lower level, letting it filter up. That is why a TIF type plan is much more relevant to the U.S.

V. Conclusion

There is, of course, much more to be said about the theory of income policies. However, the novelty of this approach has, I hope, stimulated interest in thinking about income policies and in how institutional changes combined with aggregate demand policy can be effective in reducing the level of unemployment.

References


SWITCHING AND EMPLOYMENT

JOSEPH HALEVI

I. The Context

The debate over the neoclassical theory of capital has provided an extensive array of models where the economy is divided between capital and consumption goods. The analytical framework for the discussion of the static factor-price frontier is therefore the same as that used to identify the dynamic properties of fixed coefficients two-sector growth models. This has been shown clearly in a recent book by Mukherji [7]. In this article I shall discuss the implications of this analytical structure for the employment capacity of such systems. I conclude that Pustinetti's contribution constitutes a way out of the special case character of the results yielded by such models [8]. In a two-sector model, the relation between the wage rate and the rate of profit (w/r) is derived from the following pair of price equations:

\[ p = a_0 + a_1 w \]
\[ 1 = a_2 + a_3 w \]

where:

- \( p \) = unit price of capital goods
- \( 1 \) = unit price of consumption goods
- \( a_0 \) = amount of capital goods per unit of capital goods output
- \( a_1 \) = amount of capital goods per unit of consumption goods output
- \( a_2 \) = amount of labor per unit of capital goods output
- \( a_3 \) = amount of labor per unit of consumption goods output
- \( r \) = rate of profit
- \( w \) = wage rate

The shape of the w/r relation is given by the value of the determinant of the coefficients matrix sustaining the price system (1). That is:

\[ (a_0 a_3 - a_1 a_2) \leq 0 \]

If the value of (2) is less than zero, then the w/r relation will be given by a curve convex toward the origin; a positive determinant will imply a concave curve and a zero determinant will generate a straight line. The three cases are illustrated in Figures 1, 2, 3.

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The critics of neoclassical capital theory pointed out that if an economy can choose between different techniques that will in general interest at more than one point, as can be seen by drawing the three curves on one diagram. Hence it becomes impossible to associate in an unambiguous manner a high (low) rate of profit with a low (high) aggregate capital-labor ratio. As a consequence the explanation of the distribution of income in terms of the demand and supply of capital and labor is based on postulates anchored on a special case [1,2].

For my purposes each of the three techniques will be treated as representing different economies. I therefore agree with a remark made by Joan Robinson according to which the possibility of "switching" arises only as a thought experiment. In a concrete economic system, she argued, there is a definite configuration of capital stock. A change in techniques would require a complete restructuring of the stock of capital and not a smooth transition to the new technique [9].

In the above context the question of employment and accumulation can be dealt with in two ways. One would be to follow Robinson's The Accumulation of Capital and ask what are the structural conditions for the economy to converge toward a full-employment steady-state growth path. The initial position of the economy is characterized by a Marx type reserve army of labor. That is a situation where the existing capital stock is far below the level necessary to provide employment to the whole of the labor force [7,10]. This line of reasoning led Robinson to formulate the well-known hypothesis of a State of Blas. Capital accumulation can exceed the natural growth rate of population as long as a reserve army of labor exists. Once the latter is exhausted, growth should proceed at the level allowed by natural increments in population. If these are very small, there is virtually no objective necessity for accumulation and the profits that go with it. Capital goods should be allocated mostly in the consumption goods sector and the economy should settle at a quasi-stationary state of full employment and full-capacity output.

It is interesting to see that Robinson's position implies a form of euthanasia of the capitalists. In The Accumulation of Capital she succeeds in showing that profit-propelled accumulation becomes an obstacle to full employment in a mature industrial economy. Yet the analysis is not carried much further.

The second approach to the employment-accumulation question is akin to that of Hicks in his contribution to Travers's theory in Capital and Growth [3]. Imagine an economy where the existing level of capital stock does provide employment to the whole of the labor force at full-capacity utilization. Let us also assume that the system is in balanced growth and that the labor force—the exogenous factor—suddenly starts expanding at a higher or lower rate than that of capital equipment. Hicks' analysis of the Travers's based on a two-sector fixed-coefficients model, consists in finding the conditions on the basis of which equipment and labor remain fully employed while the economy "traverses" toward the new growth path.

I shall use Hicks' formulation, which is complementary to that of Joan Robinson, although I do not limit my focus to the conditions required for equilibrium. The main assumptions will be that the multipurpose capital goods do not depreciate—a standard hypothesis that abstracts the output of machines with net increments of capital stock—and that no wages and all profits are saved.

