

THE FORMATION OF RICARDO'S EARLY THEORY OF PROFITS:
A RECONSTRUCTION BASED ON SMITH, MALTHUS AND HORNER

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ABSTRACT

David Ricardo's "Essay on Profits" (1815) presents an original theory of profit determination, based on the concept of "surplus produce" in agriculture, i.e. the excess of food produced on a piece of land over the food consumed by the labourers employed - as interpreted by Sraffa. (This interpretation is discussed vis-'a-vis the critiques made by Hollander, Rankin, Peach and Facarello.) Ricardo's "surplus produce" theory of profits is here traced to Smith's theory of rent of land, which had explained rent on the basis of the same concept. It is shown how Smith's theories of wages and rent were developed by Malthus into a theory of the expansion of food production, subject to diminishing physical returns, and under the condition that a given rate of profits must be paid to the farmer. Then it is shown how these "inputs" from Smith and Malthus were transformed by Ricardo into a theory of the expansion of food production entailing a falling rate of profits. The contribution of Horner to Ricardo's formulation is also presented.

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CHAPTER 1
INTRODUCTION

Ricardo's "early" theory of profits is that which he held in 1813-15, particularly in his "Essay on the influence of a low price of corn on the profits of stock", published two years before the Principles - hereafter referred to as the "Essay on Profits", following Sraffa (1951b)¹.

According to this theory, the general rate of profits is "regulated" by the profit rate of agriculture - "agriculture" being identified with the production of "food" or "corn". The rate of profits of agriculture is made to depend exclusively on the real wage rate (in terms of corn) and the productivity of labour in agriculture. Supposing the real wage rate to remain constant, Ricardo infers that the general rate of profits depends on labour productivity in the production of food. As he puts it in the Essay on Profits:

"profits are regulated by the difficulty or facility of procuring food" (p.13,n.)

He regarded this as "a principle of great importance", which "has been almost overlooked in the writings of Political Economists" (ibid.).

This theory, and particularly the regulating role of the profits of agriculture, seems to be based on the concept of capital as consisting of the subsistence necessary for workers, namely food or corn - as interpreted by Sraffa. Since capital is supposed to consist of the same commodity as the product of agriculture, the rate of profits in this sector is determined as a ratio between quantities of the same product, being therefore independent of the relative

1 Indications like this refer to works listed in the Bibliography.

prices of commodities. These must be adjusted so as to bring the profit rates of other sectors into equality with the rate of profits of agriculture - if there is to be a uniform rate of return on all employments of capital (Sraffa, 1951a, p. xxxi-iii; 1960, p. 93).

This "corn-ratio" interpretation is discussed in section 4.4 below, in relation to Ricardo's textual argument. It is further discussed in the Appendix, in view of some critiques made by Hollander (1973, 1975, 1979, 1983), Rankin (1984), Peach (1984, 1988) and Facarello (1986).

It is now almost forty years since the Cambridge edition of Ricardo's works and correspondence, in which a lot of new evidence on Ricardo's thought, particularly the letters from Malthus, was brought to light, or properly presented - together with Sraffa's careful and detailed account of them (with the collaboration of Maurice Dobb).

In what follows, references to this edition will generally indicate only the volume and pages, e.g. (IV, 15) referring to vol. IV, p. 15.

In his Introduction to Ricardo's Principles and in editorial notes, Sraffa has presented an important interpretation of the development of Ricardo's theorizing on value and distribution - from the appearance of the "corn-ratio" theory of profits in the correspondence, through the adoption of a theory of value and the changes in successive editions of the Principles, to developments or details found in unpublished manuscripts. However, Sraffa has not offered what he himself describes as a "proper study" of the development of Ricardo's thought (VI, xxi) as far as this concerns the formation of Ricardo's early theory of profits - from which the Ricardian theory of value and distribution developed.

Tucker (1954) contributed to this task by investigating contemporary historical circumstances that might have "set Ricardo thinking about the effect of the accumulation of capital on the rate of profit" or that

would "evoke Ricardo's interest in a theory of profits" (p.329,331). Knowing that the new theory appeared in Ricardo's correspondence in August 1813, Tucker proceeded by "enquiring whether an economic problem of public interest had arisen, probably at some time in the first half of the year 1813, of a nature that would arouse interest in the question of the causes of changes in the general rate of profit" (p.328). He then discusses different hypotheses involving a few practical problems in which Ricardo might have been interested at the time - for instance, the 1813 proposal to Parliament of new restrictions on the importation of corn - all capable of provoking thoughts on the effect of capital accumulation upon the rate of profits.

Nevertheless, Tucker (1954) did not inquire why Ricardo should have arrived at a new theory of profits, once he had started thinking about a question involving profit determination; nor did he explain why Ricardo should have arrived at the particular theory of profits at which he did happen to arrive at that time; nor did he examine the intellectual origins of this particular theory of profits. As Tucker has shown, Malthus was, at the same time, thinking about the effect of restrictions on the importation of corn (Tucker, 1954, p.330); and yet he did not arrive at any new theory of profits. There must have been something specific in Ricardo's thought.

In a later work (1960) Tucker places Ricardo's theory of profits, as found in the Principles, in the context of the development from 1650 to 1850 of British economic thought on "progress and profits"; but, again, he does not examine the specific intellectual origins of Ricardo's "corn-ratio" theory of profits, from which the theory in the Principles developed. This requires a consideration of Ricardo's immediate sources.

The general object of the present investigation has been to reconstruct the formation of Ricardo's early theory of profits as a personal intellectual process - though referring occasionally, and incidentally, to

immediate historical circumstances. I have attempted to trace in his early readings on Political Economy the essential "ingredients" of the new theory, and at the same time to establish his early connection with such components and their sources.

Three sources, among Ricardo's most important early readings (in his own judgement), seem to have supplied him with almost all the elements of the new theory of profits: the Wealth of Nations, the Essay on Population and the article by Francis Horner in the Edinburgh Review of Oct. 1804, about a bounty on the exportation of corn.

It is well-known that Ricardo studied Smith's book with great interest and admiration - his interest in Political Economy having arisen when he read the book at about the turn of the century.¹

With regard to the Essay on Population, Ricardo let us know, in a letter to Malthus of 2 Jan. 1816:

"it is many years since I read it ... The general impression which I retain of the book is excellent. The doctrines appeared so clear and so satisfactorily laid down that they excited an interest in me inferior only to that produced by Adam Smith's celebrated work" (VII,2)

No doubt Ricardo had also read Horner's article, with great interest and admiration, in those formative years before his debut in print as a political economist (1809). He quotes the article in the Principles (I,302-3), showing appreciation; and, in a letter to Trower of 26 Jan. 1818, he recollects:

"I remember well the pleasure I felt, when I first discovered that you, as well as myself, was a great admirer of the work of Adam Smith, and of the early articles on Political Economy which had appeared in the

1 See Moses Ricardo's "Memoir of David Ricardo" and Sraffa's "Addenda to the Memoir", in Ricardo's Works, vol. X, pp. 7,36.

Edinburgh Review¹ Meeting as we did every day², these afforded us often an agreeable subject for half an hour's chat, when business did not engage us." (VII,246)

As one might perhaps expect, most components of Ricardo's early theory of profits, together with the general framework which connects them, can be traced to the Wealth of Nations. It is evident, nevertheless, that the new theory of profits embodies a point of view which is very different from the Smithian "competition of capitals" view. Less obvious is the fact that it incorporates Smith's theory of wages, as will be seen in detail in this work.

An aspect which, as far as I know, has not been noticed in the literature on Ricardo's early theory of profits is its close similarity with Smith's theory of rent. In fact, the latter can be immediately converted into the former by incorporating the condition that the marginal land pays no rent, and thus the general rate of profits (which is taken as given in Smith's theory of rent) has to become an endogenous variable - as will be seen in chapter 4 below.

However, it will be shown that Ricardo arrived at his theory of profits not by considering and criticizing Smith's theory of rent, nor - as would seem natural - by criticizing Smith's explanation of changes in the general rate of profits. Ricardo logically derived the new theory as an incidental implication from theoretical arguments which *prima facie* have little to do with changes in the general rate of profits. Hence the originality of his theory.

It was in the context of Malthus's theorizing on the long-term expansion of food production (on which the

1 Most of such articles were written by Horner. See Fetter (1957).

2 At the Stock Exchange, in the early years of the century - according to the editor's note about Trower, in Ricardo's Works, vol. VI, p.xxiii-v.

growth of population was supposed to depend) that Smith's theory of rent, together with other "inputs", was converted by Ricardo into an "agricultural" theory of profits.

Ricardo's interest in Political Economy was aroused at a time (c.1799) when the revival of a bounty on the exportation of corn was soon to become a matter of concern to "political economists" such as Malthus and Horner, who were already familiar with Smithian Political Economy. Ricardo did probably read their arguments on the bounty with a still greater interest, as both writers were criticizing Smith's analysis. Their critiques centred on Smith's denial that a bounty on exportation would encourage cultivation by raising profits on the production of corn. In considering Smith's analysis, both Malthus and Horner had to examine the response of capitalist agriculture to an increased demand for food.

More importantly, the question of the profitability of agriculture as a condition for the investment of capital was also at the centre of Malthus's early speculation on the possibilities of expansion of food production vis-à-vis the growth of population. These possibilities were examined by him especially in connection with the question of the increasing population (supply of labourers) demanded by increasing capital. Malthus's thought on these matters is presented in the early editions of the Essay on Population, though not systematically. It is described in chapter 5 below.

The main specific object of this research has been to establish the role played, in the formation of Ricardo's early theory of profits, by Malthus's early economic thought on the expansion of food production.

Similarly, an attempt has been made to determine the role played in the same process by Horner's 1804 article about a bounty on the exportation of corn, in which he presents a theory of the effect of the demand for corn on cultivation, or rather a "correction" of Smith's theory. This is considered in chapter 6.

The development of Malthus's thought on the effect of the demand for corn on cultivation - which was clearly influenced by Horner's article - is traced in chapter 7, up to the time of the emergence of Ricardo's theory of profits.

Chapter 8 collects the "inputs" examined in previous chapters and - considering some circumstances pertaining to the period in which Ricardo's theory of profits is known to have emerged, for instance, the development of a friendship between Ricardo and Malthus - it attempts to explain the emergence of the new theory.

The new theory itself - the "output" of the process - is examined in detail in chapter 4.

Before that, it is necessary to consider Smith's theories of wages and rent, the basic "inputs" into the whole process of formation of Ricardo's early theory of profits. This is done in chapters 2 and 3.

CHAPTER 2
SMITH'S THEORY OF WAGES

This chapter reviews the treatment of wages in the Wealth of Nations, emphasizing some aspects that are particularly relevant for an understanding of the formation of Ricardo's early theory of profits.

Smith's wage-population mechanism, which determines the "natural" rate of wages, is described in sections 2.1 and 2.2, on the assumption that the wage-basket consists of food. Section 2.3 takes into account Smith's allowance for other necessities, but it is argued in section 2.4 that his treatment of wages is generally based on the concept of the wage-basket as consisting of food.

Page numbers in parentheses refer to the Glasgow edition of the Wealth of Nations (see Bibliography).

2.1. The principle of population in a "civilized society"

"Every species of animals naturally multiplies in proportion to the means of their subsistence, and no species can ever multiply beyond it. But in civilized society it is only among the inferior ranks of people that the scantiness of subsistence can set limits to the further multiplication of the human species; and it can do so in no other way than by destroying a great part of the children which their fruitful marriages produce."(p.97-8)

In a "civilized society", this sub-species of humans, the "inferior ranks of people" - that is to say, the "race" of workmen (p.85) - exchange their labour for "wages", "in order to obtain food" (p.181). And every workman is supposed to "marry" and to support his own offspring as best he can; "the labour of the wife, on account of her necessary attendance on the children, being supposed no more than sufficient to provide for herself" (p.85).

The rate of growth of the work-force, considered as a steady growth in the long run, is supposed to depend on the "proportion of their children [that] arrive at maturity" (p.97).

This proportion is in turn supposed to depend essentially on the quantity of food available to the labourer and his family on a regular basis; so that the scantiness of food destroys a greater part of the children born the smaller the quantity of food available.

But the quantity of food consumed by the labourer and his children is assumed to depend on the quantity that his labour can purchase, i.e. on the male wage rate in terms of food.

Therefore, in the long run, the rate of increase of the work-force depends on the wage rate in terms of food - which may be expressed as a function:

$$\dot{N}^S = f (w) \quad I$$

where \dot{N}^S is the annual rate of growth of the supply of labourers; w is the wage rate in terms of food (per man-year of labour); and f is an increasing function.

Smith pin-points a certain level of the wage rate which would just enable the labourer to buy the necessary quantity of food - as determined by human nature - to support himself and to bring up such number of children as is required, on average, to keep up the labouring population in the long run. If the wage rate (in terms of food) is higher or lower than this level, the supply of labourers will be increasing or diminishing (p.85-6).

He describes this particular level of the wage rate as the lowest rate that can prevail in the long run - being the "lowest rate which is consistent with common humanity" (p.91) - since the race of labourers would be extinguished if the wage rate remained below such level. It will accordingly be called here the "minimum" level.

This long-run minimum is, of course, greater than the daily minimum, "the bare subsistence of the labourer

[himself]. The workman must always have been fed in some way or other while he was about the work" (p.113).

Any rate of wages that is supposed to prevail in the long run - even if it happens to be greater than the "minimum" rate - is made into a "subsistence level" by the principle of population as formulated by Smith and expressed by function 1. According to Smith's formulation, the labourer and his children will never be able, in the long run, to consume anything more than is required for their subsistence. Marriages among labourers are so "fruitful" vis-`a-vis the quantity of food which the labourer's wages can ever purchase, that these wages can never be, for a long period of time, more than sufficient for the labourer to maintain himself and to bring up a number of his children - whether this number be just sufficient to keep up the work-force, or be greater than that. There is always an excessive number of births, so that "the scantiness of subsistence ... set limits to the further multiplication [of labourers]... by destroying a great part of the children which their fruitful marriages produce" (p.97-8).

Apparently describing events that took place around him, or at least including them in a statement of conditions that prevailed across the world, Smith asserts:

"In some places one half the children born die before they are four years of age; in many places before they are seven; and in almost all places before they are nine or ten. This great mortality, however, will every where be found chiefly among the children of the common people" (p.97)

2.2. The wage-population mechanism - the wage-basket consisting of food

The demand for labourers is supposed to increase in proportion to the increase of the productive "stock" or capital of society, i.e. that capital which is employed

in production, by employing labourers.

"If this demand [for labourers] is continually increasing, the reward of labour must necessarily encourage in such a manner the marriage and multiplication of labourers, as may enable them to supply that continually increasing demand by a continually increasing population. If the reward should at any time be less than what was requisite for this purpose, the deficiency of hands would soon raise it; and if it should at any time be more, their excessive multiplication would soon lower it to this necessary rate [the "natural" rate (p.80)]... to that proper rate which the circumstances of the society required [i.e. "according as the increasing, diminishing, or stationary demand of the society may happen to require" (p.98)]. It is in this manner that the demand for men, like that for any other commodity, necessarily regulates the production of men; quickens it when it goes on too slowly, and stops it when it advances too fast." (p.98)

This argument considers the supply of labourers to be perfectly elastic in the long-run, whatever the rate of increase of demand. This follows from the assumption that marriages among labourers are so "fruitful" that their potential rate of multiplication is greater than the rates at which capital ever multiplies. The actual rate of growth of the supply of labourers is always kept down to the rate of increase of demand, via the quantity of food that the labourer's wages can purchase.

The labour market is supposed to determine such rate of wages as brings the rate of growth of the supply of labourers into equality with some given rate of increase of the demand for labourers. Denoting the latter by \dot{N}^d this condition of equilibrium in the labour market may be expressed as:

$$\dot{N}^s = \dot{N}^d \quad \text{II}$$

whence, in view of equation I, $f(w) = \dot{N}^d$.

Therefore, the equilibrium or "natural" rate of wages is determined as an increasing function of the rate of growth of the demand for labourers:

$$w_N = f^{-1} (\dot{N}^d) \quad \text{III}$$

In the long-run, the labour market fixes the money wage rate at the right proportion relative to the price of food - the right proportion being the natural value of labour in terms of food, as determined according to equation III.

Given \dot{N}^d , the money price of labour depends on the money price of food. As Smith describes it:

"The demand for labour, according as it happens to be either increasing, stationary, or declining; or to require an increasing, stationary, or declining population, regulates the subsistence of the labourer, and determines in what degree it shall be, either liberal, moderate, or scanty. The ordinary or average price of provisions determines the quantity of money which must be paid to the workman in order to enable him, one year with another, to purchase this liberal, moderate, or scanty subsistence." (p.864)

This may be expressed thus:

$$w' = w_N p'_a \quad \text{IV}$$

where w' is the rate of wages in terms of money (per man-year of labour); p'_a the money price of food; and w_N is given by equation III.

This equilibrium condition must be distinguished from the identity $w' = w p'_a$ or $w = w' / p'_a$. The wage rate in terms of food is the same thing as the money wage rate divided by the money price of food.

2.3. Inclusion of other necessities besides food

"By necessities I understand, not only the commodities which are [rendered by nature] indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without." (p.869-70)

In Great Britain, for instance, a "linen shirt" has become necessary for the labourers; also "leather shoes" for men and women in England, and for men in Scotland (p.870).

A variable basket of "necessaries" now replaces a variable quantity of "food" in Smith's theories of population and wages.

Like the quantity of food, the indispensable basket varies - as to the qualities and quantities of its components - according to the required rate of increase of the supply of labourers.

The "ordinary" or average price of the necessary basket regulates the money wage rate:

"the wages of labour are every where regulated ["in the long-run"] partly by the demand for it, and partly by the average price of the necessary articles of subsistence; whatever raises this average price must necessarily raise those wages, so that the labourer may still be able to purchase that quantity of those necessary articles which the state of the demand for labour, whether increasing, stationary, or declining, requires that he should have." (p.871)

"Any rise in the average price of necessities, unless it is compensated by a proportionate rise in the wages of labour, must necessarily diminish more or less the ability of the poor to bring up numerous families, and consequently to supply the demand for useful labour." (p.873)

2.4. The labourer's budget, or the composition of the wage-basket

Smith's theories of population and wages are intended to apply to "all the different countries of the world" (p.98). He in fact applies it to America (rapidly increasing demand for labourers, high wages, rapidly increasing population); Europe, particularly Great Britain (slowly increasing demand for labourers, wages moderately above the minimum level, slowly increasing population); China (stationary demand for labour, wages at the minimum, stationary population); and Bengal (decreasing demand for labour, wages below the minimum, declining population).

In applying his theories to European nations, Smith substitutes "corn" for "food", since corn is in Europe "the food of the common people" (p.93) or "the subsistence of the labourer" (p.53).

He allows that, at some times and places, wages may be "considerably" above the minimum level (p.86). This possibility appears especially with reference to the case of contemporary Britain, where the "real recompence of labour", i.e. "the real quantity of the necessaries and conveniences of life which it can procure to the labourer", had become more than the minimum quantity of food (p.91-5). The consumption basket of the "labouring poor" is incidentally described as including "manufactured commodities" (as distinguished from raw produce of land) such as leather (for shoes), coarse "linen and woollen cloth", soap (in connection with the use of linen) - these commodities having become "necessaries" for the British labourers. They had come to consume even "conveniences of life" or "luxuries", such as beer and ale, "spirituous liquors", tobacco, tea, sugar, "butchers meat", and "agreeable and convenient pieces of household furniture" made of the "coarser metals" (p.96, 259-60, 869-76).

But this nice and tidy picture must be seen in the

context of the whole scene.

Even when talking of contemporary Britain, Smith often refers to the labouring population as the "labouring poor" or simply the "poor". Their linen clothes and woollens are invariably "coarse". The "indulgence" by the poor (particularly "the dissolute and disorderly") in the consumption of "luxuries", i.e. non-necessaries, brings distress upon their families, diminishing their "ability to bring up families", "their children generally perishing from neglect, mismanagement, and the scantiness or unwholesomeness of their food" (p.872). What increases considerably in the wage-basket - at least in that of the "sober and industrious poor", who bring up most of the "useful" labourers (p.872) - is still the quantity of food, according to the number of children that are required to arrive in a useful state at the labour market.

