Chapter11 abstract

UNFCCC Paris Agreement and exploitation in the global economy

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A fundamental concept in Marxian economics is "surplus value." Surplus value is defined as the difference between the amount of labor a worker sells and the amount of labor they receive as compensation. "Received labor" is interpreted as the amount of labor—both direct and indirect—required to produce the consumption per worker. The ratio of the "difference between sold labor and received labor" to the received labor is termed the "rate of surplus value."

Meanwhile, an input-output table is an economic statistical record that comprehensively tracks transactions of goods and services between industries. Viewing the table vertically reveals the inputs each industry receives from others and the value added (profits and wages) it generates. "Input-output analysis" refers to the analytical method that uses this information to calculate the intermediate goods and value added required—both directly and indirectly—to meet final demand, such as consumption and investment. If the direct labor input for each industry is known, input-output analysis techniques can be used to calculate the "amount of labor directly and indirectly required to produce household final consumption," thereby allowing for the calculation of the rate of surplus value. Research has been conducted to estimate rates of surplus value across various countries using this method.

This study analyzes the relationship between the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) and the rate of surplus value. The Paris Agreement is a framework for preventing global warming—adopted at the UNFCCC COP21 conference in Paris (2015)—that aims to limit the rise in global average temperature to within 1.5–2°C above pre-industrial levels. Under this agreement, nations submitted voluntary greenhouse gas (GHG) reduction targets, known as Nationally Determined Contributions (NDCs). However, because GHG reductions are voluntary, the economic burden by country; furthermore, since withdrawal is permitted—as demonstrated by the United States—inequity among participating nations is undeniable. Consequently, researchers have used international computable general equilibrium (CGE) models, such as GTAP, to estimate the impacts of compliance or non-compliance with the Paris Agreement on national GDP and capital accumulation, as well as the resulting carbon leakage. Simulation results from the GTAP model can be used to estimate ex-ante and ex-post international input-output tables. While a single-country model attributes the labor forming the rate of surplus value solely to the domestic workforce, combining international input-output tables with data on labor inputs allows for the estimation of the specific national workforces constituting the rates of surplus value for each country. Therefore, this paper aims to estimate the composition of the rates of surplus value−and determine which countries are effectively exploiting others—under three scenarios: the pre-Paris Agreement period, the implementation of NDCs under the Paris Agreement, and the U.S. withdrawal from the Paris Agreement.