II. Discussion

The analytical basis of the treatment of employment in a two-sector growth model is given by the quantity equations which accompany the price system in (1):

\[
K = a_gK + a_rC \\
L = b_gK + b_rC
\]

(3)

moreover:

\[
gK = (1/a_g)b_rK = 1
\]

(4)

where:

- \(K\) = total capital stock
- \(L\) = total labor force employed
- \(C\) = consumption goods
- \(g\) = growth rate of capital stock
- \(f\) = output of machines
- \(k\) = percent of total capital stock allocated in the capital goods sector

From equation (4) we learn that the rate of growth of capital stock is equal to the output-capital coefficient of the capital goods sector multiplied by the share of total capital stock installed in the capital goods sector itself. Hence, given the coefficients of production, an increase or decline of the growth rate of the labor force would require a parallel adjustment of the growth rate of capital, which can be brought about via an increase or decrease in the share \(k\) of capital goods allocated in the capital goods sector.

The determinant of the pair of equations (3) is the same as that of (1). Thus the properties of the value of the determinant (2) apply also to the relation between the capital labor ratio and the rate of growth. Each of the three possible values of the determinant (negative, positive, zero) implies a specific sectoral employment capacity of a unit of capital goods. In fact from (2) we can obtain \(a_r/a_g < a_g/a_r\), which would hold if the value of (2) were negative. Then:

\[
(b_g/a_g) < b_r/a_g
\]

(5)

Each of the two ratios in (5) represents the number of workers necessary to operate one unit of equipment in the sector where it is installed, i.e., they are the sectoral labor-capital ratios. In the case of inequality (5) the equipment installed in the consumption sector employs, per unit, fewer persons than the machines operating in the capital goods sector. If the sign of (5) were to be reversed the consumption sector would become the more labor-intensive one. Finally, if (5) were an equality—implying a vanishing determinant—a unit of capital good would have the same number of operators regardless of its sectoral allocation. We shall see that this case has some implications for the emergence of unused capacity.
A discrepancy between the growth rate of capital stock and of the labor force can be reallocated, providing the magnitudes are within reasonable variance. In this way full capacity and full employment can be maintained while the system adjusts to the state of equilibrium. Consider a fully-employed mature economy in which the productive capacity of the machine-producing industry outgrows the supply of labor. This is tantamount to a fall in the growth rate of labor vis-à-vis the growth rate of capital. The relative scarcity of labor would compel producers to invest in the least labor-intensive sector, namely the consumption-goods one. Thus the proportion of machines allocated to the capital-goods sector will decline. From equation (4) we know that if in the proportion $k$ will lead to a lower rate of accumulation. The behavior of the aggregate $K/L$ ratio would be consistent with the classical growth parable where $K/L$ is inversely related to the rate of accumulation and to the rate of profit. By contrast, if the capital-goods sector were the least labor-intensive, thereby attracting a greater proportion of investment, the economy would be poised for a faster rate of accumulation precisely when the expansion of the labor force has fallen.

The above presentation allows us to establish a link with general equilibrium theory. Indeed, as shown by Walras and Gram [13], a two-sector model can also be thought of as a Walrasian model with two factors and two goods. In this context, Walrasian theory is not altogether incompatible with the theories of growth and accumulation developed in the postwar years. The main limitation consists, however, in that accumulation appears in the form of two special cases: the case in which the capital-goods sector is more labor-intensive, yielding a stable equilibrium, and the opposite one yielding unstable situations.

It is now possible to examine the case where the determinant vanishes because the employment capital of each unit of equipment is the same irrespectively of the sector where it is used. During the debate over capital theory it has been sometimes argued, as Spaventa did [11], that a situation of uniform capital-labor ratios is as if the economy were producing only one kind of good. While this is correct in a situation of steady state, the statement becomes rather problematic when looked at from the angle of the employment Traverse. Assume a truly one-commodity system whose output can be invested as well as consumed. Then, a fall in the growth rate of labor relative to output can be balanced *ipso facto* by raising consumption: provided, of course, that either entitlements can be swiftly redistributed or, better still, that the underlying social structure is characterized by what Marx called simple commodity production. No surplus capacity would emerge. Yet if the economy produces two distinct kinds of goods—capital goods and consumption goods—with a technique showing labor intensiveness, the same fall in the growth rate of the work force will lead to an overproduction of machines and therefore to unused capacity.

The problem can be grasped with a simple numerical example. If at the end of a given production period, a year, ten new machines are brought into being, each employing four workers, then forty more people should enter the work force. But if the latter has expanded by only thirty-two people, two machines will end up being redundant. Unlike the cases of non-uniform capital-labor ratios, there is no way to find a new instantaneous equilibrium between equipment and labor, when, respectively, the sectoral distribution of machines, the amount of labor fetched remains unaltered. Unused capacity is inevitable because the redundant machines cannot be transformed into consumption goods. Paradoxically the structural difference between capital and consumption goods in relation to the employment capacity of the economy is high-lighted in the case of uniform capital-labor ratios. At this point subsequent developments are rather open-ended. The appearance of excess capacity can lead to a cut in investment curbing Keynesian unused capacity and unemployment. In other words, the effect of a disproportionality between capital and labor—a Marxian phenomenon—may express itself in Keynesian terms as a result of a cut in investment activity.