What the labourers are supposed to do with a "liberal reward" for their labour is "to provide better for their children, and consequently to bring up a greater number" (p.98) - which essentially means to feed them better - and not to diversify their consumption, by purchasing more of other "necessaries and conveniences of life", besides more food; nor to "indulge" in the consumption of "luxuries". There is always a "scantiness of subsistence" relative to the number of births per marriage, so that there is never much room left in the labourer's budget for lesser necessaries such as "cloathing and lodging", nor is there any room for "conveniences of life" or "luxuries" - even if the "natural" rate of wages happens to be high above the minimum level.

In one important description of the general state of things - as if he were setting the scenery and costume for the drama - the "cloathing and lodging" of the poor are "the hovel and the few rags". The poor are always willing to "exert themselves" in order to obtain food, and their competition for work may imply that they do not

earn the "command" or power of purchasing more things than the food which they must consume - things like "cloathing and lodging, household furniture, and what is called Equipage" being left for the "rich" (p.180-1).

On the whole, Smith obviously highlights food in the consumption of the labourer - food being the universal necessity of animal life, and constituting at all times and places the most important part, sometimes the whole, of the labourer's expenses. Other "necessaries and conveniences of life" are generally kept in the background, being minimized almost to the point of disappearance, or abstracted altogether.

In most of Smith's treatment of population, it is on the available quantity of food that the multiplication of labourers depends. In stating that "men, like all other animals, naturally multiply in proportion to the means of their subsistence", it is meant that the means of subsistence consist essentially of food (p.162). This is explained elsewhere thus:

"After food, cloathing and lodging are the two great wants of mankind. ...Countries are populous, not in proportion to the number of people whom their produce can cloath and lodge, but in proportion to that of those whom it can feed. When food is provided, it is easy to find the necessary cloathing and lodging." (p.178,180)

Again:

"The number of workmen increases with the increasing quantity of food." (p.181)

Also at the "micro" level of the workman and his family, their multiplication is supposed to depend on the quantity of food which they consume.

Accordingly, the labour market is supposed to fix the rate of wages at that level in terms of food which enables the workman to purchase the quantity of food that corresponds to a required rate of increase of the supply of labourers.

By fixing the value of labour in terms of food, the wage-population mechanism ipso facto determines the value

of food in terms of labour. Smith generally considers this quantity of labour which a stock of food "commands" or can purchase as being equal to the quantity of labour which it can maintain, at a given quantity per labourer. This is most universally formulated, as a sort of summing up, in the following passage, where "corn" stands for "food":

"the great and essential difference which nature has established between corn and almost every other sort of goods. ...The nature of things has stamped upon corn a real value [i.e. an exchangeable value in terms of labour, or "labour commanded"] which cannot be altered by merely altering its money price. ...Through the world in general that value is equal to the quantity of labour which it can maintain, and in every particular place it is equal to the quantity of labour which it can maintain in the way, whether liberal, moderate, or scanty, in which labour is commonly maintained in that place."
(p.515-6)

This implies that the wage-basket consists only of food; so that the quantity of food that the worker's labour can purchase is equal to the quantity of food necessary for his maintenance - whether in a liberal, moderate or scanty way.

Accordingly, it is the money price of corn - and expressly not the price of "woollen or linen cloth" (p.516) - which regulates the money price of labour:

"It [the money price of corn] regulates the money price of labour, which must always be such as to enable the labourer to purchase a quantity of corn sufficient to maintain him and his family either in the liberal, moderate, or scanty manner in which the advancing, stationary, or declining circumstances of the society oblige his employers to maintain him" - according as the demand for labour "happens to be either increasing, stationary, or declining; or to require an increasing, stationary, or declining population." (p.509,864)

2.5. Conclusion

In sum, Smith's theories of population and wages - intended to apply "through the world in general" - are generally based on a concept of the wage-basket as consisting of food, in such quantity as is necessary for the labourer to subsist and to bring up a certain number of his children, this number depending on the rate of increase of the demand for labourers. He thinks that it is the quantity of food consumed by the labourer and his children which regulates child mortality and therefore the rate of growth of the supply of labourers. Also, the labour market is supposed to operate so as to bring the supply into a path of equality with the demand, by fixing, in the long run, the money price of labour relative to the money price of food at that level which enables the labourer to purchase the necessary quantity of food.

As will be seen in the next chapter, Smith's theory of rent also hinges on the concept of the wage-basket as consisting of food or (in Europe) corn - for it is built upon his theory of wages.

CHAPTER 3

SMITH'S THEORY OF RENT OF LAND

This chapter presents a simple formalization of rent determination, as explained in the Wealth of Nations, Book I, chapter 11, "Of the rent of land". This formalization has been helped by the chapter on "Land" in Sraffa (1960), from which some notation is borrowed.

In the last section of this chapter, a discussion is given of Smith's assumption of rent being paid for the marginal land - a question that plays an important part in the formation of Ricardo's early theory of profits.

Page numbers in parentheses refer to the Glasgow edition of the Wealth of Nations.

3.1. Introduction

All land has been appropriated or monopolised by people who demand a "rent", i.e. "the price paid for the use of land". Thus, the rent of land "is naturally a monopoly price" (p.161). It is equivalent to a share of the produce obtained by using it:

"As soon as land becomes private property, the landlord demands a share of almost all the produce which the labourer can either raise, or collect from it. His rent makes the first deduction from the produce of the labour which is employed upon land. It seldom happens that the person who tills the ground has wherewithal to maintain himself till he reaps the harvest. His maintenance is generally advanced to him from the stock of a master, the farmer who employs him, and who would have no interest to employ him, unless he was to share in the produce of his labour, or unless his stock was to be replaced to him with a profit. This profit makes a second deduction from the produce of the labour which is employed upon land." (p.83)

The rent paid for any piece of land "is naturally

the highest which the tenant can afford to pay". Thus the "natural" rent of land - the rent which is paid in a state of long run competitive equilibrium - is "the residue which remains to the proprietor", after deducting from the gross produce, or from its price, "what is sufficient to keep up the stock from which he [the farmer] furnishes the seed, pays the labour, and purchases and maintains the cattle and the other instruments of husbandry, together with the ordinary profits of farming stock in the neighbourhood" (p.160,187).

In this description of rent, the "stock" or capital employed by the farmer includes "the seed... the cattle and the other instruments of husbandry", as well as the wages of labour. However, Smith generally proceeds in his analysis of rent as if the capital or expenses of the farmer consisted only of wages advanced; so that the replacement of capital is reduced to the replacement of "the food, cloaths, lodgings and other necessaries which were consumed" (p.185).

In line with his general treatment of wages, the "necessaries which were consumed" are in turn virtually reduced to a required stock of "corn, the subsistence of the labourer" - "or whatever else is the common and favourite vegetable food of the people" (p.206-7), e.g. potatoes in Ireland or rice in China.

Smith ends up talking of capital employed, or "labour and expence" (p.245), as the same thing as "labour and subsistence" (p.246). In the course of the argument, rent and profits on the land come accordingly to be considered as the excess of produce, or of its price, over the necessary maintenance of the labourers employed - at a given "natural" wage rate in terms of food, or at the "rate [quantity of food per unit of labour] at which... labour is commonly maintained in the neighbourhood" (p.162).

In Smith's treatment of rent of land - as distinguished from rent of mines - there is no

"intensive" diminishing returns. He assumes a single, given quantity of product per acre. Cultivation requires a given quantity of labour per acre, and therefore per unit of product.

The argument is generally based on the supposition of homogeneous land, but sometimes it involves different qualities of land. The case of homogeneous land is considered in section 3.2 below, whereas section 3.3 deals with an instance of heterogeneous land.

3.2. Homogeneous land, various products

Following Smith, let us suppose that any piece of land can be used for the production of any one of a number of products.

Differences between products in respect to the periods of return of circulating capital (i.e. wages advanced) are ignored, as if there were a uniform period, say one year, from the payment of wages to the sale of the product.

3.2.1. Rent and profit on the production of corn

Let us consider first the production of corn, "the food of the common people" (p.93).

Since the expenses of production are supposed to consist solely of wages, and profits are defined as revenue minus expenses and rent, the following identity prevails on any piece of land used for producing corn:

$$p'_a \equiv n_a (w p'_a) (1 + r_a) + s_a p'_a \quad V$$

where the subscript a stands for corn; the unit of product is defined as the quantity obtained from one acre of land; p'_a is the money price of corn; n_a the quantity (man-years) of labour required per unit of product; w the rate of wages in terms of corn, so that $(w p'_a)$ is the wage rate in terms of money; r_a the annual rate of

profits, i.e. the ratio between annual profits and capital employed; and s_a the annual rent per acre, expressed in terms of corn.

Identity V can be re-written as:

$$s_a + r_a (n_a w) \equiv 1 - n_a w \quad \text{VI}$$

where n_a and w , and therefore $(1-n_a w)$, are considered to be given.

Smith assumes that "land, in almost any situation, produces a greater quantity of food than what is sufficient to maintain all the labour necessary for bringing it to market, in the most liberal way in which that labour is ever maintained". In the production of food, there is a "surplus, from which are drawn both the profit of the farmer and the rent of the landlord". "The surplus too is always more than sufficient to replace the stock which employed that labour, together with its profits. Something, therefore, always remains for a rent to the landlord" (p.162-3). Elsewhere, he refers to "the rent of the landlord, or the surplus quantity of food which would remain to him" (p.175).

In the case of homogeneous land, these postulates can be expressed thus:

$$1 - n_a w > r_a (n_a w) > 0 \quad \text{VII}$$

so that $s_a > 0$. This implies, in view of identity V, that:

$$p'_a > n_a (w p'_a) (1 + r_a)$$

the excess of price being the money rate of rent, $s_a p'_a$.

Commenting on such assumptions, Marx (1905-10, II, p.354-5) observes:

"This sounds quite physiocratic and contains neither proof nor explanation of why the 'price' of these particular commodities pays a rent... rent and profit

appear as mere surplus of the product, after that part of it has been deducted in kind which feeds the worker. (This is really the physiocratic view, which is based on the fact that in an agricultural country man lives almost exclusively on the agricultural product...). ...[Smith] derives rent from the ratio between the amount of food yielded by agriculture and the amount of food consumed by the agricultural worker. In point of fact - apart from this physiocratic interpretation - he postulates that the price of the agricultural product which supplies the principal food pays rent in addition to profit. This is the starting-point for his further arguments."

3.2.2. Rent and profit on agriculture in general

Under the general assumption of competitive equilibrium, the rates of profit and wages must be uniform across all employments of capital and homogeneous labour (except to compensate for non-pecuniary advantages and disadvantages between alternative employments, as Smith explains elsewhere). Moreover, since the land is supposed to be homogeneous, the annual rent per acre must also be uniform across all land uses. All these rates are supposed to be settled at their "natural" levels. Thus the following equilibrium conditions must be satisfied:

$$s + r (n_i w) = p_i - n_i w \quad i=a,b,\dots,k \quad \text{VIII}$$

where i stands for every product a, b, \dots, k (of which a is corn); the unit of each product is defined as the quantity obtained per acre of land; r is the general rate of profits; w and s are the uniform rates of wages and rent, both expressed in terms of corn; p_i the value of product i in terms of corn, being $p_a \equiv 1$ (corn is taken as the standard of value); n_i the quantity (man-years) of labour required per unit of product i .

Since n_i and w are considered to be known data, and $p_a \equiv 1$, there are k equations involving $k+1$ unknowns,

namely p_b, \dots, p_k, r and s .

Equation VIII for $i=a$ reads (since $p_a \equiv 1$):

$$s + r (n_a w) = 1 - n_a w \quad \text{IX}$$

which means that s and r must be such that, in the production of corn, the sum of rent at the rate s and profit at the rate r is equal to the given surplus produce. This implies that the rent and profit in the production of commodities b, \dots, k must be such that, at their corresponding rates of rent and profit, the sum of rent and profit in the production of corn is equal to the given surplus produce $(1 - n_a w)$. In particular, if by chance, or by supposition, $n_i = n_a$ for some product i , say grass, then the rent and profit (per acre) in the production of i must together be equal to the sum of rent and profit in the production of corn, which is independently given; thus: $p_i - n_i w = 1 - n_a w$. This is expressed by Smith as a necessary equality "between the rent and profit of grass and those of corn; of the land of which the immediate produce is food for cattle, and of that of which the immediate produce is food for men", otherwise "corn land would be turned into pasture" or "what was in pasture would be brought back into corn" (p.165). Hence:

"the rent and profit of corn, or whatever else is the common vegetable food of the people, must naturally regulate, upon the land which is fit for producing it, the rent and profit of pasture" (p.167).

"[The price (relatively to corn) of every sort of animal food, such as butcher's-meat, poultry, dairy-produce etc.] must afford to the landlord and farmer the rent and profit of corn-land" (p.259)

In Smith's analysis of rent, the "ordinary" or "natural" rate of profits, r , is treated as a given variable, as is the real wage rate, w . Thus, in equations VIII, the unknowns are reduced to p_b, \dots, p_k and s .

Assuming that $r > 0$, and since $s_a > 0$ (from VII) and $s_a = s$, and thus $s > 0$, then condition IX implies that the range of feasible magnitudes of r is: $0 < r < (1 - n_a w) / n_a w$. Equations VIII can therefore be solved for p_b, \dots, p_k and s as functions of the independent variable r , over that range.

Equation VIII for $i = a$ independently yields the solution for s as:

$$s = 1 - n_a w (1 + r) \quad X$$

Given n_a and w , and also given r at any feasible level, then s_a is determined according to identity VI, since $r_a = r$. As the rates of rent are to be the same for all land uses, it follows that the rates of rent for all uses other than corn must be brought into equality with s_a , which is independently determined. One may therefore state, as Smith did, that s_a "regulates" all the other s_i :

"the rent of the cultivated land, of which the produce is human food, regulates the rent of the greater part of other cultivated land. No particular produce can long afford less; because the land would immediately be turned to another use: And if any particular produce commonly [in the long run] affords more, it is because the quantity of land which can be fitted for it is too small to supply the effectual demand [e.g. wines that can only be obtained from peculiar regions]. In Europe corn is the principal produce of land which serves immediately for human food. Except in particular situations [places], therefore, the rent of corn land regulates in Europe that of all other cultivated land." (p.175)

The remaining equations VIII (for $i = b, \dots, k$) determine the prices of the respective commodities (in terms of corn) at such levels as to afford the same rate of rent as that on corn production:

$$p_i = n_i w (1 + r) + s_a \quad i = b, \dots, k$$

Something like this was stated by Smith in the following terms:

"the price of each particular produce must be sufficient, first, to pay the rent of good corn land, as it is that which regulates the rent of the greater part of other cultivated land; and, secondly, to pay the labour and expence of the farmer as well as they are commonly paid upon good corn-land; or, in other words, to replace with the ordinary profits the stock which he employs about it." (p.245)

Multiplying both sides of the last equation by p'_a :

$$p_i p'_a = n_i (w p'_a) (1 + r) + s_a p'_a \quad i=b, \dots, k$$

where the left-hand side is the money price of product i . This long-run equilibrium condition implies that, ceteris paribus, a rise or fall in the money price of corn must be accompanied by a proportional rise or fall in the money prices of the other products of land:

"[the money price of corn] regulates the money price of all other parts of the rude produce of land, which ... must bear a certain proportion to that of corn ... It regulates, for example, the money price of grass and hay, of butcher's meat, of horses, and the maintenance of horses" (p.509)

3.3. Heterogeneous land, one product

Smith takes into account the heterogeneity of "the same extent of ground" in respect to "fertility" and "situation", i.e. distance from the market. The rate of rent varies with both:

"The rent of land not only varies with its fertility, whatever be its produce ["by the increase of the produce, and by the diminution of the labour which must be maintained out of it"], but with its situation, whatever be its fertility. Land in the neighbourhood of a town, gives a greater rent than land equally fertile in a

distant part of the country. Though it may cost no more labour to cultivate the one than the other, it must always cost more to bring the produce of the distant land to market. A greater quantity of labour, therefore, must be maintained out of it and the surplus, from which are drawn both the profit of the farmer and the rent of the landlord, must be diminished." (p.163)

This argument may be readily expressed thus:

$$s_j = A_j - N_j w (1 + r) \quad \text{XI}$$

or

$$j = 1, 2, \dots, m$$

$$s_j / A_j = 1 - n_j w (1 + r)$$

where the subscript j denotes one of m different qualities of cultivated land, m being the quality of what has come to be called the "marginal land", i.e. the worst portion of cultivated land, where labour productivity is lowest; s_j is the corn rent per acre of land j ; A_j the quantity of corn produced per acre of land j ; N_j the quantity (man-years) of labour required to cultivate and bring to market the produce A_j ; n_j the quantity of labour required per unit of product, i.e. the same as N_j/A_j ; and the other symbols retain the same definitions as in the previous section.

All A_j and N_j are considered to be known data, as are w and r , and thus the m equations XI determine the rates of rent s_1, s_2, \dots, s_m .

The "position" of the "extensive margin" of cultivation - or rather the quality of the marginal land, m - and the total output of corn are supposed to be determined by the amount of capital invested in agriculture. The demand for such output is taken for granted, because, in a sense, the supply of food creates its own demand:

"As men, like all other animals, naturally multiply in proportion to the means of their subsistence, food is always, more or less, in demand." (p.162)

The assumption of "extensive" differential returns

may be expressed as $n_1 < n_2 < \dots < n_m$. On the other hand, assumption VII is in force for all qualities of land, thus $1 - n_j w > 0$ ($j=1, 2, \dots, m$). It follows immediately that:

$$1 - n_1 w > 1 - n_2 w > \dots > 1 - n_m w \quad \text{XII}$$

which means that "the surplus, from which are drawn both the profit of the farmer and the rent of the landlord" must be smaller (as a relative share of the produce) on less fertile or more distant lands.

Since $r > 0$, it follows from XI and XII that rent must also be smaller (as a relative share of the produce) on less fertile or more distant lands.

3.4. Rent on the marginal land

In his analysis of rent, Smith takes the "natural" rates of wages and profit as given, and supposes them to be such that, in the production of corn, there is always a part of the gross produce in excess of wages and profits: "something, therefore, always remains for a rent to the landlord" (p.162). In other words, assumption VII is in force for all qualities of land, including the marginal land. Thus $s_m > 0$ in "sub-model" 3.3 above; and the case of the production of corn on homogeneous land, as in sub-model 3.2, may be considered as a special case where all the cultivated land happens to be uniformly of the best quality available, which is therefore the marginal quality of land - thus $s_m = s_1 = s_a > 0$.

However, at the same time, Smith takes for granted that there is redundant land which could be cultivated, should more capital be invested in agriculture - except for particular products, e.g. wines, that require special types of land, the quantity of which be "too small to supply the effectual demand" (p.175).

There is no such scarcity of land (vis-'a-vis demand) for the production of corn and other products in

general. The rent which they pay, therefore, does not arise from scarcity of land. Rather it is traced by Smith to a postulated residue of the surplus produce in the production of corn, "the subsistence of the labourer" - this surplus produce (exceeding the maintenance of the labourers) being "the original source of rent" (p.182). All the alternative uses of land must also pay rent, otherwise the land would be used for producing corn (which creates its own demand).

Smith seems therefore to have overlooked the implication that, under his own general assumption of competitive behaviour, the competition of redundant land, i.e. the excess supply of land, prevents any cultivated land of the same quality from paying rent in the long run. Thus $s_m = 0$, as a condition of competitive equilibrium - if there is redundant land of the same quality as that of the marginal land.

However, if Smith's assumption that $s_m > 0$ is relaxed, and the missing condition $s_m = 0$ is added to his theory of rent, this theory becomes over-determined. This problem can be seen in equation XI for $j = m$: the magnitude of s_m that is compatible with the given variables A_m, N_m, w and r will not be zero, except by chance - that is to say, except when the marginal land happens by chance to be of that quality for which the surplus produce $(A_m - N_m w)$ is just sufficient to pay profits at the given rate r , leaving nothing to be paid as rent (supposing there is land of such a quality among the available lands).

This problem, or rather a solution to this problem, constitutes the essential difference between Smith's theory of rent and the theories of rent and profits that Ricardo presented in his "Essay on Profits" (1815). As will be seen in the next chapters, Ricardo's "solution" did not develop directly from a recognition of the problem as such, that is, as it appears in Smith's argument on rent. Rather, this argument was taken up by Malthus in the context of his "race" between population

and food, and it was Malthus's theorizing on the expansion of food production that provided the immediate steps towards Ricardo's own formulation, including the notion of a no-rent marginal land.

But it is convenient to present Ricardo's formulation as if it were immediately derived from Smith's theory of rent. This is done in the next chapter.

