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# Economic Systems

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## The distribution of income between labor and capital is not stable: But why is that so and why does it matter?



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## ARTICLE INFO

*JEL classification:*

D33

E23

E25

J31

O40

Q43

*Keywords:*

Factor shares

Labor incomes

Globalization

Technological progress

Energy

Economic growth

## ABSTRACT

I review the literature on labor's share of national income in developed and developing countries. These shares have varied systematically over the post-World War II period, rising until the late 1970s and then falling until now. Explanations for the decline in labor's share include technical progress, globalization and a decline in labor's bargaining power, but none of these explanations can account for both the rise and the decline of labor shares over time and for the similar pattern in developed and developing countries. However, movements in oil prices can account for these movements if energy is included in the production function. Such an explanation has broad implications for income distribution, energy conservation and for the modern theory of growth.

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### 1. Introduction

While the distribution of aggregate income between capital and labor was a central element of Marx's economics, it has been largely ignored by neo-classical economists. At the macroeconomic level, most economists believe that the distribution of income between labor and capital reflects the two factors' marginal products so long as factor markets are tolerably competitive. Labor economists have mainly concerned themselves with wage inequality and how it relates to education, structural changes in the economy, globalization, unionization, etc., and policy makers have tended to view income distribution from the perspective of tax policy and social support expenditures. While households' income from capital contributes to inequality due to the unequal distribution of wealth,

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the distribution of national income between labor and capital is generally taken as given, and discussions regarding the distribution of income tend to focus more on wage inequality and the policies that may affect it.

A major reason for the lack of interest in the distribution of income between the two factors comes from the commonly accepted view that it is fixed. This belief that the distribution of income between labor and capital is fixed has recently come into question.<sup>1</sup> In this essay, I critically review the evidence for the two sides of the argument. I conclude that the evidence is rather clear that, since the end of World War II, if not before, there were large and systematic shifts in the distribution of income between the two factors. I then review recent research that seeks to uncover the reasons for these shifts. I conclude that none of the explanations put forward in the literature adequately account for the experience of both developed and developing countries in the period usually analyzed. I also offer an alternative, admittedly speculative, explanation, one that is based on including energy in the aggregate production function. I argue that this approach is able to explain the timing of recent shifts in factor shares and that it encompasses the experience of both developed and developing countries. I also argue that, if the distribution of income is not fixed for the reasons I suggest, then much of modern growth theory, that is to say, the emphasis on total factor productivity (TFP) as the engine of modern economic growth as well the widely-held belief that good economic institutions, financial intermediation, etc., are the basis of the growth in TFP, are placed in doubt, as are our beliefs about the sources of income inequality in the economy. Moreover, I conclude that energy conservation may not only serve to improve the environment but that it may also shift the distribution of income in favor of labor, thus redressing the long-term decline in labor's share.

## 2. What economists believe about factor shares and why they believe it

That the distribution of income between labor and capital is fixed has been a widely-held belief among economists since Keynes' (1939, p. 48) observation that there is a "stability of the proportion of the national dividend accruing to labor, irrespective apparently of the level of output as a whole and of the phase of the trade cycle. This is one of the most surprising, yet best-established, facts in the whole range of economic statistics, both for Great Britain and for the United States. It is the stability of the ratio for each country which is chiefly remarkable, and this appears to be a long-run, and not merely a short-period, phenomenon."<sup>2</sup>

It is not only Keynes' dictum that inclines economists to this belief. Most economists implicitly express this belief on an almost daily basis in their teaching and research. This is because the Cobb–Douglas (CD) production function is a ubiquitous tool in the classroom and in both theoretical and empirical research. An obvious implication of this function,

$$Y = AK^{\alpha}L^{(1-\alpha)} \quad (1)$$

where  $Y$  is aggregate output,  $K$  is the stock of capital and  $L$  is labor input, is that, if each factor is paid its marginal product, capital's share will be  $\alpha$  and labor's share will be  $1 - \alpha$ . Indeed, the fixity of factor shares in the CD production function was a key implication of this function used by its proponents to overcome the considerable professional resistance that the CD function faced in its early years (Cobb and Douglas, 1928; Douglas, 1976).

There are two important implications that arise from the belief that the CD production function is an adequate or appropriate description of production and the distribution of income between labor and capital. The first is that the distribution of income is determined by technology and thus has little or nothing to do with the nature of the economic system or with economic or social justice.

<sup>1</sup> One of the sources of controversy about the distribution of income between capital and labor is that it is not easy to estimate. Much of the difficulty arises in allocating the income of self-employed individuals who utilize their own capital and land in their business or farms. Their aggregate income has to be imputed to capital and labor along rather arbitrary lines. Some of the literature cited in this paper uses data on employees' share of national income, which is easier to measure but obviously misses the income of the self-employed. See Gollin (2002) for a useful discussion of this and other topics related to the measurement of factor shares and their comparability across countries.

<sup>2</sup> It is worth noting that Keynes is referring to the share of "manual labor" in national income.

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