This mixed Marxian—Keynesian approach is very close to that taken by Kaldor some forty-seven years ago in a very important paper on the stability of full employment [4]. Using, but only verbally, a two-sector model he distinguished between short-period and long-period full employment. In the short period, full employment and full capacity can be brought about by adjusting the distribution of income and the propensity to save. But in the long period, he argued, the central issue becomes the productive capacity of the capital-goods sector vis-à-vis the expansion of the labor force. The basic historical hypothesis is that a developed capitalist economy possesses an amount of capital stock which, if fully utilized, could more or less employ the whole of the labor force; this view is shared also by Kalecki and Sweezy [5,12]. Hence, as indeed Sweezy pointed out, as the economy approaches full capacity output it can quickly move toward over-accumulation, leading to a breakdown in investment. In recent times Morishima [6] has tried to elucidate (with a similar model) the interaction among over-accumulation, Keynesian unemployment and Marx’s reserve army of labor. His results, while valuable, depend in a crucial manner on fixed prices and on a Harrodian saving function which is not necessarily the case in Kaldor or in the case discussed above.

III. Conclusions

Two-sector models play an important role in clinching the basic aspects of major theoretical constructions. As shown by Walsh and Gram they can express the cases of classical as well as neoclassical theories of general equilibrium. Furthermore, they are particularly helpful for the discussion of macroeconomic problems connected with Marx—the founder of the two-sector approach—and with Keynes.

At the same time, whenever one theoretical aspect is elucidated, it is invariably tied to a special case connected with a specific technological configuration of the system. Indeed, the special-case character of the results obtainable with a two-sector model has surfaced particularly during the debate over capital theory. The main reason lies in that the economic structure is locked up in one multipurpose capital good.

The question now is whether a way out exists. For example, is it possible to represent the phenomenon of a breakdown in investment due to excessive accumulation without falling into a special case (such as uniform capital-labor ratios)? The answer is in the affirmative and can be deduced from a recent seminal book by Luigi Pasinetti [8]. The discussion of Pasinetti’s book would require a separate and lengthy essay; I will only mention the nature of its significance. Pasinetti constructed a model in which there are many consumption goods, each produced by means of a vertically integrated sector. Each consumption good is produced by a specific capital good which in turn can reproduce itself. Thus we have a multipurpose system formed by many pairs of two-sector models. Then, it is possible to obtain simultaneously many different technological configurations, whereas in the traditional two-sector model only one technological configuration is allowed: the capital-labor ratios can be uniform or different but cannot be both at the same time. By contrast this is precisely what happens in Pasinetti’s approach. The implications are straightforward: the special cases of convergence toward full-employment equilibrium is ruled out, while that of an imbalance between means of production and labor is not. Hence what is a
two-sector model appears as yet another special case, in Pastinetti’s it appears embedded in the general features of economic activity. As a consequence, even if we start with full employment of labor and no unused capacity it will be impossible to maintain this state of affairs through time, unless a central institutional organization is entrusted with the specific task of maintaining full employment (8,91).

References


DEVELOPMENT ECONOMICS: THE INTELLECTUAL DIVISIONS

PAUL STREETEN

1. Cross-Currents in Development Economics

Albert Hirschman (6) has used two criteria for classifying development theories: one, whether they asserted or rejected the claim of mutual benefits in North-South relations; and two, whether they asserted or rejected the claim of monocentricism—that there is a single economic discipline applicable to all countries at all times. From this, he derived four types of economists: (1) orthodox (neoclassical) economists accept both claims; (2) neo-Marxists and independence economists reject both; (3) development economists reject the monocentricism claim—their existence requires a distinct subject—but accept the mutual benefit claim; (4) neo-Marxists accept monocentricism claim except insofar as class determines consciousness, but reject the mutual benefit thesis.

Monocentricism

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One may want to quibble. There are development economists who analyze interest conflicts, and development economists who are neoclassical. Karl Marx (11) makes the point that capitalist countries exploit "backward" countries although both parties gain from exchange. And Joan Robinson wrote: "The misery of being exploited by capitalists is nothing compared to the misery of not being exploited at all" (18, 46). Mutual benefit is not denied.

Hirschman (6) attributes the decline of development economics to a combined (though not concerted) onslaught from both neoclassical economics (with the charge of missallocation)