CHAPTER 4

RICARDO'S EARLY THEORY OF PROFITS (1813-15)

Ricardo's "agricultural" theory of profits was published in his Essay on Profits (February 1815). As noted by Sraffa (1951b,p.3-5), the "essential elements" of this theory had already appeared in Ricardo's letters to Malthus of August 1813 and in his letter to Trower of March 1814. His formulation in this letter to Trower is considered in section 4.3, but this chapter is generally concentrated on the argument of the Essay on Profits.

Ricardo's early theory of profits may be readily presented as if it were immediately derived from Smith's theory of rent by incorporating the condition that the marginal land pays no rent. This is done in section 4.2. Before that, section 4.1 gives a preliminary account of a few aspects of Ricardo's early mechanism of profit determination. The working of this mechanism in the textual argument of the Essay on Profits is described in section 4.3. The underlying rationale, as interpreted by Sraffa - i.e. the concept of wages as consisting of food - is discussed in section 4.4; and section 4.5 speculates about Ricardo's attitude to this "ridiculous assumption", as Hicks (1985) refers to it.

4.1. Introduction

In the Essay on Profits, the general rate of profits is made to depend exclusively on the rate of real wages (in terms of food) and the productivity of labour in agriculture, i.e. in the production of "food" or "corn".

The real wage rate is supposed to be determined much in the same way as in Smith's theory of wages, as described in chapter 2 above. The accumulation of capital and its increasing demand for labour gives a stimulus to population, or rather to the supply of labourers, by keeping real wages "high" (IV,35), presumably above "that

remuneration for labour, which is necessary to the actual subsistence of the labourer" (IV,22). If "capital and population advance in the proper proportion", then "the real wages of labour, continue uniformly the same" (IV,12).

However, the rate of profits now depends on the real wage rate, so that there is a feed-back influence of the profit rate on the demand for labour and the real wage rate, via the rate of growth of capital, which depends on the rate of profits. This influence is mentioned in the Essay (IV,19,n.;35), but it is abstracted in the main course of the argument, which treats the labour market as exogenous from the point of view of profit determination.

There remains a link of dependence of the profit rate on the growth of capital and population, through the aggregate demand for food (IV,13). But the argument is essentially formulated in terms of different quantities demanded, rather than in terms of a continuously increasing demand. In fact, R. proceeds by "jumping" between equilibrium states of cultivation. In the main course of the argument, he imagines cultivation to be successively extended to less fertile or more distant expanses of land; but he considers this process to be reversible in the event of importation of cheaper corn (IV,35-6,38-9) - which is supposed not to occur (IV,16,n.).

Therefore, the Essay's analysis of "changes" in the rate of profits may be formally reduced to one of comparative statics. The mechanism of profit determination may be disconnected from the dynamic mechanism of capital accumulation and population growth, so that the real wage rate and the demand for food become exogenous variables. They are in fact treated by Ricardo as independent variables in the determination of the general rate of profits.

4.2. The model

In the Essay on Profits, Ricardo considers initially a case where all the cultivated land is "equally fertile, and equally well situated" (IV,11). He later introduces differences between the cultivated lands in respect to fertility or distance from the market.

4.2.1. Homogeneous land

Ricardo's analysis may be immediately obtained from Smith's model 3.2 above. If one identifies agriculture with the production of commodity a , namely "food" or "corn", and accordingly re-defines the other commodities b, \dots, k as the products of other trades, such as manufactures etc. - where it is assumed there is no rent - equations VIII may be re-written as:

$$p_a = n_a w (1 + r) + s_a$$

$$p_b = n_b w (1 + r)$$

.....

$$p_k = n_k w (1 + r)$$

XIII

where $p_a \equiv 1$.

Ricardo initially abstracts rent by supposing that fertile land is a free resource:

"In the first settling of a country rich in fertile land, and which may be had by any one who chooses to take it, the whole produce after deducting the outgoings belonging to cultivation, will be the profits of capital, and will belong to the owner of such capital, without any deduction whatever for rent" (IV,10)

By removal of s_a from equations XIII, they come to express Ricardo's conditions of competitive equilibrium, as stated in the Essay:

"["Wherever competition can have its full effect, and the production of the commodity be not limited by nature (e.g. particular wines)"] the price of all commodities is

ultimately regulated by ... the cost of their production, including the general profits of stock" (IV,19-20;20,n.)

On the other hand, removing s_a from identity VI and re-arranging terms results in:

$$r_a \equiv (1 - n_a w) / n_a w$$

where n_a and w are considered to be given, and therefore r_a is ipso facto determined by definition (no behavioural assumption involved). Thus, r_a is determined independently of variables other than n_a and w , i.e. of variables such as the relative prices of commodities; and independently of conditions such as equations XIII. On the contrary, the endogenous variables in these equations will have to conform to r_a .

In the absence of rent ($s_a \equiv 0$), the first of equations XIII itself determines the general rate of profits, as it implies that $r = (1 - n_a w) / n_a w$; or, what is the same thing, $r = r_a$. Therefore, r depends on r_a , which is independently determined. In other words, r is "regulated" by r_a , as Ricardo puts it. The remaining equations determine the corn values of the respective commodities at such levels that the profit rates in the remaining trades conform to the rate of profits in agriculture.

If r were considered to be given, as well as n_a and w - as in Smith's theory of rent - then system XIII would be over-determined, in the absence of rent. The general rate of profits was instead considered by Ricardo as an endogenous variable, profits being determined as a residue over wages - as rent is determined in Smith's theory of rent as a residue over wages and profits.

4.2.2. Heterogeneous land

When different qualities of land are introduced, Ricardo takes for granted that there is no rent on the marginal land. This is presumably based on the assumption

that the available land is abundant, though of gradually differing qualities, and thus rent does not arise from scarcity of land as a whole. In each of the equilibrium states of cultivation which are contemplated and compared, there always remain redundant pieces of land of the same or similar quality as that of the marginal land; the latter is thus prevented from earning any considerable rent in the long run.

Ricardo seems to have recognized that, even where all land has become private property, this monopoly can only earn a rent for the proprietors if accompanied by scarcity - as in Smith's example of land fit for particular wines, which Ricardo mentions in the Essay (IV,20) as a case where price diverges from cost of production (by including rent). As he puts it, in connection with the proposition that the marginal land pays no rent, in a letter to Malthus of 13 Feb. 1815 (when he was about to publish the Essay):

"The effects of monopoly [of land] cannot I think be felt till no more land can be advantageously cultivated."
(VI,177)

What about rents on the intra-marginal lands? The Essay's determination of such rents may be presented as if it were a modification of Smith's determination of rents on heterogeneous land - as described in section 3.3 above - the modification being the incorporation of the condition that the marginal land pays no rent. In effect, the determination of rents and profits, according to the main course of the argument of the Essay, may be formalized by substituting equations XI in place of the first of equations XIII, and adding the condition $s_m = 0$, thereby obtaining:

$$\begin{aligned}
 s_j &= A_j - N_j w (1 + r) & j &= 1, 2, \dots, m \\
 p_i &= n_i w (1 + r) & i &= b, \dots, k & \text{XIV} \\
 s_m &= 0
 \end{aligned}$$

where A_j and N_j are considered to be given data, as are n_i and w .

Thus we have $m+k$ equations which determine $m+k$ unknowns, namely $s_1, \dots, s_m, p_b, \dots, p_k$ and r .

Under the equilibrium condition $s_m = 0$, the m -th equation of the system itself determines the general rate of profits, as it implies that:

$$r = (1 - n_m w) / n_m w$$

where n_m and w are given, and thus r is determined. The general rate of profit therefore depends wholly on the rate of surplus produce on the marginal land, i.e.

$(1 - n_m w) / n_m w$. It depends exclusively on the rate of wages in terms of corn, and the productivity of labour at the marginal land.

On the marginal land, if the prevailing rate of rent is s_m , the profit rate will be, by definition:

$$r_m = (A_m - N_m w - s_m) / N_m w.$$

Under the condition $s_m = 0$, this rate is equal to the rate of surplus produce, $(1 - n_m w) / n_m w$. It is therefore determined independently of variables other than n_m and w ; and independently of the remaining equations in the system. These equations determine respectively $s_1, \dots, s_{m-1}, p_b, \dots, p_k$ at such levels that the profit rates everywhere else conform to the rate of profits on the marginal land. As Ricardo puts it in the Essay:

"the general profits of stock being regulated by the profits made on the least profitable employment of capital on agriculture" (IV, 13)

By "the least profitable employment of capital on agriculture" Ricardo generally refers to the employment of capital on the marginal land (IV, 38-9), or on the "new land" brought into cultivation (IV, 15-6, n.), or on the cultivated land "which has the worst original qualities and powers" (IV, 24). He considers this quality of land to be determined - given the available quantities of land of

various qualities - as soon as the demand for food is also given (IV,13,24); which implies that the quantity of food per acre of land of each quality (A_j in the equations above) is given. This is, in fact, the general assumption throughout the Essay, and particularly in the Table (IV,17), which belongs to the main course of the theoretical argument.

However, Ricardo admits en passant the increase of the product per acre, at a diminishing rate of increase, from successive additions of capital to the same plot of land - additions of capital implying proportional additions of labour (IV,14-5). At the same time and place, he mentions differential rent based on this kind of diminishing returns.¹ This new principle of rent had been formulated by Malthus in the Inquiry into Rent (1815a), published before Ricardo's Essay on Profits. In the Preface to his Principles, Ricardo makes a general acknowledgement to Malthus's Inquiry into Rent for "the true doctrine of rent" (I,5), but he is more specific in a letter to Malthus of 13 Feb. 1815:

"You have yourself said, and I very much admire the passage, that the last portion of capital employed on the land yields only the common profits of stock, and does not afford any rent" (VI,177)

An editorial note to this letter (VI,177,n.) refers the reader to a passage in Malthus's Inquiry into Rent (1815a,p.116,n.), where it is asserted that the "land which is successively taken into cultivation" may only pay a "fair profit on the stock employed", and no rent. But Malthus also states a marginal principle of profit maximization, according to which the farmer would employ additional capital on his land until "it would return only the common profits of stock, with little or no rent"; or until "the additional produce resulting from it

1 In the Principles, Ricardo emphasizes this principle of differential rent based on "intensive" diminishing returns. See Works, vol. I, pp.328-9;412-3,n.

will fully repay the profits of his stock, although it yields nothing to his landlord" (Malthus, 1815a, p.132-3).

Therefore, when Ricardo states in the Essay on Profits that the general rate of profit is regulated by the profit rate of "the last portion of capital employed on the land" (IV,21), he may be referring to the "intensive" as well as to the "extensive" margin of cultivation.

4.3. The textual argument

As noted by Sraffa (1951b, p.3-5), the essential elements of the theory of profits presented in the Essay on Profits (Feb. 1815) had already been developed by March 1814, when Ricardo had written some "papers on the profits of Capital", mentioned in a letter from Trower of 2 Mar. 1814 (VI,102). These papers have not survived, but - as suggested by Sraffa (1951b, p.4, n.; VI,102, n.) - their contents may have been incorporated, in revised form, into the Essay on Profits. At any rate, in his reply to Trower of 8 Mar. 1814, Ricardo briefly states an argument - presumably developed in the lost manuscript on profits - which was to re-appear as the core of the theoretical argument of the Essay:

"in short it is the profits of the farmer which regulate the profits of all other trades, - and as the profits of the farmer must necessarily decrease with every augmentation of Capital employed on the land [presumably from diminished productivity of labour], provided no improvements be at the same time made in husbandry, all other profits must diminish" (VI,108)

This is enlarged in the Essay, by admitting that the profits of the farmer might be increased from a fall in the real wage rate as well as from improvements in agriculture (IV,11). Thus, it may be inferred, general profits must fall, unless there are improvements in agriculture and/or real wages fall - "the general profits of stock being regulated by the profits made on the least

profitable employment of capital on agriculture" (IV,13).

Hence the conclusion:

"I think it may be most satisfactorily proved, that in every society advancing in wealth and population, independently of the effect produced by liberal or scanty [real] wages, general profits must fall, unless there be improvements in agriculture [in the absence of importation of corn]" (IV,23)

That this conclusion is logically connected with the proposition that "it is the profits of the farmer which regulate the profits of all other trades" - presumably as a corollary, as in the letter to Trower of March 1814 - is shown by the fact that Ricardo adds:

"This principle will, however, not be readily admitted by those who ascribe to the extension of commerce, and discovery of new markets, where our commodities can be sold dearer, and foreign commodities can be bought cheaper, the progress of profits, without any reference whatever to the state of the land, and the rate of profit obtained on the last portions of capital employed upon it. Nothing is more common than to hear it asserted, that profits on agriculture no more regulate the profits of commerce, than that the profits of commerce regulate the profits on agriculture" (IV,23).

In the letter to Trower of March 1814, he had added the following comment to the statement just quoted above from this letter:

"To this proposition Mr. Malthus does not agree. He thinks... that the profits of the farmer no more regulate the profits of other trades, than the profits of other trades regulate the profits of the farmer, and consequently if new markets are discovered, in which we can obtain a greater quantity of foreign commodities in exchange for our commodities, than before the discovery of such markets, profits will increase" (VI,104).

In the Essay, Ricardo proceeds to demonstrate (IV,23-4;24,n.) that the extension of commerce will not raise the rate of profits on commercial capital because

it will not affect the rate of profits on agriculture: "with the same population and capital [so that "the demand for food is by the supposition not diminished"], whilst none of the agricultural capital is withdrawn from the cultivation of the land", the marginal land will be of the same quality, and thus the profit rate at this marginal, no-rent land will be the same. The principles which regulate rent ensure that this rate of profit will also prevail at the intra-marginal lands. Therefore:

"either then it must be contended, which is at variance with all the principles of political economy, that the profits on commercial capital will rise considerably, whilst the profits on agricultural capital suffer no alteration, or that, under such circumstances, the profits on commerce will not rise. It is this latter opinion which I consider as the true one." (IV,24)

This demonstration is based on the supposition that the rate of profits at the marginal, no-rent land is independently determined once the quality of the marginal land is known. This is not explicitly demonstrated in the Essay, but some steps involved may be found scattered in the argument.

The rate of profits of the farmer is made to depend entirely on "the produce compared with the cost of production on the land". Thus, the proposition that the extension of commerce will not raise the rate of profits on commercial capital, because it will not affect the rate of profits on agricultural capital, is "demonstrated" again in the following terms:

"the extension of commerce... the division of labour in manufactures... the discovery of machinery... they have no effect on the [general] rate of profits, because they do not augment the produce compared with the cost of production on the land, and it is impossible that all other profits should rise whilst the profits on land are either stationary, or retrograde" (IV,25-6)

What, then, can alter "the produce compared with the cost of production on the land" ? Only two factors are

admitted: productivity of labour on the land and the real wage rate. In fact, "cost of production" is treated as if it consisted only of wages; "circulating capital" is treated as equivalent to cost of production, as if it consisted only of wages advanced. The real wage rate is expressed or "estimated" in corn, i.e. it is expressed in terms of the agricultural product. Thus a rise or fall in this wage rate, like a change in the productivity of labour, implies a rise or fall in the corn value of the circulating capital employed on the land compared with the produce obtained (IV,11). In other words, a change in the corn price of labour, like a change in its productivity, implies a change in "the produce compared with the cost of production on the land" - on which the rate of profits on the land is supposed to depend.

It follows that the rate of profits on the marginal land, and therefore the general rate of profits, depend only on the productivity of labour in agriculture and the real wage rate. Hence Ricardo's conclusion that - as cultivation is extended to more distant or less fertile lands - "independently of the effect produced by liberal or scanty wages, general profits must fall, unless there be improvements in agriculture" (IV,23). "Improvements in agriculture" shall "afford the same produce with less labour", thereby compensating for the increasing "difficulty" of producing food, as "more labourers would be employed on the more distant or less fertile land, in order to obtain the same supply of raw produce" (IV,19-20,18).

Changes in the productivity of agricultural labour not only increase or diminish "the produce compared with the cost of production on the land" and therefore the rate of profits on agriculture, but also raise or lower the exchangeable value of corn in terms of all other commodities - and particularly in terms of gold and silver, that is to say, in terms of money (IV,19-20;VI,114). Moreover, the money price of labour must rise or fall if the money price of corn is raised or

lowered, so as to restore the same rate of wages in terms of corn. It is in this way that the profit rates of other sectors are brought to the same level as that of agriculture. As Ricardo explains in a letter to Malthus of 17 Mar. 1815:

"It is by the rise of the price of corn that all other profits are regulated to agricultural profits. If the price of corn remained low money wages would not rise and general profits could not fall" (VI,194)

In the Essay, Ricardo thinks that the money prices of other commodities would be left unaltered by a rise of the money prices of corn and labour, which would therefore squeeze profits on their production (IV,19-20). Before the Essay, as noted by Sraffa (1951a,p.xxxiii), Ricardo had subscribed to the view that a rise in the money price of corn, through its effect upon wages, would be followed by a rise of all other prices. But, having arrived at the conclusion that the profits of all other trades must be brought to the same level as the falling profits in the growing of corn, he had come to think that the prices of other commodities would not increase in the same proportion, for such price increases would diminish the demand for them (letters to Malthus of 26 Jun. 1814,VI,108; 25 Jul. 1814,VI,114; 11 Aug. 1814,VI,120). In both cases, the prices of all other commodities are supposed to fall relative to the price of corn - in other words, their values in terms of corn are supposed to fall - so as to reproduce in all the other sectors the rate of profits of agriculture, which happens to be independently determined.

4.4. The underlying rationale

Why is it that the rate of profits of agriculture, or more specifically "the produce compared with the cost of production" on the land, is independently determined and therefore "regulates" the profit rates of all other trades, or the general rate of profits ?

In Ricardo's argument on profit determination, as described in the previous section, "cost of production" consists of wages; and the whole argument points logically towards an implicit postulate that wages consist of the same commodity as the agricultural produce, namely food or "corn" - as interpreted by Sraffa (1951a, p.xxxi-iii; 1960, p.93). Therefore "the produce compared with the cost of production on the land" is a ratio between quantities of corn, and is thus determined independently of the relative prices of commodities and of the profit rates elsewhere.

In the absence of that postulate, the proposition that general profits are regulated by the profits of agriculture would lack any "rational foundation", to use Sraffa's apt expression. So would, therefore, the propositions derived from it. These include what Ricardo considers to be "a principle of great importance" which he believes to have discovered - namely that the general rate of profits is "regulated" by the "difficulty" or "facility" of producing food - the real wage rate being supposed to "continue uniformly the same" (IV, 12; 13, n.).

The assumption that wages consist of food or corn is not only ultimately necessary to demonstrate the main theorems, but is also logically necessary to make sense of the fact that, on the one hand, circulating capital, i.e. wages advanced, is expressed in terms of corn; and on the other hand, this corn value of circulating capital is supposed to be determined independently of changes in the corn values of all other commodities (as the value of corn rises or falls as a result of the increased "difficulty" or "facility" of production). Accordingly, the wage rate in terms of corn is considered to be determined exclusively by the demand and supply of labour, independently of such value changes (IV, 11-2, 22-3). Thus, the real wage rate is not only expressed but also determined in terms of corn.

This same view of wage determination appears in terms of money prices: the money price of labour is

supposed to increase, except temporarily (VI,146), in the same proportion as the money price of corn; and concurrently the money prices of all other commodities are supposed not to increase in the same proportion as the money prices of corn and labour. They are either supposed to remain unchanged (as in the Essay) or to increase by a lower proportion (as in the correspondence of mid-1814). Again, there is no reason why this should be so, unless corn is the only commodity consumed by the labourer.

No doubt Ricardo has in mind Smith's position that it is the money price of corn which "regulates" the money price of labour - a position which is based on the virtual reduction of the wage-basket to a quantity of food or (in Europe) corn, as shown in section 2.4 above. This is the reason why Ricardo concludes that an increase in the general rate of profits can never take place except in consequence of cheaper food (IV,25).

That Ricardo thought of wages as consisting of food is revealed where he supposes a rise of the wage rate in the following terms:

"Supposing that the nature of man was so altered, that he required double the quantity of food that is now necessary for his subsistence, and consequently, that the expenses of cultivation were very greatly increased."
(IV,15)

He then infers that the farmer would be left with "a much less surplus produce".

Elsewhere, a fall in the "real wages of labour" would "enable the farmer to bring a greater excess of produce to market" (IV,22). Also, a fall in the corn price of labour and/or improvements in agriculture "which shall afford the same produce with less labour" (IV,19) would augment the produce compared with the cost of production on the land (IV,11).

