ADDENDUM TO 'THE DYNAMICS OF GENERAL EQUILIBRIUM: A COMMENT ON PROFESSOR GINTIS'.

Capital like land?

This Addendum includes some considerations on Gintis (2007) that for space reasons could not be included in our Comment.

One aspect that puzzled us in professor Gintis’s contribution is his treatment of capital as not only homogeneous but also neither depreciating nor produced, and therefore formally identical to a kind of land. In the main article we have argued that this treatment of capital eliminates essential aspects of economies with capital goods, rendering Gintis’s final conclusions disputable. In this Appendix we ask whether the traditional marginalist conception of capital as a single factor of variable 'form' could support such an analytical choice.

Indeed some readers might attempt to defend Gintis’s treatment of capital as simply taken over from other neoclassical models, in particular from the innumerable expositions in the pure theory of international trade where the analysis, clearly aimed at determining persistent (long-period) situations, describes countries producing two commodities A and B with the use of the two factors labour and capital, where capital is treated as similar to land in that it is apparently neither produced nor deteriorated by use. In these models capital is homogeneous, and this is well known to reflect the traditional marginalist/neoclassical conception of capital goods as embodiments, crystallizations, of a single factor ‘capital’ of variable ‘form’ (cf. Petri 2004 for a recent exposition of that conception and of its analytical roles; also Garegnani 1990). However, while it is not difficult to understand how that conception can have justified macro models (e.g. Solow’s growth model) where capital is treated as homogeneous but depreciation and production of capital are admitted, it is perhaps less clear to other modern readers how that conception can have justified the treatment of capital as identical to land. It may therefore be worthwhile briefly to remember the essential terms of the issue. Although we will hardly be speaking of the ‘Walrasian model’, we will be discussing whether professor Gintis’s results can support the thesis that the neoclassical supply-and-demand forces, when coupled with more realistic descriptions of disequilibrium behaviour, 'lead to an economy with a reasonable level of stability and efficiency'.

With the single exception of Walras, the marginalist/neoclassical approach was born on the basis of a conception of capital as in some sense a homogeneous factor of
variable ‘form’ embodied in the several capital goods, a factor whose total endowment (a scalar) could be taken as given as legitimately as e.g. the endowment of (each type of) labour. In such a conception, net savings do alter the endowment of capital, but at a speed (comparable with the speed of change of population) which is very slow relative to the potential speed with which its ‘form’ (i.e. composition) can change, and this makes it legitimate to treat the total capital endowment as given while at the same time treating its ‘form’ as endogenously determined by the tendency of gross investment to go where rates of return are higher. When capital is so treated, then in a rigorous disaggregated equilibrium model (e.g. Wicksell’s) there will appear both the total endowment of capital, a datum, and the quantities of the several capital goods, endogenously determined by the equilibrium, which is a long-period equilibrium (not to be confused with a steady-growth path); but more frequently the endogenous determination of the composition of capital is left implicit, the different capital goods do not appear in the model at all, and in the production functions there appears only ‘capital’ the single factor; this is implicitly justified by the belief that, given the purposes of the analysis, the explicit determination of the composition of capital would not add to what can be concluded on the basis of its total endowment and of its marginal productivity in the several industries. Importantly, if that conception of capital is granted, the impermanence problem does not arise: the data of equilibrium are sufficiently persistent because the endowments of the several capital goods are not data of the equilibrium, they are determined endogenously, only the total endowment of capital appears among the data; then the adjustment toward equilibrium can be conceived as taking time and involving actual productions, there is no need to assume the auctioneer (which in fact was assumed by Walras but not by the authors adopting this conception of capital).

It is an essential element of this conception of capital that the substitution mechanisms between capital and labour (or land) are believed to work ultimately in the same way as between labour and land, in spite of the peculiarity of capital of being an amount of exchange value; thus the demand for capital is believed to be a regularly decreasing function of its ‘price’, the rate of interest; and from this a negative elasticity of investment with respect to the rate of interest is derived, that makes it plausible to assume the stability of the savings-investment market − hence the marginalist/neoclassical faith in Say’s Law.

