Nature's Bounty

The New Nethergill Perspectives on Hill Farming

Note 14 October 2020

1. In the examination of the prospects for the future of farming it has been found that the industrial-economic models central to farming in the post-war years are fundamentally flawed. This short paper addresses the issues that come from this unfortunate situation. It does so from the perspective of the hill farmer who probably has the greatest struggle to be truly profitable in the farming sector. However, the general lessons drawn will have corresponding applications to arable farming, dairy farming, and woodland management.

2. Farm management will change because the nature and form of variable costs in farming will change when the availability of natural grass runs out.
    a. Productive variable costs (PVCs) prevail up to this point.
    b. Thereafter, corrective variable costs (CVCs) come into play.
    c. CVCs increase at a faster rate than PVCs, as grass substitutes are acquired.
    d. This behaviour destroys the central premise of the standard theory of the firm which postulates that profits will increase (indefinitely) with volumes beyond the break-even point.
    e. Indeed, two new phenomena are introduced.
        i. There is a point of maximum sustainable output (MSO) at the juncture of the end of PVCs and the onset of CVCs.
        ii. There is a real prospect of a break-back point into un-profitability as volumes increase.

3. Natural grass is a commercial "free-issue" commodity from *Nature* to a farm business. This makes the case for treating *Nature* as a stakeholder in a farm business. In doing so *Nature* will rank with other traditional stakeholders such as owners, investors, or subscribers as a liability on the balance-sheet. However, whilst traditional shareholders will expect a dividend to service their investments (which is a cost burden on the business) *Nature* provides a "free-issue" bounty (as an avoided cost or quasi-revenue). It must therefore rank as a negative liability.
    a. Although seemingly counter-intuitive this makes sense as the arithmetic effect of having the benefits from natural capital will reduce the net assets employed and make commercial returns easier to achieve. NB This also explains why there is a premium on farmland prices even though few make returns that compare with industry even after support payments.
    b. If the "free-issue" advantages of natural grass are taken to be a benefit derived from natural capital it offers a route to valuing natural capital
    c. Natural capital is the capitalised value of the farm profits made at the point of maximum profitability. This equates to the profits (post-support payments) at

MSO up-rated by an annuity-factor. This is the notional natural capital (NNC) for a hill farm.

4. The MSO phenomenon is such that as profits are maximised at this point so too is the benefit of natural capital.
    a. As this measure of natural capital (NNC) is maximised so (mathematically) the inverse of NNC must be minimised
    b. This inverse may be incorporated into a definition of a new parameter, the environmental stress index (ESI).
        i. This type of ESI is therefore a measure of the trade-off between commercial benefits and the stress on natural resources to produce a profit.
        ii. Such an ESI is minimised at the MSO point. NB Again this seems to be counter-intuitive as the expectation might be to have the ESI minimised at no output.

5. Over the past 400 years, the farming sector of the economy has created a managed landscape. This landscape environment has been in long-term equilibrium with *Nature*. That is, changes to the environment from one year to the next will be small (after due allowances for weather). It can therefore be argued, that unless *Nature* delivers a commercial benefit there is no value to natural capital. Indeed, the re-wilding of a working farm will result in the de-capitalisation of natural assets as incomes are reduced. It is a case of use-it or lose-it when “free-issue” grass is available for commercial exploitation. Equally so, by pressing outputs beyond the MSO point (and so reducing profitability) de-capitalisation of the natural environment also results.