There is a similar instance in a letter to Malthus of July 1814, where he refers to the impossibility (presumably given the "nature of man") that "the

labourers who are employed for a hundred days [in the production of corn] will be satisfied with the same quantity of corn for their subsistence that the [same number of] labourers employed for fifty had before" - the farmer's "share", or "the corn which remains to him after defraying the charges of production", depending on the produce compared with the consumption necessary for the subsistence of the labourers (VI,114-5).

All these instances, considered together, suggest that - behind Ricardo's explicit argument in terms of rate of "real wages", "expenses of cultivation", "surplus produce" - there is a reasoning which involves a quantity of corn consumed by the labourer, a quantity of corn consumed by the labourers employed in the production of corn, and the excess of produce over the consumption necessary for such production. Therefore, "the produce compared with the cost of production on the land" is determined as a proportion between physical quantities of corn, independently of the relative prices of commodities.

This "rational foundation" of Ricardo's proposition that "it is the profits of the farmer which regulate the profits of all other trades" - as interpreted by Sraffa - is therefore the same as the rationale of Smith's proposition that "the rent and profit of corn ... must naturally regulate ... the rent and profit of pasture [and of all other cultivated land]". In Smith's theory of rent, as noted by Marx (1905-10, p.354-5), "rent and profit [in the production of food] appear as mere surplus of the product, after that part of it has been deducted in kind which feeds the worker ... [Smith] derives rent from the ratio between the amount of food yielded by agriculture and the amount of food consumed by the agricultural worker".

Marx observes (loc.cit.) that this "is really the physiocratic view, which is based on the fact that in an agricultural country man lives almost exclusively on the agricultural product". For his part, Sraffa (1960, p.93)

observes that "Ricardo's view of the dominant role of the farmer's profits ... appears to have a point of contact with the Physiocratic doctrine of the 'produit net' in so far as the latter is based, as Marx has pointed out, on the 'physical' nature of the surplus in agriculture which takes the form of an excess of food produced over the food advanced for production".

Dmitriev (1898) does not mention Ricardo's Essay on Profits, but derives the "corn-ratio" theory of profits as a special case of the theory of profits which he found in Ricardo's Principles. Dmitriev explains:

"whenever a known quantity of some product a [e.g. corn (p.43)] has been used up in the production of a and we can obtain a larger quantity of the same product within some finite period of time as a result of the production process, the profit rate in the given branch of industry will be a fully-determined quantity greater than zero, irrespective of the price of the product a . If the production costs of the other goods ... are reduced in the final analysis to the same product a , the same profit rate should also be established in these branches under conditions of free mobility from one branch of production to another" (p.62-3)¹

On the assumption that the wage-basket consists only of food, the model formulated in section 4.2 above from the argument of the Essay on Profits becomes identical with a special case of the model formulated by Dmitriev from Ricardo's Principles: the special case where there is only one wage-good, labour is the only "input" - or, as Ricardo expresses it in the Principles (I,63), production is made by "unassisted labour" - and the period of production is the same for all commodities. Referring to the special case based on the

1 In this and the next quotation from Dmitriev (1898), the letter a replaces the Greek letter alpha which appears in the original text.

"simplification" that "a worker consumes one product, e.g. corn" (p.43), Dmitriev observes:

"It is to Ricardo's credit that he was the first to note that there is one production equation ["production costs" equation] by means of which we may determine the magnitude of r [the general rate of profits] directly (i.e. without having recourse ... to the other equations). This equation gives us the production conditions of the product a ["i.e. the product forming the essential means of existence of the labourer"]" (p.59)

In terms of the equations in section 4.2 above, the first of equations XIII itself determines the general rate of profits (in the absence of rent, i.e. being $s_a \equiv 0$) - because commodity a , or corn, is the only wage-good; and not merely because the wage rate is exogenously given in terms of corn.

This "rational foundation" of Ricardo's proposition on the determining role of the profits of agriculture - as interpreted by Sraffa - is further discussed in the Appendix vis-à-vis some objections recently raised by Hollander (1973,1975,1979,1983), Rankin (1984), Peach (1984,1988) and Facarello (1986).

4.5. Digression

Accepting that Ricardo's own reasoning or "model", underlying the Essay's main propositions on profit determination, was based on the postulate that wages consist of food, one question naturally emerges: why did he not make explicit such a necessary basis for the demonstration of those propositions? Perhaps because it would have seemed too abstract or too unrealistic to his readers. After all, the Essay on Profits is a political pamphlet - "shewing the inexpediency of restrictions on importation" - not an academic paper.

Garegnani (1982,p.71) suggests:

"He was, in fact, concerned with conclusions applicable

to reality and not, merely, with correct deductions from an assumption - that of wages consisting entirely of corn - the realism of which could, and would, be immediately disputed."

Hicks (1985, p.318) refers to Ricardo's "assumption of the wage-earners living only on corn", in the model of the Essay, as a "ridiculous assumption", with which Ricardo could not have dispensed, given his limitations at that time. It was, indeed, an assumption that Ricardo could not have made explicit in the Essay without making his argument appear "ridiculous" to contemporary English readers.

Ricardo had a new theory based on an abstraction which he had inherited from Smith, who seems to have considered his reduction of the wage-basket to food as a fair generalization for "all the different countries of the world" (as seen in section 2.4 above). Smith's assumption, and his consequent position that the price of corn regulates the price of labour, had been subject to criticism by Malthus, particularly in the Observations on the Corn Laws (1814), which Ricardo had read (IV,32). Here, Malthus had argued that "the expenditure of the labouring classes of society ... by no means consists wholly in food, and still less, of course, in mere bread or grain". He then refers to "that mine of information ... Sir Frederick Morton Eden's work on the poor"¹ as showing that, "in a labourer's family of about an average size", the expenditure on food represents roughly 3/5 of the whole expenditure; and "meal or bread", 2/5 - these fractions being "subject to considerable variations, arising from the number of the family, and the amount of earnings" (p.89).

It would be difficult for Ricardo to defend Smith's generalization vis-à-vis such facts of contemporary

1 "The State of the Poor; or an History of the Labouring Classes in England from the Conquest to the Present Period, etc.", 3 vols. (London, 1797)

England. Yet he seems to have in mind Malthus's critique of Smith's position when he re-asserts this position in a letter to Malthus of 26 Jun. 1814:

"[the cheapness of provisions] is after all, whatever intervals we may be willing to allow, the great regulator of the wages of labour" (VI,108)

The date of this letter, the reference to "intervals", the fact that this passage occurs in a discussion about the effects of restrictions on the importation of corn, and also the content of this passage and of the discussion all point to Malthus's Observations on the Corn Laws, recently published (in the Spring of 1814, according to Malthus, 1815b,p.151).

In such Observations, Malthus criticizes Smith's position that the price of corn regulates the prices of all other home-made commodities (through the money wage rate), by criticizing Smith's position that the price of corn regulates the money wage rate. Ricardo, too, was later (in the Essay of Feb. 1815) to reject the position that the price of corn regulates the prices of other commodities - as noted by Sraffa (1951a,p.xxxiii). But what he rejects (IV,21,n.) is the view that a rise or fall in the money wage rate must be accompanied by a rise or fall in the money prices of all commodities, i.e. by a fall or rise in the value of money. He adheres to Smith's position that the money price of corn regulates the money price of labour.

In the letter to Malthus of June 1814, as "the cheapness of provisions" is "the great regulator" of the price of labour, so the general rate of profits "essentially depends upon the cheapness of provisions" (VI,108). Ricardo seems to believe that his propositions on profit determination - logically based, as in the Essay, on the simplification that wages consist only of food, so that an "increase of the general rate of profits ... can never take place but in consequence of cheap food" (IV,25) - represent a fair approximation to reality.

At the same time, he admits, under pressure from Malthus, a determining role for wage-goods other than food, this role being similar in certain respects to that which he formally stated exclusively for food. Thus, he acknowledges that the prices of other wage-goods may also affect the general rate of profits through the money wage rate:

"I admit ... that commerce, or machinery, may produce an abundance and cheapness of commodities, and if they affect the prices of those commodities on which the wages of labour are expended they will so far raise profits; - but then it will be true that less capital will be employed on the land, for the wages paid for labour form a part of that capital." (letter to Malthus of 18 Dec. 1814;VI,162)

In the last sentence here, Ricardo is trying to reconcile this admission with his "proposition" that "the rate of profits can never permanently rise unless capital be withdrawn from the land" - the "truth" of which he is "at present anxious to establish" (VI,163). Until the Essay, and even later, Ricardo does not manage to incorporate logically other wage-goods into his theory of profits. In a footnote of the Essay, he again explains the effect of their prices on general profits through their effect on agriculture (IV,26,n.).

Ricardo seems therefore to have been attempting, under pressure from Malthus, to re-formulate his "agricultural" theory of profits on the basis of a more general and realistic assumption regarding the composition of the wage-basket. By the time of the Essay, as suggested by Sraffa, Ricardo had been "groping" towards a more general form of his theory. Sraffa observes:

"In the Principles, however, with the adoption of a general theory of value, it became possible for Ricardo to demonstrate the determination of the rate of profit in society as a whole instead of through the microcosm of one special branch of production. At the same time he was

enabled to abandon the simplification that wages consist only of corn, which had been under frequent attack from Malthus, and to treat wages as composed of a variety of products (including manufactures), although food was still predominant among them" (Sraffa, 1951a, p. xxxii-iii)

In the Principles, Ricardo joins Malthus in criticizing Smith's position that the price of corn regulates the price of labour. Opposing Smith's view that a rise in the money price of corn cannot raise its "real" value, i.e. its value in terms of labour - that is to say, it cannot lower the value of labour in terms of corn - Ricardo argues:

"If nothing were consumed by the labourer but corn, and if the portion which he received was the very lowest which his sustenance required, there might be some ground for supposing, that the quantity paid to the labourer could, under no circumstances, be reduced, - but the money wages of labour sometimes do not rise at all, and never rise in proportion to the rise in the money price of corn, because corn, though an important part, is only a part of the consumption of the labourer" (I, 305-6)

Incidentally, this passage shows that Ricardo had realized that Smith's determining role of the price of corn - which had been an integral part of Ricardo's early theory of profits - was logically grounded on the supposition that "nothing were consumed by the labourer but corn".

4.6. Conclusion

Comparing the theoretical argument of the Essay on Profits with Smith's theory of rent - which takes for granted his theories of wages and profits - one reaches the conclusion that, while Smith's theory of wages is retained in the Essay, his treatment of the profits of agriculture is turned upside down. Instead of considering the general rate of profits to be given from the point of view of agriculture, Ricardo regarded the profit rate of

agriculture as independently determined from the point of view of the remaining sectors.

In this chapter, this difference has been logically traced to the condition that the marginal land pays no rent - a condition which Smith had apparently overlooked, or at any rate had not incorporated into his theory of rent.

Nevertheless, the variable which Ricardo saw as determining profits on the marginal land - namely the corn output compared with the corn consumed by the labourers - is the same variable that Smith had seen as determining rent on any quality of land, including the marginal land (given the rate of profits).

Therefore, the reason why "it is the profits of the farmer which regulate the profits of all other trades" (Ricardo) is the same reason why "the rent of corn land regulates ... that of all other cultivated land" (Smith).

One might be tempted to conclude that Ricardo's early theories of wages and profits were immediately derived from Smith's theories of wages and rent by incorporating the concept of a no-rent marginal land. Indeed, the analytical similarity between Ricardo's and Smith's theories is so close - and even the technical jargon is so similar - that one is naturally led to such a conclusion, knowing that Ricardo had studied the Wealth of Nations with great interest and admiration.

However, from what will be seen in the next chapters, one is rather led to believe that it was in the context of Malthus's theorizing about the long-term expansion of food production, that Smith's theory of rent, together with other "inputs", was converted by Ricardo into an "agricultural" theory of profits. The key idea that the marginal land pays no rent was itself drawn from Malthus, as will be seen in section 8.2.2 below.

Another important difference between Ricardo's early theory of profits and Smith's theory of rent is that Smith considers the extent of cultivation to be determined by a given amount of capital employed in

agriculture; and he assumes that the consequent output creates its own demand (by creating population). Ricardo reverses this order of determination. In the Essay, capital is supposed to bring as much land into cultivation as is necessary to supply the quantity of product required by a given demand. In adopting this different view, Ricardo seems to have been influenced by Horner, as will be seen in chapter 6 below.

CHAPTER 5

MALTHUS'S EARLY ECONOMICS OF FOOD PRODUCTION (1803)

In developing his argument about the "principle of population" - that population increases in proportion to the means of subsistence, being limited by them - Malthus finds it necessary to explain the independent variable in this relation, i.e. the increase of the means of subsistence, particularly in a capitalist society.

This chapter attempts to weld into a coherent argument the relevant pieces of such explanation, which are found, somewhat scattered, in his Essay on Population, second edition (1803) - particularly in Book III, which contains the "economic" chapters.

In a letter to Malthus of 2 Jan. 1816, Ricardo says: "The edition which I have of your work [Essay on Population] is the first, and it is many years since I read it." (VII,2)

As noted by the editor (loc.cit.), following Empson (1837,p.495), what Ricardo here calls the first edition is the edition of 1803, not the 1798 anonymous edition.

In the 1803 edition of the Essay on Population, the "means of subsistence" consist of "provisions" or "food", and agriculture is conspicuously reduced to the production of "subsistence" or "food" or, eventually, "corn" - all these terms being used interchangeably.

Section 1 sets up the basic framework of Malthus's analysis, this framework being a two-sector model of production in which capital (wages advanced) consists of food. The conditions of production in one of the sectors, namely agriculture, are detailed in section 2. Section 3 focuses on the conditions of growth of agriculture - the central subject of Malthus's analysis. The final section considers Malthus's position concerning the effect of the Poor Laws on the production of food - a topic particularly relevant here, because Ricardo's critique of Malthus's position may have contributed to his

transformation of Malthus's early economics of agriculture into his "agricultural" theory of profits, as will be seen in chapter 8.

Page numbers in parentheses refer to Malthus(1803).

5.1. A corn model

The aggregate surplus produce of the land of a country - i.e. the excess of the food produced over the food paid to the labourers and the farmers - is immediately paid out as a "monied rent" to the landlords. It is ultimately distributed, in kind, through the landlords' expenses, taxes etc., between landlords, "manufacturers" (comprising "master manufacturers", merchants and the workers they employ) and "persons engaged in the various civil and military professions" (p.670 et seq.).

Thus, "the surplus produce of the cultivators is the great fund which ultimately pays all those who are not employed upon the land". The number of such people "must be exactly proportioned to this surplus produce, and cannot in the nature of things increase beyond it" (according to the "principle of population", that population is proportional to the available food). In particular, as the surplus produce increases, manufacturing employment may increase: "the order of precedence is clearly the surplus produce; because the funds for the subsistence of the manufacturer [worker] must be advanced to him, before he can complete his work" (p.673).

A manufactured commodity fetches a value which is "certainly no more than sufficient to replace the subsistence that had been consumed ... together with the profits of the master manufacturer and merchant" (p.679). The produce of land not only replaces the subsistence consumed by the labourers and pays the profits of the farmer, but also pays in general a rent to the landlord, and thus "its value bears a much greater proportion to

the expense incurred in procuring it, than that of any other commodity whatever" (p.678)

This argument is based on the assumption that "the profits of the master manufacturer and merchant" bear about the same proportion to the expense incurred in producing and selling the manufactured commodity, as "the profits of the farmer" bear to the expense of producing food. Since the expenses of production are identified with capital employed, both consisting of the subsistence advanced to the labourers, this assumption is the same thing as the principle that the rates of profit must be the same across all employments of capital (except for compensating non-pecuniary advantages or disadvantages between employments). That Malthus takes for granted Smith's formulation becomes clear elsewhere:

"If the improvement of land, he [Smith] goes on to say, affords a greater profit¹ than what can be drawn from an equal capital in any mercantile employment [including manufactures], the land will draw capital from mercantile employments. If the profit be less, mercantile employments will draw capital from the improvement of land." (p.674)

Nevertheless, sometimes a manufacturer of a piece of lace "may sell this piece of lace for [the money-equivalent of] three times the quantity of provisions which he consumed while he was making it" (p.671); and "with regard to a mere monied revenue to an individual, there is no apparent difference, between a manufacture which yields very large profits, and a piece of land which is farmed by the proprietor [yielding him a clear rent on top of profits]" (p.672).

However, "the man who, by an ingenious manufacture, obtains [in exchanging it] a double portion out of the old stock of provisions, will certainly not be so useful to the state, as the man, who, by his labour, adds a

1 "The original text reads 'capital', but clearly 'profit' is intended." (editor's note, loc.cit.)

single share to the former stock [of provisions]" (p.671).

Malthus explains:

"Suppose, that 200,000 men, who are now employed in producing manufactures, that only tend to gratify the vanity of a few rich people, were to be employed on some barren uncultivated land, and to produce only half of the quantity of food that they themselves consumed ... In their former employment, they consumed a certain portion of the food of the country, and left in return some silks and laces. In their latter employment, they consumed the same quantity of food, and left in return, provision for 100,000 men. There can be little doubt which of the two legacies would be the most really beneficial to the country" (p.671).

"A capital employed upon land may be unproductive [unprofitable] to the individual that employs it, and yet be productive to the society. A capital employed in trade, on the contrary, may be highly productive to the individual, and yet be almost totally unproductive to the society" (p.671).

Again, speaking of the advantages of exporting raw produce vis-à-vis manufactures:

"raw produce, and more particularly corn, pays from its own funds the expenses of procuring it, and the whole of what is sold [the remainder] is a clear national profit [value added, net of wages]. If I set up a new manufacture, the persons employed in it must be supported out of the funds of subsistence already existing in the country, the value of which must be deducted from the price for which the commodity is sold, before we can estimate the clear national profit; and of course, this profit can only be the profit of the master manufacturer and the exporting merchant. But if I cultivate fresh land, or employ more men in the improvement of what was before cultivated, I increase the general funds of subsistence in the country. With a part of this increase I support all the additional persons employed, and the

whole of the remainder which is exported and sold, is a clear national gain, besides the advantage to the country, of supporting an additional population equal to the additional number of persons so employed, without the slightest tendency to diminish the plenty of the rest." (p.679)

Ignoring Malthus's argument about the advantage to society of producing food rather than manufactures, we have here a "corn model" of production, which may be expressed by equations XIII above. However, there is so far no statement on the determination of the rates of profit and rent.

5.2. The equilibrium state of cultivation

The individual profit-seeking farmer will always consider where his capital may be "most profitably" employed (p.458).

He will leave a piece of land uncultivated whenever he can resort to a more fertile or less distant land, i.e. one which enables him to bring a greater quantity of produce to market at the same expense. Thus, in countries "with a considerable quantity of land of a middling quality, the attempt to cultivate such a spot [its "most barren" spot] would be a palpable misdirection and waste both of individual and national resources" (p.459).

Nor will any "new land" be brought into cultivation if the expenses involved "might be employed to greater advantage [more profitably] on the improvement of land already in cultivation"; and this improvement will take place where such expenses "produce a greater proportional effect [product]" (p.458).

The "operation of individual interest" (p.458) is such that any piece of land will not be taken into cultivation, or will not be long kept in cultivation, by "private individuals", if "as a farming project ... the cultivation of it would not answer" (p.459), that is, if its produce would not pay the farmer his expenses and a

"fair" profit (p.681-2).

This "fair profit", or "fair and proper recompense to the grower" (p.677), is a necessary rate of profits, in line with the prevailing profitability elsewhere, or the general rate of profits. It is the same thing as Smith's "ordinary profits of farming stock". As in Smith's theory of rent, it is considered as given.

Supposing the importation of much cheaper corn were encouraged, the consequent great reduction of the money price of corn, if it were not accompanied by a fall in the money price of labour - there being thus a great rise in the corn wage rate - would very much reduce the extent of cultivation:

"The British grower of corn could not, in his own markets, stand the competition of the foreign grower, in average years. ... Arable lands of a moderate quality would not pay the expense of cultivation. Rich soils alone would yield a rent. Round all our towns, the appearances would be the same as usual; but in the interior of the country, half of the lands would be neglected, and almost universally, where it was practicable, pasture would take place of tillage. ... It could hardly be expected that a century should elapse without seeing our population repressed within the limits of our scanty cultivation" (p.677)

On the whole, Malthus considers that no country can long rely on a regular importation of corn, and that it must in the end depend on its own domestic supply. Thus, in this passage, population would ultimately be "repressed within the limits of our scanty cultivation". The demand for corn from the excess population would not bring about an increased domestic supply because the ratio between the money price of labour and the money price of corn, i.e. the real wage rate, would be so high that the extension of cultivation, even to lands of "moderate quality", would not in the long run pay the farmer the required rate of profit.