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1 The equilibrium earnings of capital goods are proportional to their value, and therefore if these earnings are to be seen as reflecting the amount of a single factor capital ‘embodied’ in the different capital goods, this amount is necessarily proportional to (and hence measured by) their value.
On this basis it is possible to explain the absence of the savings-investment market in some neoclassical models where capital is treated like a single factor similar to land. The implicit conception of capital is the one we have just described. The already noticed slowness of change of the total quantity of capital suggests that for certain purposes (not, of course, when the issue is growth) it can be legitimate to neglect that change; then when formulating a model where a savings-investment market does not appear at all, and capital and labour produce only consumption (or exported) goods, one is not denying that there is production of capital goods too, and that there is a savings-investment market, but one is assuming that the latter market is in equilibrium (Say’s Law holds), and that in the time period covered by the analysis the change of the total capital stock is so small that one may well assume that the economy is stationary. The aggregate income appearing in the model is then to be interpreted as net income.

If this conception of capital were acceptable, professor Gintis’s ‘capital’ could be interpreted as indeed capital and not land, and his analysis could be interpreted as not restricted to what, for brevity, we can call a-capitalistic production economies. But after the criticisms advanced in the Cambridge debates on capital theory that conception is universally recognized to be indefensible.

It may be useful to remember two aspects of the critique. The first criticism is generally accepted: the endowment of capital as a single quantity of variable ‘form’ is indeterminable, because it must be an amount of value: the observed value of the capital endowment of an economy cannot be taken as independent of prices, it would change if relative prices were to change, so it cannot be considered given when relative prices are what the analysis must determine; and any other number would be arbitrary. The second criticism – with which there seems to be much less familiarity – is that the phenomena of reswitching and reverse capital deepening show that substitution between capital and labour behaves totally differently from that between labour and land in the a-capitalistic economy, hence investment can no longer be presumed to be a regularly decreasing function of the interest rate, and as a consequence the adaptation of investment to savings cannot be plausibly assumed (Petri 2004, ch. 7). The implications of these criticisms are far-reaching; we remember only two. It is an implication of the first criticism that one can no longer draw a labour demand curve because one no longer knows what amount of capital to take as given.

2 Obviously then the model would have little right to be considered Walrasian, because Walras did not entertain that conception of capital. Furthermore, professor Gintis’s analysis would be assuming the stability of the savings-investment market, rather than proving it on the basis of the postulated behaviours of agents.
when attempting the determination of the marginal product of labour; thus we find again the conclusion that wages cannot be determined by the intersection of a demand curve and a supply curve because the labour demand curve cannot be determined (Petri 2004: ch. 8). One implication of the second criticism is that Say’s Law cannot be presumed to be valid[3]; one is then brought to attribute greater plausibility to Keynes’s thesis, that it is savings that will adapt to investment via changes in the level of aggregate output.

Unless refuted (and so far they have not been refuted), these implications undermine any presumption that the results of a model where the production side and income distribution are modelled as in professor Gintis’s analysis, thus excluding all problems on the aggregate demand side as well as on the endowment-of-capital side, may reflect the functioning of market economies where capital and investment play a role.

REFERENCES


[3] Professor Gintis on p. 1300 mentions reswitching only as a possible cause of multiple equilibria; the fact that, by implying reverse capital deepening, reswitching undermines the role of the rate of interest in ensuring Say’s Law, and thus undermines the right to assume the absence of aggregate demand problems, is not mentioned. It is also not clear what results precisely, and what kinds of equilibria – Arrow-Debreu? long-period? steady-growth? –, he has in mind when mentioning that reswitching might imply multiple equilibria. And it deserves notice that the possibility of reswitching (and hence of multiple equilibria) is the sole consequence of admitting heterogeneous capital mentioned in the article; the impermanence problem is nowhere hinted at.