A Marxian Model of the Breakdown of Capitalism

By Howard Petith

Various arguments for the breakdown of capitalism are to be found in the work of Marx and also in the Marxian literature generally. Usually they involve one of more of the following: a rising capital to labour ratio, a falling rate of profit and a rising share of capital. I will call these three characteristics the central relations. Marx's views on lthe movement of the wage are subject to various interpretations. But it is clear that a wage which rises because of market forces both causes serious problems for the key concept of the value of labour power and makes the idea of worker revolt as a cause of the breakdown of capitalism problematic. Thus an "ideal" Marxian model of the breakdown would be one which exhibits the central relations and has a constant wage.

Such a model has never been constructed because of the problem that once the wage is fixed and the labour supply made infinitely elastic, the capital to labour ratio, the rate of profit and capital's share are all fixed as well. This has lead to a division of models where ones by, for example, Roemer and Marglin have constant wages and the central relations do not hold and ones by, for example Foley and Dumenil and Levy in which the wage rises and the central relations hold.

The goal of the present paper is to construct the "ideal" Marxian model. It is a one sector growth model, with labour , capital and land as factors of production. The labour supply is infinitely elastic at the fixed wage, capital accumulates because of capitalist saving and the supply of land is fixed. The result is that, under an assumption on the production function, the central relation hold for this model.

One's first reaction may be that this is a Ricardian rather than a Marxian model. Marx, in criticising Ricardo, said that the rate of profit fell not because labour was less productive but because it was more productive. The model of the present paper has this paradoxical characteristic. A balance between the negative effect of the fixed land and the positive effect of the growing capital stock keeps the marginal product of labour constant and at the same time the growing stock of capital both lowers the rate of profit and raises the average product of labour so that capital's share increases. Thus the model perfectly reflects the distinction that Marx drew between himself and Ricardo.

Finally the model is interesting on a technical level as well. Unlike virtually every other growth model, the paths generated by this model do not converge to steady state but diverge. The key questions concern the nature of this divergence. Thus there are no well developed techniques available. However a referee has worked out a method of analysis using Chaplygin's theorem and produced an elegant derivation of the results. The paper characterises the Marxian model as one with divergent paths and presents a mathematical technique for dealing with this type of problem.