Although Malthus considers a fall in the money price

of labour to be difficult to happen in practice (p.676,684), he follows Smith in thinking that the real price of labour tends to be restored to a "natural level" (p.20):

"The state of this employment [demand for labourers] however will necessarily regulate the wages of labour, on which depends the power of the lower classes of people to procure food; and according as the employment of the country is increasing, whether slowly or rapidly, these wages will be such, as either to check or encourage early marriages; such, as to enable a labourer to support only two or three, or as many as five or six children." (p.449)

Given this "natural" rate of wages in terms of corn and the required rate of profit (and given the quantities of land of various qualities and the state of agricultural technology), there will be an equilibrium state of cultivation - the "limits" of cultivation, and particularly the quality of the marginal land, being determined by the given quantity of capital employed in agriculture.

It is evident that this equilibrium state of cultivation, which Malthus appears to have in mind, is very similar to the equilibrium state involved in Smith's "sub-model" of rent determination on heterogeneous land, as described in section 3.3 above. The apparent difference is that, whereas Smith considers the quantity of corn per acre to be a given quantity, Malthus admits that it may be possible and profitable for the farmer to employ more capital on his land, thereby obtaining greater yields. However, the additional employment of capital would be subject to diminishing returns:

"[the increase of food by the improvement of land already cultivated] is a stream, which, from the nature of all soils, instead of increasing, must be gradually diminishing" (p.10)

However, Malthus (1803) does not stop to elaborate equilibrium conditions, or the determination of rents (as

he was to do in his 1815 Inquiry into Rent). He is more concerned with the expansion of cultivation.

5.3. The growth of agriculture

Apparently following Smith, Malthus sees no restriction to an increasing production of food on the part of demand, since the principle of population warrants an increase of population in proportion to the supply of food (and population is taken to represent a commensurate demand for food):

"Population invariably increases where the means of subsistence increase, unless prevented by some very powerful and obvious checks." (p.20)

The increase of food production is generally made to depend on the growth of capital employed in agriculture, in the context of capital accumulation in the economy as a whole. Still following Smith, Malthus considers that the relative extent to which an increasing aggregate capital is employed in agriculture or elsewhere depends, at any time, on the relative profitability of investment in agriculture vis-à-vis elsewhere (p.674-5).

An additional employment of capital in agriculture is conceived as the employment of "more bushels of corn in the maintenance of a greater number of labourers" (p.684).

5.3.1. Diminishing returns

The increasing agricultural capital is employed to "turn up" new lands and to "improve" what is already cultivated. However, in a country that has long been occupied - when "acre has been added to acre till all the fertile land is occupied" (p.10) - the cultivation of less fertile soils and the further cultivation of fertile land are both subject to diminishing returns in terms of increases in produce for equal additions of capital or of the corresponding number of labourers (p.10 et passim).

Consequently, the additional surplus produce (over the maintenance of the labourers) is diminished in relation to the additional capital employed. Given the rate of profits, this implies that rent is lowered in relation to capital employed, or as a share of the additional produce.

5.3.2. The natural limit of cultivation

It follows that, as cultivation is extended to less fertile (or more distant) lands, it may eventually reach some land the produce of which leaves no surplus over the maintenance of the labourers and the required profit of the farmer, that is, it leaves no surplus to be paid as rent.

This implication of Malthus's analysis is apparently hinted by him in the following passage, where the "instance" of a no-rent land appears explicitly:

"If we take [as an arbitrary definition of the "wealth" of a state] the clear surplus produce of the land ... the funds for the maintenance of labour [i.e. the gross produce of the land] and the population may increase, without an increase of wealth, as in the instance of the cultivation of new lands, which will pay a profit but not a rent; and, vice versa, wealth may increase, without increasing the funds for the maintenance of labour and the population, as in the instance of improvements in agricultural instruments, and in the mode of agriculture, which may make the land yield the same produce, with fewer persons employed upon it" (p.672;emphasis mine)

One may infer that, ceteris paribus, technical improvements in agriculture (which presumably can be applied to any quality of land) would turn a no-rent land into a rent-yielding land; and the no-rent land would instead be a still less fertile land.

Given the quantities of land of various qualities and the known methods and instruments of husbandry, and given the wage rate in terms of food and the required

rate of profits, there will be a no-rent quality of land, beyond which cultivation can only be permanently extended if there are technical improvements in agriculture¹. No capital will be (or long remain) invested beyond the no-rent quality of land, since a still poorer land will not pay the required rate of profits.

It seems that Smith had not thought of the possibility of cultivation being extended to so barren or so distant lands, such as not to afford some rent. Moreover, he generally thought that there would be improvements in agriculture rather than diminishing returns.

But Malthus - concerned as he was with the tendency of population to increase to vast numbers, and considering the limits to which the increase of food production is subject - often speaks of the possibility of cultivating "barren lands" in "long peopled" countries, particularly Britain and "China, which is so fully cultivated and so fully peopled" (p.460). Hence his considering whether the cultivation of barren lands would "answer" to the farmer by paying him at least a "fair profit"; and hence his notion of a no-rent land.

5.3.3. Food for capital

The employment of additional capital, i.e. savings from the national revenue, will abort if it cannot find labourers to employ; and it will not find the additional number of labourers it demands where additional food cannot be raised to support them (barring importation). In this case, the investment of capital will "succeed" only in raising the money price of labour and therefore

1 "Improved skill and a saving of labour would certainly enable the Chinese to cultivate some lands with advantage which they cannot cultivate now ... this extended cultivation ..." (Malthus, 1798, p.129, n.)

the price of food (through the labourers' increased demand), by pressing against fixed supplies of labourers and food:

"The error of Dr. Smith lies in representing every increase of the revenue or stock of a society, as an increase of these funds [food for the maintenance of labourers]. Such surplus stock or revenue [savings], will indeed always be considered by the individual possessing it, as an additional fund from which he may maintain more labour; but it will not be a real and effectual fund for the maintenance of an additional number of labourers, unless the whole, or at least a great part of it, be convertible into a proportional quantity of provisions; and it will not be so convertible where the increase [of revenue] has arisen merely from the produce of labour [manufactures], and not from the produce of land. A distinction will in this case occur between the number of hands which the stock of the society could employ, and the number which its territory can maintain. ... supposing a nation, for a course of years, to add what it saved from its yearly revenue to its manufacturing capital solely, and not to its capital employed upon the land ... [and therefore] without any increase in the real funds for the maintenance of labour [i.e. "without a power of supporting a greater number of labourers"]. There would, notwithstanding, be a demand for labour, from the power that each manufacturer would possess, or at least think he possessed, of extending his old stock in trade, or of setting up fresh works. This demand, would of course raise the price of labour; but if the yearly stock of provisions in the country were not increasing, this rise would soon turn out to be merely nominal, as the price of provisions must necessarily rise with it." (p.694)

Taking Malthus's supposition of a fixed supply in the context of his argument, as described in the sections above, it seems to imply what has been described here as his "natural limit of cultivation". This is suggested by

his using the example of China as illustration of this strong case of limited supply of food. It is also suggested by the explanation he offers in anticipation of the objection that, even if the domestic production of food could not be increased at all, "the additional capital of the nation would enable it to import provisions, sufficient for the maintenance of those whom its stock could employ" (p.695). He finds a limit to importation that is similar to his natural limit of domestic cultivation:

"when the commercial population of any country increases so much beyond the surplus produce of the cultivators, that the demand for imported corn is not easily supplied, and the price rises in proportion to the price of wages ... In the progress of wealth, this will naturally take place; either from the largeness of the supply wanted; the increased distance from which it is brought, and consequently the increased expense of importation; the greater consumption of it in the countries in which it is usually purchased; or what must unavoidably happen, the necessity of a greater distance of inland carriage, in these countries. ...[Such a nation's] funds for the maintenance of labour, and consequently its population, will be perfectly stationary. This point is the natural limit to the population of all commercial states." (p.696)

Elsewhere, adhering to his general assumption of absence of importation of food, Malthus examines the possibilities of employment of an increasing capital before the natural limit of cultivation is reached. Again, the demand for labourers is supposed to increase in proportion to aggregate capital, whereas the supply of labourers (population) can only increase in proportion to the produce of agriculture (means of subsistence). However, the increasing demand for labourers and the derived demand for subsistence would not be met by proportional supplies, and therefore would raise the money prices of labour and subsistence:

"The competition of increasing commercial wealth, operating upon a supply of corn not increasing in the same proportion, must at all times greatly tend to raise the price of labour [together with the price of corn]" (p.676-7)

Would not the increased demand and price of corn encourage investment in agriculture and thereby bring about a proportional increase in the supply ? Anticipating this objection, Malthus answers:

"It will be said, perhaps, that the advance in the price of provisions will immediately turn some additional capital into the channel of agriculture, and thus occasion a much greater produce. But from experience, it appears, that this is an effect which takes place very slowly, particularly when, as in the present instance, an advance in the price of labour had preceded the advance in the price of provisions, and would therefore tend to impede the good effects upon agriculture, which the increased value of the produce of land might otherwise have occasioned." (p.695)

5.4. Poor Laws

"The poor laws of England tend to depress the general condition of the poor ... Their first obvious tendency is to increase population [by encouraging marriage from a "prospect of parish provision"] without increasing the food for its support" and therefore "to raise the price of provisions, and to lower the real price of labour" (p.365-6)

Again, would not the production of food be increased by the increased demand and the increased price of food relative to the price of labour ? The following is the answer that one finds in the chapters on Poor Laws:

"The food of a country which has been long peopled, if it be increasing, increases slowly and regularly, and cannot be made to answer any sudden demands" (p.365)

Referring to this and other passages of the Essay on

Population, Cannan (1893,p.238-40) attributes to Malthus a "curious habit of regarding the supply of food as fixed in some way independently of the demand for it" (p.240).

Ricardo perceived this "curious habit", at least this instance in Malthus's argument on the Poor Laws. Referring to the Essay on Population, Ricardo says in a letter to Malthus of 2 Jan. 1816:

"I remember mentioning to you, and I believe you told me that you had altered it in the following editions, that I thought you argued in some places as if the poor rates had no effect in increasing the quantity of food to be distributed - that I thought you were bound to admit that the poor laws would increase the demand and consequently the supply." (VII,2-3)

This is the only specific point mentioned by Ricardo on this occasion, when he recollects his connection with the Essay on Population. It may have played an important part in the emergence of his theory of profits, as will be seen in chapter 8.

Malthus's position concerning the effect of the demand for food on cultivation will be examined in detail in chapter 7. Before that, it is necessary to consider Horner's position on the same topic.

CHAPTER 6

HORNER (1804): THE EFFECT OF THE DEMAND FOR CORN ON CULTIVATION

Horner's article about a bounty on the exportation of corn, in the Edinburgh Review of Oct. 1804¹, may well have influenced Ricardo in forming his view that an increased demand for corn necessarily occasions an equal supply - including his critique of the different position which Malthus adopted when discussing the Poor Laws in the Essay on Population (as seen in section 5.4 above).

In his Principles, Ricardo comments on Horner's analysis of the bounty in the following terms:

"[the Edinburgh reviewer] has very clearly pointed out its effects [i.e. of the bounty upon exported corn] on the foreign and home demand. He has also justly remarked, that it would not fail to give encouragement to agriculture in the exporting country" (I,302)

Horner's argument that the bounty "would not fail to give encouragement to agriculture" (by increasing the total demand for home-grown corn) was worthy of attention especially because he intended, with "much diffidence", to make a "correction" to Smith's analysis of the operation of the bounty. According to this analysis (to be seen presently) the bounty would increase the demand and price of corn but these increases would fail to encourage cultivation.

Horner's article may even have stimulated Ricardo to read the Essay on Population, as it contains an instalment of Horner's intended review of Malthus's book,

1 This article was published anonymously, as were all the contributions to the Edinburgh Review at that time. For the assignment of authorship see Fetter (1953), p.243 et seq. The bounty, originally established by an Act of 1688, had been suspended between 1765-73, abolished in 1773 and revived by an Act of Parliament of Jul.1804.

a review which was never completed.¹ Horner refers to Malthus as "the ingenious and enlightened author of the Essay on Population", an "original and important work" (p.97); and also "by far the most intelligent advocate for the bounty" (p.106).

6.1. Horner's critique of Malthus's view

Horner refers to a passage from the Essay on Population (1803 edition), where Malthus asserts that the Corn Laws of 1688 and 1700 (including the bounty on exportation) had given such an encouragement to agriculture that "the apparent result was gradually to produce a growth of corn in the country, considerably above the wants of the actual population, and consequently to lower greatly the prices of it [during the first half of the eighteenth century]" (Malthus, 1803, p.680; summarized by Horner, 1804, p.106-7). Horner then observes:

"[Malthus] evidently forgets, that a greater growth [of corn] can only be occasioned by a greater demand" (p.107)

Elsewhere, Horner argues:

"The demand in the home market is at all times by far the most powerful, generally the sole, encouragement to cultivation" (p.110)

Towards the end of his article, Horner quotes a passage from a recent Parliamentary Report on the corn trade,² which affords empirical evidence in support of his view concerning the role of demand in encouraging cultivation (by raising the relative price of corn) - though Horner does not adduce it as such:

"[the high average price of corn since 1791] have had the effect of stimulating industry [diligence], and bringing

1 See the account in Fetter (1957), p.9-10.

2 Report of the Committee of the House of Commons respecting the Corn Trade, ordered to be printed 14th June 1804

into cultivation large tracts of waste land" (quoted by Horner, 1804, p. 114)

Horner thus emphasizes the role of demand as a pre-condition for, and as an encouragement to, the further cultivation of corn. He asserts this role not only against Malthus, but mainly against the authority of Adam Smith.

6.2. Critique of Smith's position

Smith had argued that a bounty on exported corn makes the money price of corn in the home market higher than it would "naturally" be, but does not succeed in encouraging cultivation because it fails to raise the farmer's profits in real terms. The reason for this failure is thus explained by Smith:

"the money price of corn regulates that of all other home-made commodities. ... The money price of labour, and of every thing that is the produce either of land [raw produce] or labour [manufactures], must necessarily either rise or fall in proportion to the money price of corn" (Wealth of Nations, Glasgow edition, vol. I, p. 509-10)

In particular:

"[the money price of corn] regulates the money price of labour, which must always be such as to enable the labourer to purchase a quantity of corn sufficient to maintain him and his family either in the liberal, moderate or scanty manner in which the advancing, stationary or declining circumstances of the society [and hence of the demand for labourers] oblige his employers to maintain him [as a result of competition in the labour market]" (ibid., p. 509)

Therefore, an increase in the money price of corn "must occasion some augmentation in their pecuniary wages, proportionable to that in the pecuniary price of their subsistence", otherwise it would "reduce the subsistence of the labouring poor" and therefore their ability to bring up children; and would in this way "tend

to restrain the population of the country" (ibid.,p.508).

Smith concludes, on the basis of this wage-population mechanism, that the higher money price of corn, occasioned by the bounty on exportation - accompanied as it must be by a proportionably higher money price of labour - would fail to bring about a greater production (ibid.,p.515-6).

As part of his critique of Smith's analysis, Horner argues that Smith "has overlooked that interval which elapses ... between the enhancement of the money-price of corn, and its communication to the money-price of labour and other commodities". During this interval, the increase of the price of corn would not be merely nominal, and therefore would afford some encouragement to further cultivation, and thus succeed in bringing about some increase of produce.

6.3. Horner's formulation

Horner's theory of the operation of the demand for corn in bringing about an increased production is a part of his whole analysis of the bounty upon exported corn. As far as the domestic economy is concerned, the effects of the bounty are described as operating via an increase of the total demand for home-grown corn - the foreign component of this demand being increased as a result of the subsidized price of exported corn.

He supposes the bounty to be granted at an initial state of equilibrium where "the returns of the farmer are of course adequate, and no more than adequate, to replace his advances with a profit proportioned to the profits of other capital" (p.100). The increased demand for corn will raise its money price, while the money price of labour will not be immediately affected, which implies that cultivation will become more profitable (p.103). Horner proceeds:

"By raising the profits of farming, it [the increased demand] will operate as an encouragement to husbandry; by

raising the price of corn to the consumers at home, it will diminish for the time their power of purchasing this necessary of life, and thus abridge their real wealth. It is evident, however, that this last effect must be temporary; the [real] wages of the labouring consumers had been adjusted before by competition [to a rate proportioned to the general circumstances of the nation], and the same principle will adjust them again to the same rate, by raising the money-price of labour, and, through that, of other commodities, to the money-price of corn." (p.103)

A new equilibrium will eventually obtain where the supply of food will have increased to meet the greater demand; and the money prices of corn and labour, and thereby of all other home-made commodities, will also be higher than they had been initially; but the real wages of labour and the profits of the farmer will have been restored to their former "natural" rates (p.100-3).

It is clear that Horner has in mind Smith's theory of the "natural" price of labour (in terms of corn).

Horner continues:

"By a new bounty, however, granted in addition to the former, a new range may be created for the repetition of another series of the same effects. But, whatever limit we suppose to the amount of the bounty, its complete and ultimate effect will always be found to be a corresponding rise of the money-price in the home market, both of corn, of labour, and of all commodities. In the interval that must each time elapse, before wages are equalized with each successive rise in the price of corn, there will be a certain degree of new encouragement held out to husbandry, and some diminution in the wealth and comfortable subsistence of the labouring consumers. ... And this diminution of the comforts of the labouring people, from being temporary, may become almost a permanent diminution, if the successive advances of the price of corn shall follow each other without interruption, and so keep always ahead of the successive

advances in the wages of labour" (p.103-4)

The mechanism of response of the production of food to an increasing demand, as described by Horner, may be considered (and may have been devised) as a technical development from the Malthusian mechanism of mutual adjustment between population and food production, as described in the 1803 edition of the Essay on Population, which Horner was then reviewing. According to Malthus's argument (p.17-20), the wage-population mechanism affects not only the growth of population but also the expansion of food production. Thus, a rise of the money price of corn relative to the money wage rate - that is to say, a fall in the wage rate in terms of corn - encourages the expansion of cultivation, at the same time as it checks the growth of population. After a while, the consequent reduction of the supply of labourers vis-'a-vis the demand tends to restore the corn wage rate to its "natural" level. This rise stimulates the growth of population, which again lowers the corn wage rate, and so on.

However, while Malthus focuses on the "oscillation" of the food wage rate and the consequent check to population, Horner focuses on the increase of food production. This increase appears in Malthus's argument, not as a response to increased demand, but rather as an incidental expansion of cultivation stimulated by the "cheapness" of labour in terms of food, which recurs as a result of excess population. In addition, Horner makes it explicit that, as the real wage rate is lowered and must be restored to its natural level, so the profits of agriculture are raised above their natural rate and must be restored to it. This aspect is left implicit, if not overlooked, in Malthus's formulation.

6.4. Conclusion

As will be seen in the next chapter, Malthus appears to have accepted Horner's critique and "correction" of

Smith's position concerning the effect of the price of corn on cultivation - a position which Malthus himself had been following, though with some qualifications.

Malthus seems accordingly to have modified his economics of food production, in line with Horner's analysis, by attributing the increase of production to the demand for food. In fact, Horner's formulation of the mechanism of adjustment of corn production to an increased demand, or something similar to it, would come to be regarded by Malthus as applying not only to a greater demand for corn from a bounty on exportation but also to any supposed increase of the domestic demand for home-grown corn, e.g. from an increase of population or from restrictions on importation.

However, Horner mentions no sort of diminishing returns affecting the response of cultivation to an increasing demand. Nor does he consider wage-goods other than corn, which should affect the adjustment of the money price of labour to an increased price of corn. These aspects constitute the essential differences between Horner's formulation and Malthus's re-formulation of the process of increase of food production. This re-formulation is examined in the next chapter.

CHAPTER 7

MALTHUS (1798-1814): THE EFFECT OF THE DEMAND FOR CORN ON CULTIVATION

It was seen in section 5.4 that Malthus's apparent position, in the 1803 edition of the Essay on Population, that the Poor Laws would increase the demand and price of corn, but not the production, was questioned by Ricardo, who argued that Malthus was "bound to admit" that the increased demand would bring about an increased supply.

In order to understand Malthus's position, and how he "had altered it in the following editions", as Ricardo remembered Malthus had told him, it is necessary to consider the development of Malthus's thought on the effect of the demand for corn on cultivation - from the 1798 edition of the Essay on Population to the 1814 "Observations on the Effects of the Corn Laws, and of a Rise or Fall in the Price of Corn, on the Agriculture and General Wealth of the Country".

