of labour coefficients,  $w$  the absolute wage rate and  $r$  the rate of profit. We shall suppose, with Smith, that the wages are advanced along with the other means of production. Then we have the following price system,

$$P = (AP + wL) (1 + r)$$

which can be readily solved for the prices if the magnitudes of the rate of profit and the wage rate are specified,

$$P = [I - (1 + r) A]^{-1} wL (1 + r) \quad \dots (1)$$

As is now well-known [Sraffa (1960)] the solution for the prices will be positive, if the  $A$  matrix satisfies the Hawkins-Simon conditions and if the values of  $r$  considered are less than  $R$ , the