By the time of the publication of this pamphlet (Spring 1814), Ricardo's new theory of profits had recently appeared in his correspondence. It will be seen in the next chapter how Malthus's thought on the conditions of expansion of agriculture might have contributed to the formation of Ricardo's "agricultural" theory of profits.

7.1. 1798

In this edition of the Essay on Population, one finds a similar statement to the one - quoted in section 5.4 above - which, in the 1803 edition, apparently justifies the position that an increased demand for food, as a result of the Poor Laws, does not increase production. Here, also in connection with the discussion of the Poor Laws, it reads:

"The demand for an increased quantity of subsistence is,

with few exceptions, constant everywhere, yet we see how slowly it is answered in all those countries that have been long occupied." (p.100)

How does Malthus account for this slowness? The explanation, which was suppressed in the following editions, runs like this:

"there is an essential difference between food and those wrought commodities, the raw materials of which are in great plenty. A demand for these last will not fail to create them in as great a quantity as they are wanted. The demand for food has by no means the same creative power. In a country where all the fertile spots have been seized, high offers are necessary to encourage the farmer to lay his dressing on land from which he cannot expect a profitable return for some years. And before the prospect of advantage is sufficiently great to encourage this sort of agricultural enterprise, and while the new produce is rising, great distresses may be suffered [by the lower classes of society] from the want of it." (p.99-100)

Elsewhere, Malthus observes:

"Perhaps there is no possible way in which wealth could in general be employed so beneficially to a state, and particularly to the lower orders of it, as by improving and rendering productive that land which to a farmer would not answer the expense of cultivation" (p.181)

Hence, he suggests, among other things:

"premiums might be given for turning up fresh land" (p.101-2)

Thus, a subsidy is required to make up for the low profits to be obtained on the cultivation of poorer lands.

However, Malthus had said that an increased price of corn in relation to the price of labour would encourage cultivators "to turn up fresh soil" - though presumably "fresh soil" as fertile as soil already cultivated (p.77). Could not this relative increase in the price of corn be sufficiently great to encourage the cultivation of less fertile lands, without the need for subsidies?

No, according to Malthus's analysis. Here, in explaining why the extension of cultivation is not profitable, he observes that "before the prospect of advantage is sufficiently great to encourage this sort of agricultural enterprise, and while the new produce is rising, great distresses may be suffered [by the lower classes of society] from the want of it" (p.99-100). Elsewhere, when he supposes the number of people to increase before the supply of food is increased, the consequent increase in the price of food in relation to the price of labour - that is to say, the fall in the price of labour in terms of food, which means "distress" - checks the growth of population (supply of labourers), thereby occasioning a scarcity in the labour market. This scarcity reverses the movement of the real wage rate (by raising the money price of labour) and tends to restore it to the former level (p.77,78-9). Therefore, an increase in the price of food relative to the price of labour may fail to be sufficiently great to encourage the farmer to cultivate poor land. Even if it did prompt him to do so, he would sooner or later be frustrated when the real wage rate recovered towards its former level; and then he would not be willing to continue cultivating such land, unless he were given a subsidy to make up for his low profits.

It is to be noted that Malthus's reasoning - underlying his position that the production of food may fail to adjust, or may adjust "slowly", to an increased demand - has an intersection with the explanation that Smith had offered for the supposed failure of a bounty on exported corn to bring about an increased production (as described in section 6.2 above). The intersection consists in the wage-population mechanism, which tends to restore the food wage rate to its "natural" level by adjusting the money price of labour to the money price of corn.

In addition, Malthus formulates a check to the expansion of agriculture, viz. diminishing returns on the extension of cultivation to less fertile lands. He makes

the profits of the farmer depend, not only on the wage rate in terms of the produce, but also on the number of labourers per unit of produce. Thus, cultivation will tend to be stopped short of an increased demand because following a rise in the price of corn not only will the money wage rate eventually rise, but more labourers will be required per unit of produce on the poorer lands from which the increase of supply must be obtained. In any event, cultivation will not be extended (or will not long remain extended) to "that land which to a farmer would not answer the expense of cultivation", or which would not pay a "profitable return" on his capital.

7.2. 1803

In the 1803 edition of the Essay on Population, Malthus's argument that the Poor Laws increase population "without increasing the food for its support" (p.365) is apparently inconsistent with his description (p.19-20) of how an increased population occasions a greater production of food (by temporarily lowering the price of labour in relation to the price of corn). However, the inconsistency disappears if we consider that, in this description, he seems to have in mind the extension of cultivation to equally fertile "fresh soil". On the other hand, his view that the Poor Laws of England do not increase the production of food is connected with his statement that, in "a country which has been long peopled", food production "if it be increasing, increases slowly and regularly, and cannot be made to answer any sudden demands" (p.365). As seen in section 7.1 above, in stating a similar position before (1798), he had in mind "countries that have been long occupied", where "all the fertile spots have been seized"; so that cultivation can only be extended to less fertile spots. This is the basic reason why the demand for food "has by no means the same creative power" as the demand for manufactures, which "will not fail to create them in as great a quantity as

they are wanted" (1798, p.99-100).

However, this passage has been suppressed in the 1803 edition. In his revised argument on the Poor Laws there is hardly any trace of the reasoning which had supported, in the 1798 edition, his statement that the production of food responds "slowly" to an increasing demand in countries that have been long occupied. He had then prescribed "premiums" for turning up "that land which to a farmer would not answer the expense of cultivation", so as to make up for the low profits to be expected from the cultivation of such land.

Nevertheless, a part of that reasoning is revealed elsewhere in this edition, when he comes to argue for a bounty on the exportation of corn:

"the bounty to the British cultivator does, in the actual state of things, really increase his profits on this commodity; and by thus making the growth of corn answer to him, encourages him to sow more than he otherwise would do" (p.684).

Another part of that reasoning is revealed elsewhere, too, when Malthus explains what he considers to be the failure of contemporary British agriculture to produce enough corn to supply the increasing demand without the need for regular importation:

"the experience of the last twenty years seems to warrant us in concluding, that the high price of provisions arising from the abundance of commercial wealth, accompanied as it has been, by very great variations, and by a great rise, in the price of labour, does not operate as an encouragement to agriculture, sufficient to make it keep pace with the rapid strides of commerce" (p.674)

Malthus seems here to be appealing to practical experience in order to "warrant" his theoretical position (similar to Smith's) that a rise of the money price of food does not operate as an encouragement to agriculture, because it has to be accompanied by a rise in the money price of labour (from the wage-population mechanism).

However, Malthus now thinks that qualifications must

be made to Smith's argument. He does not challenge Smith's position on theoretical grounds; he argues essentially that "in applying a theory to practice, all circumstances should certainly be taken into consideration" (p.684). His account of Smith's position is worth quoting:

"The most plausible argument that Dr. Smith adduces against the corn laws, is, that, as the money price of corn regulates that of all other home-made commodities, the advantage to the proprietor from the increased money price is merely apparent, and not real; since what he gains in his sales, he must lose in his purchases. This position, however, is not true, without many limitations. The money price of corn, in a particular country, is undoubtedly by far the most powerful ingredient in regulating the price of labour, and of all other commodities; but it is not the sole ingredient" (p.683)

Malthus proceeds to argue that taxes on "necessaries, such as soap, candles, leather, salt, etc.", being fixed in terms of money, imply that money wages need not rise or fall in the same proportion as the money price of corn. Similarly, the various taxes involved in the other expenses of growing corn prevent these expenses from rising or falling in proportion to the price of corn. Hence, if such money taxes remain unaltered "the effect of a rise or fall in the money price of corn, would be to benefit or injure the grower or proprietor" (p.684).

With regard to the practical effects of a supposed removal of restrictions on the importation of corn:

"in judging of the practical effects of the ... system of importation duty free [which would lower the price of corn], not only, as was before observed, the difficulty of lowering the price of labour should be attended to, but also the length of time which it would require to lower the rents of land [in proportion to the money price of corn, "which might be the case in the long run"], and the probable ruin of agriculture before these two objects could be effected" (p.684)

As Malthus describes elsewhere, a fall in the money price of corn, unaccompanied by a fall in the money price of labour, would squeeze profits and rents, and would imply a new equilibrium state of cultivation. In this new state the poorer lands would have been abandoned, the profits of farming would have been restored to a necessary rate, and rents would accordingly have been reduced everywhere. In the absence of importation of corn, population would eventually be "repressed within the limits of our scanty [reduced] cultivation" (p.677; as seen in section 5.2 above).

The demand for corn from the excess population would not bring about increased production because the ratio between the price of labour and the price of corn would be such that the cultivation of poorer lands would not pay the required rate of profits.

Although Malthus refers en passant to "the instance of the cultivation of new lands, which will pay a profit but not a rent" (p.672), he is not yet clear about what happens to rents, particularly on the marginal land, as the extensive margin of cultivation shifts forwards or backwards.

7.3. 1807

"At the expiration of a lease, any particular advantage, which the farmer had received from a favourable proportion between the price of corn and of labour, would be taken from him [upon the renewal of the lease, under the pressure of competitive bids], and any disadvantage from an unfavourable proportion made up to him" (p.173)

Therefore, Malthus now argues, the question as to whether or not the real value of corn (in terms of labour and other commodities) is altered by a rise or fall in its money price, "though of great weight to the owners of land, will not influence the growth of corn beyond the current leases ... The sole cause, which would determine

the quantity of effective capital employed in agriculture, would be the extent of the effectual demand for corn" (p.173-4;emphasis mine).

This statement involves a fundamental change of point of view, which can be attributed - at least in part - to Horner's 1804 critique of Smith's and Malthus's positions, as described in chapter 6 above. It amounts to thinking, not that the output of corn is determined by the quantity of capital employed in agriculture, but that both are determined by "the extent of the effectual demand for corn", i.e. the quantity demanded at the "natural" price, according to Smith's definition - the natural price being that price which pays wages, profits and rent at their "natural" rates.

Accordingly, Malthus now states, evidently following Horner's analysis:

"if the bounty [on the exportation of corn] had really enlarged this demand ["the effectual demand for corn"], which it certainly would have done, it is impossible to suppose, that more capital would not be employed upon the land" (p.174)

"I certainly do mean to say, that the bounty to the British cultivator does, in the actual state of things, really increase the demand for British corn; and thus encourages him to sow more than he otherwise would do" (p.174)

In this passage, instead of saying that the bounty to the farmer "increase the demand for British corn; and thus encourages him", Malthus had said in the 1803 edition that the bounty "increase his profits on this commodity; and by thus making the growth of corn answer to him, encourages him" (p.684).

However, one might argue that - following an increase in the demand for corn, which by having raised the real price of corn would have brought poorer lands under the plough - if the expenses of cultivation, and particularly the wages of labour, were to be restored to the same value in terms of corn, then profits might be so

squeezed on such lands that it would not "answer" to the farmers to go on cultivating them. The supply of corn would then tend to shrink towards its former level, falling below the increased demand. The surplus produce might be so small on such lands (which require a greater number of labourers for the same produce) that it would not afford profits at the necessary rate, even if rents fell to nil at the renewal of the leases. These consequences of a rise in the money wage rate vis-'a-vis the money price of corn are the same as the consequences traced by Malthus from a fall in the money price of corn vis-'a-vis the money wage rate following a supposed removal of restrictions on importation (p.150).

Would Malthus, facing an objection like this, have concluded - as he seems to have done in the previous editions - that there is a "natural" limit to the expansion of agriculture, beyond which the extension of cultivation, even if there is an increased demand, cannot be sufficiently profitable in the long run? Or, as he puts it in this edition (1807, p.177), would we "be reduced to the dilemma of owning, that no motive can exist to the further investment of capital in the production of corn" ?

In the 1798 edition, it seems he had been reduced to such "dilemma" - and this position combined perfectly with his general formulation that population is kept down to the available supply of food, rather than the latter adjusting to the former. He had thought that "premiums" were required to make up for the low profits to be expected from the cultivation of poor lands, which "to a farmer would not answer the expense of cultivation".

He had equally thought, in the 1803 edition, that a bounty would increase profits on the growth of corn and thus make the extension of cultivation answer to the farmer.

He now thinks (in the 1807 edition) that more capital will necessarily be employed in agriculture, provided only that there is an effectual demand for the

increased produce, that is, a demand willing and able to pay the price of growing this additional quantity of corn, including the "natural" profits on the capital required.

On the basis of his new position, Malthus might have replied that the production of corn, once increased to meet an increased demand, could not be reduced - as a consequence of a rise of the money expenses of production - whilst there was an effectual demand for a greater quantity of corn. An excess demand would raise the money price of corn, and if the money price of labour were to chase the price of corn and tend to stop the supply short of the demand, there would ensue a further rise in the price of corn. This process would then continue whilst there was an effectual demand for a greater quantity of corn, i.e. a demand ready to pay the increased expenses of producing an additional quantity of corn, together with the required profits on capital. Malthus would nevertheless have concluded, as he in fact had done by 1814 (to be seen presently), that an increased effectual demand for corn would succeed in bringing about a permanently increased supply, provided that the money wage rate did not rise in the same proportion as the money price of corn.

It seems that Malthus found a way out of his "dilemma" - which he had made for himself by supposing diminishing returns - by gradually freeing himself from Smith's trap concerning the proportional effect of the price of corn on all other prices, as he found more and more grounds for rejecting Smith's doctrine.

Malthus now takes his criticism of Smith's position further, in a more decided manner than in the 1803 edition. He argues, in particular, that the money wage rate would by no means increase in the same proportion as the money price of corn. Besides his former point concerning money taxes on necessaries, he now argues that foreign commodities constitute an exception of "very great importance", directly or indirectly (e.g. by being

used as inputs into manufactured wage-goods); that the prices of wool and raw hides, being joint-products with butcher's-meat, do not depend much on the price of corn. He proceeds:

"But wollen cloths, leather, linen, cottons, tea, sugar, &c., which are comprehended in the above-named articles, form almost the whole of the clothing and luxuries of the industrious classes of society. Consequently, although that part of the wages of labour, which is expended in food, will rise in proportion to the price of corn, the whole of the wages will not rise in the same proportion" (p.172)

7.4. 1814

In his "Observations on the Effects ... of a Rise or Fall in the Price of Corn, on the Agriculture ... of the Country" (Spring 1814), Malthus takes still further his critique of Smith's doctrine that the real price of corn cannot be raised by an increase in its money price. This, he now definitely thinks, "cannot possibly be true", because it leads to implications which are "directly contrary to all experience" (p.91). He argues that, if Smith's doctrine is valid for a rise in the price of corn occasioned by an increased demand from a bounty on exportation, "it applies equally to an increased price occasioned by a natural demand"; which cannot be true, he thinks, because the production of corn has been observed to respond to an increased price from "natural causes", such as a run of bad seasons, an increase in population, or a rapid progress of commercial wealth.

In the 1803 edition of the Essay on Population, and up to the 1807 edition, Malthus had asserted:

"the experience of the last twenty years seems to warrant us in concluding, that the high price of provisions arising from the abundance of commercial wealth, accompanied as it has been by very great variations, and by a great rise in the price of labour, does not operate

as an encouragement to agriculture sufficient to make it keep pace with the rapid strides of commerce." (1807, p.140-1)

Malthus now (1814) thinks that, "in this country during the last twenty years", there had been a great prosperity of manufactures and foreign commerce, accompanied by a very great increase of population; and this had meant a rapidly increasing demand for corn, which had pulled its price upwards (p.92,105 et passim). However, he now thinks, the money price of labour had been lagging behind the price of corn "at a sufficient distance and for a sufficient time, to change the direction of capital" (by temporarily raising the profits of agriculture vis-à-vis other sectors). The increasing price of corn had then succeeded in giving great encouragement to agriculture, which was "as yet nearly keeping pace with" the rapid growth of manufactures and commerce (p.90,102 et passim). Thus:

"From 1805, partly from the operation of the corn laws passed in 1804, but much more from the difficulty and expense of importing corn in the actual state of Europe and America, the price of grain had risen so high [by 1813] and had given such a stimulus to our agriculture, that with the powerful assistance of Ireland, we had been rapidly approaching to the growth of an independent supply." (p.100-1)

In the successive editions of the Essay on Population, Malthus had attributed the increasing money price of corn merely to an increasing demand, "operating upon a [domestic] supply of corn not increasing in the same proportion" (1803, p.676; 1807, p.146). In this 1814 work¹, the increasing demand has been nearly met by the

1 Malthus applies to the production of corn the short-run analysis that Smith had developed to explain the adjustment of the supply to the demand of particular commodities, that is, the mechanism of "market price" in relation to the "natural price".

domestic supply, and thus the price of corn would tend to subside towards its former level. Nevertheless, according to Malthus's analysis, the market price of corn, being pulled upwards by an increasing demand, is sustained at higher and higher levels by an increasing supply-price of the entire home produce. The primary cause of this increase is "the necessity of yearly cultivating and improving more poor land, to provide for the demands of an increasing population; which land must of course require more labour and dressing, and expense of all kinds in its cultivation" (p.107-8). If any additional supply is not to be withdrawn in the long run, the price of corn must pay for the increased cost of production, including ordinary profits:

"In all progressive countries, the average price of corn is never higher [nor can long remain lower] than what is necessary to continue the average increase of produce. And though, in much the greater part of the improved lands of most countries, there is what the French economists call a disposable produce, that is, a portion which might be taken away without interfering with future production, yet, in reference to the whole of the actual produce and the rate at which it is increasing, there is no part of the price so disposable." (p.96-7)

This statement implies that there is no rent at the marginal land, as Malthus was to state explicitly in his Inquiry into Rent (1815a).

In the 1807 edition of the Essay on Population - having adopted the view that more capital is necessarily employed upon the land if there is a greater demand for corn - Malthus had concluded that by a diminution of rents at the renewal of leases the farmer would be compensated for any increase in the expenses of cultivation relative to the price of corn. Thus, an "unfavourable proportion" between the price of labour and the price of corn would be "made up" to the farmer and would "not influence the growth of corn beyond the current leases" (p.173); and "taxes which affect

agricultural capital fall, during the current leases, wholly on the farmer" but "ultimately fall on the rent" (p.151,n.).

He now thinks this is a mistake, and reverts in effect to his position in the 1803 edition. Thus, a new regime of freedom of importation, which reduced the price of corn, without a corresponding reduction of the price of labour and of the other expenses of cultivation, would be "efficient ... in throwing land, which has been already improved, out of cultivation" and in "preventing the future improvement of land" (p.96). These effects would take place not only during the current leases:

"It is a great mistake to suppose that the effects of a fall in the price of corn on cultivation may be fully compensated by a diminution of rents. Rich land which yields a large net rent, may indeed be kept up in its actual state, notwithstanding a fall in the price of its produce: as a diminution of rent may be made entirely to compensate this fall ... But in poor land, the fund of rent will often be found quite insufficient for this purpose. ... The regular cultivation of such land for grain would of course be given up, and any sort of pasture, however scanty, would be more beneficial both to the landlord and farmer." (p.96)

On such poor land, the price of corn would not leave a "fair remuneration for the capital employed, according to the general rate of profits" together with a rent at least equal to the scanty rent of pasture (p.96-7).

Similarly, it may be inferred, if the money price of labour were to rise in the same proportion as the price of corn, cultivation would not be extended to poorer lands, which would not yield enough produce to pay for the greater number of labourers required and also to pay profits at the necessary rate. Or, if it were once extended, capital would retreat from such lands in the long run.

How, then, does Malthus now reconcile his view that production must adjust to an increasing demand with his

supposition of diminishing returns, if these diminishing returns cannot, after a point, be compensated for by diminishing rents ? As in the 1807 edition, he thinks that the money wage rate does not rise in the same proportion as the money price of corn, i.e. that the wage rate in terms of corn falls. As he puts it in a letter to Ricardo of 5 Aug. 1814:

"A slight fall in the real price of labour ... or what comes to the same thing, a rise in the price of produce without a proportionate rise of labour, a most natural and frequent occurrence, will ... easily make up for some increase of difficulty in procuring corn" (VI,118)

In contemporary Britain, he asserts, the wages of labour "have not risen in proportion to the price of corn", though they "have been beyond all doubt considerably influenced by it" (1814,p.107).

Hence the importance for Malthus of ascertaining the extent of the effect of the money price of corn on the money wage rate. He now proceeds in his empirical refutation of Smith's position that the price of corn "regulates" the price of labour by showing the weight of other goods in the labourer's budget:

"It is by no means intended to deny the powerful influence of the price of corn upon the price of labour, on an average of a considerable number of years ... [but] the whole of the wages of labour can never rise and fall in proportion to the variations in the price of grain"; "if we inquire into the expenditure of the labouring classes of society, we shall find, that it by no means consists wholly in food, and still less, of course, in mere bread or grain" (p.89)

He then refers to Sir Frederick Morton Eden's "work on the poor"¹ as showing that, "in a labourer's family of about an average size", roughly three fifths of the

1 "The State of the Poor; or an History of the Labouring Classes in England from the Conquest to the Present Period, etc.", 3 vols. (London,1797)

expenditure consists of food - of which two thirds consists of "bread or meal" and one third of "meat, milk, butter, cheese, and potatoes" - the remaining two fifths consisting of "house rent, fuel, soap, candles, tea, sugar, and clothing" (p.89).

From this enlarged view of the wage basket, there was not much room left in Malthus's thought for the concept of capital as consisting of the food required for the maintenance of the labourers, a concept which had figured conspicuously in the 1803 edition of his Essay on Population (as seen in chapter 5 above). He had already suppressed from the 1807 edition most passages involving this concept. He now argues, in a letter to Ricardo of 5 Aug. 1814:

"In no case of production [including the production of food], is the produce exactly of the same nature as the capital advanced." (VI,117)

7.5. Conclusion

Like Smith, Malthus invariably considers the "fair remuneration for the capital employed, according to the general rate of profits" as something given from the point of view of agriculture. He sees no reason why the general rate of profits should rise or fall because of circumstances connected with the changing state of cultivation; and he treats the rate of profits of the farmer as if it should always be restored to a given long-run level in line with the profitability prevailing elsewhere.

Thus, the increased number of labourers required per unit of product on poorer lands is seen not as a circumstance which should affect the profits of farming in the long run but as an increase of expenses for which the farmer must somehow be compensated - either artificially by subsidies, as he thought in the 1798 and 1803 editions; or "naturally" by a diminution of rent, as in the 1807 edition, or by a fall in the wage rate in

terms of corn, as he eventually came to believe.

Taking into account other goods besides food in the consumption of the labourer, Malthus came to think that the money price of labour does not increase in the same proportion as the money price of corn. In this case, the necessary adjustment of cultivation to an increasing demand, subject to diminishing returns, may be compatible with a given rate of profits.

On the other hand, Ricardo - following Smith in thinking that the price of labour must increase in proportion to the price of corn - was to come to the conclusion that the required expansion of cultivation, subject to diminishing returns, necessarily entails a falling rate of profits. The next chapter shows how Ricardo might have arrived at this conclusion.

CHAPTER 8

THE EMERGENCE OF RICARDO'S THEORY OF PROFITS

As noted by Sraffa (1951b,p.3), Ricardo's letters of August 1813 already show the "essential elements" of the theory of profits which was to appear in the Essay on Profits (Feb.1815). On the other hand, as noted by Tucker(1954,p.322), Ricardo's High Price of Bullion (4th ed.,Apr.1811) shows him following Smith on the subject of profit determination.¹ It may then be inferred that his own theory emerged sometime between April 1811 and August 1813.

This matches the fact that the friendship between Ricardo and Malthus developed from mid-1811, when they first met and started their correspondence.²

8.1. Early discussion with Malthus about the effect of the demand for food on cultivation

Although the discussions that appear in their extant correspondence before Aug. 1813 have nothing to do with Ricardo's early theory of profits, this correspondence shows that some letters are missing, especially for 1812/13. Even if the available correspondence were complete, it would still be only the tip of the iceberg, and might well fail to give us any hint on some relevant

1 "Profits can only be lowered by a competition of capitals not consisting of circulating medium [that is, consisting of "productive capital"]"; "the rate of interest is not regulated by the abundance or scarcity of money, but by the abundance or scarcity of that part of capital, not consisting of money"; "the rate of interest being regulated by the profits on the employment of [productive] capital" (III,92,88-9)

2 See Ricardo's Works, editor's note on Malthus, vol. VI, p. xix.

technical conversation.

However, it seems reasonable to presume that they would occasionally have talked about the arguments in the Essay on Population, particularly in the more "economic" chapters (Book III); and to the extent that the discussion involved the economic arguments, it would have probed into the whole relation between food production, population growth and capital accumulation.

8.1.1. Increased demand for food as a result of the Poor Laws

A relevant discussion, from the point of view of the emergence of Ricardo's theory of profit, may have been triggered by Ricardo's comment on the argument about Poor Laws, which he found in the Essay on Population. He "remembers" the comment in a letter to Malthus of January 1816, in such a manner that suggests it had been made several years before; which brings us to the period between mid-1811, when they first met, and August 1813, when Ricardo's new theory appears in his correspondence. For convenience, let me repeat the passage, already quoted in section 5.4 above:

"I remember mentioning to you, and I believe you told me that you had altered it in the following editions, that I thought you argued in some places as if the poor rates had no effect in increasing the quantity of food to be distributed - that I thought you were bound to admit that the poor laws would increase the demand and consequently the supply." (VII,2-3)

Why or what did Ricardo then argue so that Malthus was "bound to admit that the poor laws would increase the demand and consequently the supply" ?

That the Poor Laws would increase the demand for food is evident from Malthus's own argument, thus Ricardo's remark was aimed rather at Malthus's arguing as if this increase of demand had no effect in increasing

the production of food¹.

It would, indeed, seem that Malthus was bound to admit that an increased demand for food, proceeding from a greater population, would bring about an increased production, in view of his mechanism of mutual adjustment between population and food production. This had been presented as an essential part of a basic chapter of the Essay on Population (chapter 2). It is likely, therefore, that Ricardo pointed to this conspicuous part of Malthus's argument, thereby suggesting that Malthus had been inconsistent when he came to argue as if the Poor Laws had no effect in increasing the production of food.

As seen in section 7.2 above, this inconsistency may be only apparent, because, in that part of his chapter 2, Malthus seems to have had in mind the extension of cultivation to equally fertile lands; whereas his arguing that the Poor Laws increase population without increasing food production seems to have been based on his view that the extension of cultivation to less fertile lands may be unprofitable to "private individuals" in the long run.

As described in chapter 7 above, Malthus had thought, in the early editions of the Essay on Population, that an increased demand and price of corn might fail to bring about an increased production - because not only would the price of labour rise to the price of corn (as Smith had argued), but the cultivation of poorer lands would not pay a "profitable return".

It was also seen in chapter 7 above that, in the 1807 edition of his book, Malthus had changed his view on the effect of the demand for corn on cultivation, and had come to think that an increased demand and price does succeed in raising more corn. In fact, as Ricardo

1 One must understand the increase of "supply" here to mean (or at least to include) an increase of domestic production (apart from importation), for this is clearly what is involved in Malthus's argument on the Poor Laws, to which Ricardo refers.

remembered in connection with his critique of Malthus's arguing as if the Poor Laws increased the demand but not the supply of food, Malthus had told him that he "had altered it in the following editions".

It is likely that Malthus's reply to Ricardo's comment would not have been merely saying that he had altered his position. An important discussion probably followed Ricardo's critique, for he would not have recollected this question - in the account of his connection with the Essay on Population, in which the passage appears (VII,2-3) - if the discussion about it had been of no consequence.

Malthus would naturally have rejected the suggestion of inconsistency, and would probably have explained the position underlying his argument on Poor Laws, in the early editions of the Essay on Population.

Let us suppose, for a moment, that he did so. Then, Ricardo would have been inclined to conclude that - if an increased demand must necessarily bring about an increased production, obtainable only from poorer lands - the lower profits to be made on these lands will not impede their cultivation, that is, such lands will be cultivated, paying lower profits. He would have been inclined to this conclusion because he thought, at that time, that following an increase in the money price of corn the rate of wages must eventually be restored to the same level in terms of corn. Unlike Malthus, he did not yet depart from Smith on the question of the extent of the effect of the money price of corn on the money price of labour - although he had probably accepted Horner's point that Smith had overlooked the interval for the completion of this effect. As he put it in a letter to Malthus, as late as June 1814:

"[the price of provisions] is after all, whatever intervals we may be willing to allow, the great regulator of the wages of labour" (VI,108)

As seen in chapter 7 above, Malthus had deviated from the line of reasoning leading to the conclusion that

cultivation will be extended to poorer lands which will pay lower profits, by coming to think that the wage rate must eventually be restored to a lower level in terms of corn. If this were so, the extension of cultivation would not entail diminished profits.

Our supposition that Malthus explained to Ricardo his early position on the extension of cultivation to poorer lands is of course a conjecture, plausible though it may be. The available evidence does not permit reconstruction of the early discussion between Ricardo and Malthus on the effect of the demand for food on cultivation, in connection with the comment which Ricardo remembered having made. Moreover, there is no means of ascertaining that this comment was actually delivered by Ricardo before he arrived at his theory of profits.

Irrespective of such speculation, Ricardo's comment may serve here to illustrate how attentive his reading of the economic arguments in the Essay on Population had been; and also how inevitable it was that he would come to discuss such arguments with Malthus.

8.1.2. Increased demand for corn as a result of new restrictions on importation

Another likely start of a relevant discussion - which might have brought Ricardo to a fresh reflection on the economics of food production in the Essay on Population - was pointed out by Tucker (1954, p.330), although not as such, but as something which "may have led Ricardo to consider the causes of changes in the rate of profit" (Tucker sees no connection between Ricardo's thought on profits and Malthus's economics of food production or the Essay on Population). Tucker pointed out the fact that, in June 1813, "Malthus was thinking about the effects of restrictions on the importation of corn", which "somewhat increases the probability that Ricardo was also doing so". Tucker publishes at the end of his article a letter from Malthus to Horner, dated 16

June 1813. The letter shows that Horner had sent to Malthus a copy of the recent Parliamentary Report on the corn trade¹, which Malthus says he had just "looked over".

The letter shows, too, that Horner had transmitted to Malthus some comments about the effects of the essential measure proposed in the Report, viz. a prohibitive duty on the importation of corn, unless the market price rose above a certain high level. Malthus's reply (and presumably Horner's comments) touches on the old questions, namely: the effect of the demand for corn on cultivation; differential returns from lands of different qualities; and the effect of the price of corn on the prices of labour and of all other home-made commodities. In fact, Malthus writes:

"I cannot however agree with you in the opinion you seem to hold, that restrictions upon importation have no tendency to encourage the growth of an independent supply of corn. ... I cannot, without violating what appear to me to be some of the most fundamental principles of Political Economy, believe, that an increase in the relative demand for home corn will not produce an increase in the relative supply. ... If Europe were like one large nation with regard to importation and exportation, its cultivation would proceed like the cultivation of a large nation; and it could never answer to bring indifferent land under tillage in one district, till the good lands in other districts, from which there was an easy communication, were first cultivated. ... I don't quite agree with you about the interest of the landlords. High nominal prices of corn appear to me to be advantageous as it gives them a greater command of all those commodities the materials of which are foreign."
(loc.cit.,p.332-3)

1 Report from the Select Committee Appointed to Enquire into the Corn Trade of the United Kingdom - Ordered, by the House of Commons, to be printed, May 11,1813

8.1.3. Conclusion

Both possibilities for triggering a relevant discussion between Ricardo and Malthus on the effects of the demand for corn on cultivation - leading to the emergence of Ricardo's theory of profits - are plausible, and they are not mutually exclusive; but the evidence is too scanty to confirm either one of them.

However, these possibilities enhance the likelihood of such relevant discussion - not necessarily a discussion connected with Poor Laws or Corn Laws.

To judge from their correspondence - where they hardly agree about anything, without adducing qualifications, and where the discussion is never conclusive because it continuously turns to related issues - one may presume that their early discussion would eventually have involved Malthus's thought on the conditions of increase of food production.

8.2. Derivation of the new theory

Once driven into a reconsideration of Malthus's arguments concerning the expansion of food production, under the stimulus of a discussion regarding some question that somehow involved such arguments - if Ricardo may be supposed to have been so driven at that time - then it is easy to understand how he might have arrived at the new theory of profits. This section examines how a known "output" - Ricardo's early theory of profits - would have been derived from known "inputs", namely Malthus's early economics of food production plus Horner's argument about the effect of the demand for food on cultivation.

Such are the immediate inputs, which had been projected by Malthus and Horner from a common Smithian background, and which had been absorbed by Ricardo against the same background. In fact, neither Malthus's nor Horner's economic arguments make sense except in the

context of Smith's theoretical framework. This is therefore the basic input into the "production" of Ricardo's theory of profits. Nevertheless, it is a very diffuse input, whereas Malthus's and Horner's economic arguments, having been derived from it, concentrate, as it were, Smithian elements together with their own additions or alterations into materials capable of yielding immediately Ricardo's early theory of profits.

8.2.1. Components of the new theory and their sources

Knowledge of the "output" - as it appears in Ricardo's Essay on Profits - enables one to specify some relevant ingredients that can be collected from one or more of the named sources:

1. corn supposed to be "the food of the common people", or "the subsistence of the labourer";
2. wages of the labourer supposed to be expended on bread for him and his family;
3. principle of population, according to which the rate of growth of the labouring population is regulated by the rate of wages in terms of food;
4. wage-population mechanism, determining the long-run equilibrium rate of wages (in terms of food) as that rate which brings the rate of growth of the supply of labourers into equality with a given rate of growth of the demand for labourers;
5. the money wage rate is in the long run regulated by the rate of wages in terms of corn and by the money price of corn; therefore, the former of these factors remaining constant, it is regulated by the latter;
6. concept of surplus produce in the production of corn, i.e. the reproduction of an excess quantity of corn over what is consumed by the labourers employed (during a cycle of production, say one year);
7. differential number of labourers per unit of product, on lands of different qualities in respect to soil fertility and distance from the market;

8. capital conceived as wages advanced or (from 2) as an equivalent quantity of corn;
9. uniform rates of profit on all employments of capital;
10. concept of rent of land as the residual part of the surplus produce after payment of profits at the general rate;
11. differential rent, as a relative share of the produce, between lands of different qualities;
12. identification of "agriculture" with the production of "food" or "corn" (interchangeable terms);
13. increased number of labourers per unit of product on the extension of cultivation to less fertile or more distant lands;
14. increased "difficulty" of producing food for the additional number of labourers (population) demanded by an increased capital;
15. adjustment of the production of food to an increasing population, this adjustment being stimulated by temporary falls in the price of labour in relation to the price of food;
16. necessary adjustment of the production of corn to increases in demand, this adjustment being stimulated by greater profits resulting from temporary rises in the price of corn in relation to the price of labour.

These ideas may be classified into three groups according to their sources from Ricardo's point of view:

- (a) ideas which are found in both Smith's and Malthus's arguments, namely those under numbers 1 to 11 (of which 4 and 5 are clearly reiterated in Horner's article);
- (b) ideas that are found in Malthus's analysis, but not in Smith's (at least explicitly), namely 12 to 15;
- (c) 16, a position which is formulated in Horner's article.

In the case of the first of these groups, Ricardo's reading of the Essay on Population may be supposed to have produced a fixation in his mind of notions that had been vaguely floating in it since he had read the Wealth of Nations. Such ideas appear scattered throughout

Smith's book, but are found together, connected as parts of a single theoretical argument, as components of his theory of rent (as described in chapter 3 above).

However, Smith's argument on rent had given little attention to heterogeneity of lands, and even then was confined to static differential returns - since its object was to explain the determination of equilibrium or "natural" levels of rent. On the other hand, Malthus's object was to explain the checks opposed to the multiplication of people by the availability of food, and therefore to examine the possibilities and obstacles to the growth of food production: hence the prominent place of heterogeneity of lands, and the formulation of dynamic diminishing returns. This Malthusian version of diminishing returns is echoed very clearly in a letter from Ricardo to Malthus of 16 Sep. 1814, where he refers to "the increasing difficulty of making constant additions to the food of the country" (VI,134).

Also, it seems superfluous to look to any other source than the Essay on Population - Ricardo's second most important reading in Political Economy, according to his own judgement - for the connection between "the increasing difficulty of making constant additions to the food of the country" and the process of capital accumulation, which demands an increasing supply of labourers. This connection is echoed by Ricardo in a letter to Malthus of 18 Dec. 1814, where he says that "every accumulation [of capital] is attended with increased difficulty in obtaining food" (VI,162). In the Principles, Ricardo criticizes Smith for never "adverting to the increasing difficulty of providing food for the additional numbers of labourers which the additional capital will employ" (I,289).

Horner's belief in the power of an increased demand and price to raise more corn had been sanctioned - not only by the recent experience before 1804, which he mentioned in his article of Oct. 1804 - but also by the experience from 1805 to 1812 or 1813. Both Malthus and

Ricardo refer to this recent experience as evidence of the power of price in increasing the supply of food:

"From 1805 ... the price of grain had risen so high [by 1813], and had given such a stimulus to our agriculture, that ... we had been rapidly approaching to the growth of an independent supply" (Malthus, 1814, p.100-1)

"after the experience which we have had of the power of high prices [of corn] to procure a supply"; "we all know the prodigious effects of a high price in procuring a supply" (Ricardo, 1815, p.31, 29)

Horner had offered a theory of these "effects of a high price in procuring a supply" - as a "correction" of Smith's analysis.

All those listed ingredients had entered Ricardo's mind many years before 1812 or 1813. He had met some of them individually, in unconnected contexts; he had met most of them connected together as components of Smith's theory of rent; he had met all of them, except the last, as components of Malthus's economics of food production, in the Essay on Population (1803 edition); and, last but not least, he had read with admiration Horner's article in the Edinburgh Review of Oct. 1804, which conveyed a convincing critique of Smith's analysis of the effect on cultivation of an increased demand for corn resulting from a bounty on exportation. He may have met this last piece again, in conversation with Malthus, who had adopted Horner's position.

8.2.2. The final component and its source

Even before meeting Malthus (mid-1811), the ideas listed in the previous section must have been stored at the back of Ricardo's mind, ready for collection and coalescence. However, there is an essential ingredient which is not in that list - it is not in the Wealth of Nations, or in the 1803 Essay on Population, or in

Horner's article - but is logically necessary for the conversion of that list into Ricardo's early theory of profits. This is the notion that successive marginal lands pay no rent. As Malthus states in his 1815 Inquiry into Rent:

"I cannot, however, agree with him [Smith] in thinking that all land which yields food must necessarily yield rent. The land which is successively taken into cultivation in improving countries, may only pay profits and labour. A fair profit on the stock employed, including, of course, the payment of labour, will always be a sufficient inducement to cultivate." (p.116,n.)

That the landlord of the marginal land will not be able to exact a rent, because the whole available land is (supposed to be) abundant, though of gradually different qualities - so that there is always redundant land of the same or similar quality as that of the marginal land - seems to be implied in Malthus's attributing rent to a "partial monopoly", or a "comparative scarcity of the best lands" (loc.cit.,p.118-9).

Malthus believed that Ricardo had followed him in adopting the concept of a no-rent marginal land (VII,372,379). This concept was attributed to Malthus by Ricardo himself, in his Essay on Profits (IV,37-8).

Quoting that passage of the Inquiry into Rent, Ricardo said that it was a "doctrine" which Malthus had maintained in "all" his publications (ibid.,p.38). He may have included in this reference the Essay on Population, for which Malthus was mostly known to the public.

However, in the 1803 Essay on Population, the notion of a no-rent land seems to apply only to a single stage in the extension of cultivation to successively poorer lands - that is, when this extension is pushed sufficiently far, into land of such quality that its surplus produce is just sufficient to pay a "fair" profit to the farmer, leaving nothing to be paid as rent. This seems to be the only "instance of the cultivation of new lands [as food production increases], which will pay a

profit but not a rent" (Malthus, 1803, p. 672).

Ricardo may have understood this possibility as applying to any "instance of the cultivation of new lands", or to the "land which is successively taken into cultivation" - as Malthus expresses it in his Inquiry into Rent, having seemingly reached a new position.

It seems more likely, however, that Malthus's new position - which is already implicit in his Observations on the Corn Laws of Spring 1814 - was communicated to Ricardo in conversation (or missing correspondence) before August 1813. This was a period (after mid-1812) when Malthus was concerned to publish his notes on Adam Smith (not with much consequence though)¹. The notes contained his new ideas about rent, as he says in the "advertisement" to his Inquiry into Rent (Malthus, 1815, p. 115). Ricardo seems to have been familiar with Malthus's project, to judge from a passage at the end of his letter to Malthus of 25 Feb. 1813, which seems to refer to it (VI, 89)². This does not prove that Ricardo would have been familiar with the contents of such notes, but it is likely that Malthus would have discussed one or other point with him, particularly his differences with Smith.

8.2.3. Re-combination of such elements

As soon as Ricardo's mind had absorbed this last element, in addition to those listed in section 8.2.1 above, it would have been logically bound to arrive at the new theory of profits - because a fall in the general rate of profits is the only means of reconciling all the previous elements with the condition that the marginal land pays no rent.

1 See James (1979), p. 245-9

2 "I cannot believe that you give a correct account of your habits of application ... when you have once fairly begun I expect that you will advance at a giant's pace."

However, any mind would have been more capable of stirring up and re-combining such components into a new theory when it was stimulated by a discussion involving them, such as a discussion with Malthus; or when it was stimulated by some practical problem in the analysis of which those theoretical elements might have played a part, such as the question of the effects on cultivation of the Poor Laws or of the Corn Laws; or under the stimulus of both circumstances - which seems to have been the case, as seen in section 8.1 above.

When we catch the train of the discussion between Ricardo and Malthus in their correspondence of August 1813, Ricardo is already defending his new theory of profit determination against a different view held by Malthus. The general rate of profits, he asserts, can be prevented from falling as a result of an increase of capital, by "improvements" or "new facilities" in agriculture, i.e. in the "production of food" (VI,94-5). Thus, it may be inferred, the tendency of the general rate of profits to fall as a result of capital accumulation proceeds from an increasing difficulty in producing food. As Ricardo explains in a letter to Malthus of 18 Dec. 1814:

"Accumulation of capital has a tendency to lower profits. Why ? because every accumulation is attended with increased difficulty in obtaining food, unless it is accompanied with improvements in agriculture; in which case it has no tendency to diminish profits. If there were no increased difficulty, profits would never fall, because there are no other limits to the profitable production of manufactures but the rise of wages."
(VI,162)

As in Malthus's early economics of food production, there is a "limit to the profitable production" of food, viz. the "increased difficulty in obtaining food". However, according to Ricardo, this increased difficulty will tend to diminish profits, whereas Malthus had thought that it would tend to stop the expansion of the

food supply.

The Malthusian problem of the increasing difficulty in producing food for the additional population to be employed by an increasing capital (as described in section 5.3.3 above) was modified by Ricardo, who saw that difficulty as implying not a check to the increase of food and population but a falling rate of profits.

In his letter to Malthus of 23 Oct. 1814, Ricardo is more specific:

"a gradual accumulation of capital which by creating new demands for labour may give a stimulus to population and consequently promote the cultivation or improvement of inferior lands, - but this will not cause profits to rise but to fall, because not only will the rate of wages rise [from the consequent rise in the price of food], but more labourers will be employed without affording a proportional return of raw produce. The whole value of the wages paid will be greater compared with the whole value of the raw produce obtained." (VI,146)

Ricardo seems to have concluded that profits will have to be lower at the inferior lands - which are successively brought into cultivation as a result of an increasing demand - "because" more labourers will be required per unit of product and the wage rate must be restored to the same level in terms of food. Consequently, the wage cost will necessarily rise in relation to the produce, thereby squeezing the profits of the farmer - there being no rent to be squeezed on such lands.

The farmer will have to be content with a lower rate of profits. However, according to accepted Smithian principles, the farmer can be content in the long run with a lower rate of profits only if he does not have more profitable alternatives for the employment of his capital, i.e. only if the profit rates elsewhere are no higher than on the land (except for compensating non-pecuniary disadvantages). Ricardo would therefore have concluded that - if less fertile or more distant

lands are to be permanently brought into cultivation - then the general rate of profits must come into line with the lower rate to be obtained on the cultivation of such lands. As he explains in a letter to Trower of 8 Mar. 1814:

"as the profits of the farmer must necessarily decrease with every augmentation of capital employed on the land, provided no improvements be at the same time made in husbandry, all other profits must diminish" (VI,104)

This new theory of profit determination has been examined with more detail in chapter 4 above.

CHAPTER 9
CONCLUDING REMARKS

Ricardo's early theory of profits seems to have been produced by a "coalescence of thought"¹ involving elements from Malthus's early theory of the extension of cultivation, in the context of Smith's analytical framework, with some assistance from Horner's "correction" of Smith's analysis of the operation of a bounty on exported corn.

That Ricardo's "corn-surplus" theory of profits did occur to him in connection with Malthus's "corn" model of agriculture (described in ch. 5 above), is borne out by a passage in the Essay on Profits:

"Supposing that the nature of man was so altered, that he required double the quantity of food that is now necessary for his subsistence, and consequently, that the expenses of cultivation were very greatly increased ... [leaving] a much less surplus produce; consequently, the [general] profits of stock could never be so high. ... The natural limit to population would of course be much earlier ... because, in the nature of things, land of the same poor quality would never be brought into cultivation ... with any adequate return of profit." (IV,15;emphasis mine)

Malthus had set the natural limit of cultivation - and therefore of population (in the absence of importation of food) - at that land where the surplus produce barely affords a profit to the farmer, according to a given general rate of profits. Ricardo thought that this general rate will fall, in line with the diminishing surplus produce of cultivation (at the no-rent marginal

1 I have drawn this expression from G.L.S. Shackle, The Years of High Theory: 1926-1939 (Cambridge, University Press, 1967).

land), as long as "the smallness of profits do not check accumulation" (IV,14).

Ricardo's early theory of profits may be logically derived from Smith's "corn-surplus" theory of rent by identifying agriculture with the production of food or corn, and incorporating the condition that the marginal land pays no rent (as shown in ch. 4). Nevertheless, the fact that Malthus had made such identification and that the no-rent condition was drawn by Ricardo from Malthus (as seen in sec. 8.2.2), also suggests that Smith's theory of rent was transformed into Ricardo's theory of profits in connection with Malthus's thought on the expansion of cultivation - particularly his early "corn" theory, which is an extension of Smith's theory of rent.

All these "corn" theories - Smith's theory of rent of land, Malthus's early theory of the expansion of food production and Ricardo's "agricultural" theory of profits - are based on Smith's theory of wages, particularly on the concept of wages as consisting of food. Accordingly, they are all based on the concept of surplus produce in the production of food, i.e. the excess of food produced over the food consumed by the labourers employed.

On the basis of Malthus's "doctrine" that the marginal land pays no rent, Ricardo inferred that - as the surplus produce diminishes on the poorer lands which are successively brought into cultivation and which require more labourers and therefore more food per unit of product - the rate of profits on such lands will necessarily diminish. Ricardo then concluded that, since there is to be a uniform rate of profits across all employments of capital, the general rate of profits will also have to fall (before the "natural limit" of cultivation is reached).

A P P E N D I X

RECENT CRITIQUES OF SRAFFA'S "CORN-RATIO" INTERPRETATION
OF RICARDO'S EARLY THEORY OF PROFITS

1. Introduction

This appendix contains a discussion of the principal critiques that have been made by Hollander (1973,1975,1979,1983), Rankin (1984), Peach (1984,1988) and Facarello (1986) against Sraffa's interpretation of Ricardo's early theory of profits.¹ It concentrates on the pieces of evidence presented by Sraffa in support of his "corn-ratio" interpretation. As Hollander observes, "by focusing upon the evidence presented by Sraffa we deal with the essentials of the problem" (1983,p.174).

Sraffa's interpretation is centred on Ricardo's early proposition that it is the profits of agriculture which regulate the profits of all other trades, or the general rate of profits. This proposition was published in the Essay on Profits (Feb.1815), and also appears in the preceding correspondence (from March 1814). According to Sraffa's interpretation of the Essay and of this correspondence, the "rational foundation" of Ricardo's "principle of the determining role of the profits of agriculture" is that capital -"conceived as composed of the subsistence necessary for workers" - is supposed to consist of the same commodity as the agricultural product, namely corn; so that:

"in agriculture ... the determination of profit by the difference between total product and capital advanced, and also the determination of the ratio of this profit to the capital, is done directly between quantities of corn without any question of valuation ... It follows that if there is to be a uniform rate of profit in all trades it is the exchangeable values of the products of other trades relatively to their own capitals (i.e. relatively to corn) that must be adjusted so as to yield the same rate of profit as has been established in the growing of

1 This interpretation is given in Sraffa, 1951a, p. xxxi-ii, where the evidence is presented; and also in Sraffa, 1960, p.93.

corn; since in the latter no value changes can alter the ratio of product to capital, both consisting of the same commodity." (Sraffa, 1951a, p. xxxi)

That capital, and particularly wages advanced, were supposed by Ricardo to consist of corn has been disputed by Rankin (1984) and Peach (1984, 1988). Their arguments in connection with the Essay on Profits are considered in section 2.

Section 3 discusses the very meaning of Ricardo's proposition on the regulating role of the profits of agriculture. Hollander argues that Ricardo did not strictly mean that the rate of profits of agriculture determines the general profit rate; and Peach argues that Ricardo did not precisely mean that it is the rate of profits of agriculture which uniquely determines general profitability. They argue, in effect, that Sraffa not only imagined a "corn model" behind Ricardo's proposition, but undertook to interpret an imaginary position.

The main points raised by Hollander and Peach against Sraffa's reading of the textual evidence are examined in section 4. And section 5 considers Facarello's critique.

2. The wage-basket in the "Essay on Profits"

Rankin (1984) and Peach (1984,1988) question the view that Ricardo's argument in the Essay - and particularly the regulating role of the profits of agriculture - is based on the implicit assumption that wages consist only of "food" or "corn". They believe that, on the contrary, Ricardo proceeded upon the assumption that the wage-basket includes manufactured goods as well as corn.

Peach (1984,p.738) argues:

"[Ricardo's] reference to circulating capital as being 'of the value of one hundred quarters of wheat' may suggest that commodity wages do not consist solely of wheat/corn; at any rate, there is no explicit assumption anywhere in the Essay that wheat/corn is the only wage good"

Nobody has yet argued that there is in the Essay an explicit assumption that wheat/corn is the only wage good. Other writers believe that this simplification is implicit in the theoretical argument of the Essay (Sraffa, 1951a, p.xxxi-ii; Hollander, 1979, p.145-6; Hicks, 1985, p.318 et passim).

Ricardo's reference to circulating capital as being "of the value of one hundred quarters of wheat" may suggest, contrary to Peach's belief, that "commodity wages" does consist solely of wheat /corn. In fact, the reference appears in the following passage:

"Profits [of the farmer] might even increase, because the population increasing, at a more rapid rate than capital, wages might fall; and instead of the value of one hundred quarters of wheat being necessary for the circulating capital, ninety only might be required" (IV,11)

This statement suggests that the wage rate is not only expressed but also determined in terms of wheat. It is evident that Ricardo is following Smith in describing the wage rate as being determined by a labour market where demand increases at the same rate as capital, and supply

increases at the same rate as population. There is no reason why such a labour market should fix the wage rate in terms of wheat, unless the consumption basket of the labourers is supposed to consist of wheat and their multiplication is supposed to be regulated by the quantity of wheat that they consume (as in Smith's theory of wages).

Rankin (1984,p.85) recognizes that "There are several pieces of indirect evidence from the Essay which might be used in support of the contention that Ricardo does indeed assume the wage basket to consist exclusively of corn". He recognizes, too, that "Ricardo specifically states that while an increase in productivity in the production of manufactures will increase the quantity of commodities produced, it will not affect the rate of profit in the long run (see IV,pp. 25-26)" - which is clearly "inconsistent with the inclusion of manufactures in the wage basket and might lead us to infer that the model of the Essay only makes sense if we hypothesise a wage basket consisting exclusively of corn". However, Rankin points to what he considers to be a piece of counter-evidence from the Essay, viz. a footnote where Ricardo seems indeed to make the general rate of profits also depend on productivity in the production of other wage-goods, including manufactures (from its reference to "machinery"):

"If by foreign commerce, or the discovery of machinery, the commodities consumed by the labourer should become much cheaper, wages would fall; and this, as we have before observed, would raise the profits of the farmer, and therefore, all other profits." (IV,26,n.)

Peach also points to this statement as an instance where the "corn model" assumption of wages consisting of corn is manifestly contradicted by Ricardo (Peach, 1988, p.108).

However, this footnote contradicts Ricardo himself in the passage to which it is appended. The passage is the following, where an * indicates the position of the

footnote:

"Profits then depend on the price, or rather on the value of food. Every thing which gives facility to the production of food, however scarce, or however abundant [other] commodities may become ["abundant" from the "extension of commerce", the "division of labour in manufactures" or the "discovery of machinery"], will raise the rate of profits, whilst on the contrary, every thing which shall augment the cost of production [on the land] without augmenting the quantity of food*, will, under every circumstance, lower the general rate of profits. The facility of obtaining food is beneficial in two ways to the owners of capital, it at the same time raises profits and increases the amount of consumable commodities. The facility in obtaining all other things, only increases the amount of commodities." (IV,26)

The footnote in question is evidently a qualification to the main argument. Ricardo first states that it is only an increased "facility" of producing food - and not manufactures etc. - which will raise the rate of profits; and then he adds a footnote, according to which an increased facility of producing "the commodities consumed by the labourer" - presumably including manufactures - raises the rate of profits.

Ricardo also asserts that an increase in the general rate of profits "according to my opinion, can never take place but in consequence of cheap food" (IV,25;emphasis mine).

It seems therefore that, in the main course of the Essay's theoretical argument, Ricardo proceeds upon the assumption that the wage-basket consists of food.

However, Peach represents the footnote in question - which apparently includes manufactured wage-goods - as though it were not an aside. Pointing to it, he argues that Ricardo thought his regulating role of agricultural profits to stand "regardless of both the physical composition of inputs and the sectoral origins of any perturbation" (1988,p.108-9). Peach seems to interpret

the expression "and therefore" in this footnote as meaning: 'and since it is the profits of the farmer which regulate the profits of all other trades, it follows that...'. However, what seems to be involved in Ricardo's inference in this footnote is merely the principle - well-known and accepted among the Smithian economists - that the rates of profit must be uniform; "and therefore" all other profits must rise if the profits of the farmer are raised.

Rankin also takes the footnote in question as an integral part of the main argument. He is then led to conclude that, in the Essay, Ricardo - supposing a mixed wage-basket, but lacking a coherent theory of relative prices - was not yet equipped to establish, and therefore failed to establish, "what may be considered to be the central argument of both the Essay and the Principles: namely, that in the absence of technical improvements in the production of wage goods [including manufactures], capital accumulation entails a falling rate of profit" (p.86).

A similar interpretation of the argument to which Ricardo "struggled to give analytical representation" (but failed to do) is given by Peach (1984, p.748):

"in a given state of technology, capital accumulation would result in a 'permanent' reduction in profitability, owing to worsened agricultural conditions of production [in the absence of free trade in corn]"; since (more generally) "ceteris paribus, 'permanent' changes in profitability will be the result of altered conditions of producing wage-goods [including manufactures]".

However, the "central argument" of the Essay is clearly that, in the absence of technical improvements in the production of food, capital accumulation entails a falling rate of profits. As Ricardo puts it:

"I think it may be most satisfactorily proved, that in every society advancing in wealth and population, independently of the effect produced by liberal or scanty wages, general profits must fall, unless there be

improvements in agriculture [in the absence of importation of corn]" (IV,23)

This position is emphasized elsewhere in the Essay:

"through the whole progress of society, profits are regulated by the difficulty or facility of procuring food. This is a principle of great importance, and has been almost overlooked in the writings of Political Economists" (IV,13,n.; emphasis mine).

This "principle of great importance" has been almost overlooked in the writings of Rankin and Peach. They interpret the main theoretical argument of the Essay as though Ricardo included other goods in the wage-basket, particularly manufactures. Consequently, both find it necessary to place Ricardo's statement of the regulating role of the technical conditions of producing food under a ceteris paribus clause, viz. that the technical conditions of producing wage-goods other than food remain the same.

Ricardo's proposition that the farmer's profits regulate the profits of other trades is left unexplained by Rankin (except, perhaps, as a non sequitur from an incomplete model). As will be seen in section 3 below, it is described by Peach as an imprecise assertion. He interprets it as asserting what Ricardo "struggled to give analytical representation" (1984,p.748), as quoted a few paragraphs above. It cannot, indeed, be rationally derived - it does not make sense - on the assumption that the wage-basket includes commodities other than agricultural produce.

3. A determining role of the profits of agriculture ?

Ricardo's early theory of profits, as published in the Essay, is interpreted by Hollander as being essentially the same as that in the Principles, namely (according to Hollander): supposing that the money prices of individual goods depend solely on productivity in their production (the value of money remaining constant); and supposing that the money wage rate depends on the money prices of wage-goods (including manufactures); then the general rate of profit depends on productivity in the production of wage-goods, through their money prices and the money wage rate. The theory in the Essay, Hollander believes, is a special case in which corn is supposed to be the only wage-good, and thus the general rate of profit depends uniquely on productivity in agriculture, i.e. in the production of corn (through the money price of corn and the money wage rate). As Hollander puts it: "agricultural productivity alone influences profits generally in the event that corn alone enters the wage basket" (Hollander, 1975, p.189)

In Hollander's interpretation, this is what Ricardo has in mind in stating that it is the profits of the farmer which regulate general profits; the latter statement should not be interpreted as strictly meaning that the rate of profits of agriculture determines the profit rates of other trades; it is merely a verbal variation of the proposition that the general rate of profit depends on agricultural productivity.

As argued by Garegnani (1982, p.65-6, 68): "it is only by ascribing to Ricardo an unusual use of language that Hollander can account for the presence of the principle of the determining role of farmers' profits in the Essay"; "Hollander's 'variation' consists of taking Ricardo's expression 'profits of the farmer' as equivalent to the expression 'state of agricultural productivity' in describing the determination of the general rate of profit."

Hollander (1983,p.171) recognizes that he makes such "identification", but he does not agree that it is illegitimate. However, instead of considering the Essay, he turns to Ricardo's letter to Trower of March 1814. In this letter, he argues, Ricardo emphasizes the proposition that general profits vary with agricultural productivity, and the assertion that "it is the profits of the farmer which regulate the profits of all other trades" appears as a restatement of that proposition, "nothing more than a catch-phrase".

However, the context makes it clear that the expression "profits of the farmer" means the rate of profits of agriculture, for that assertion is immediately followed by:

"and as the profits of the farmer must necessarily decrease with every augmentation of capital employed on the land, provided no improvements be at the same time made in husbandry, all other profits must diminish and therefore the rate of interest must fall" (VI,104)

It is evident here that "profits of the farmer" cannot be interpreted as "agricultural productivity". Ricardo is clearly using the principle that the rates of profit must be uniform across all employments of capital (and also the principle that the rate of interest is regulated by the general rate of profits).

In stating the determining role of the profits of agriculture, Ricardo means that the profit rates of other trades must be brought into line with the rate of profits of agriculture. This appears still more clearly in the Essay on Profits (IV,13,23-4). Nevertheless, Hollander (1983) in replying to Garegnani does not take into account the statements in the Essay - perhaps because he misunderstood Sraffa's suggestion of the "rational foundation of the principle of the determining role of the profits of agriculture" as referring only to the statement in Ricardo's letter to Trower. For this is how he represents it in his 1983 article:

"the Sraffa position in support of the material theory of

profits, 'the rational foundation' of the principle expressed by Ricardo in his letter to Trower of 8 March 1814 that 'it is the profits of the farmer which regulate the profits of all other trades'" (p.167).

However, Sraffa describes "the principle of the determining role of the profits of agriculture" as a basic principle to be found "both in the Essay and in Ricardo's letters of 1814 and early 1815" (Sraffa, 1951a, p. xxxi). In both cases, this principle is left unexplained by Hollander. In fact, he does not even recognize it as something different from the principle of the determining role of agricultural productivity.

For his part, Peach (1984, p. 735-6) argues that Ricardo's "imprecise assertion" of a "'regulatory' function for farmers' profits", in the letter to Trower of March 1814, does not mean that the profits of the farmer determine the profits of other trades, as understood by Sraffa. Peach says that Sraffa has made an "illicit substitution of a precise twentieth-century notion - that of unique determination - for Ricardo's imprecise notion of 'regulation'" (p. 750). He argues that it is "unclear" why Sraffa's "terminological translation" of "determining" for "regulatory" should be justified (p. 735). As in Hollander (1983), these points are made without taking into account - or at any rate without mentioning - the regulating-profits-of-agriculture statements in the Essay on Profits.

In Ricardo's letter to Trower, containing the proposition in question, one reads:

"it is the profits of the farmer which regulate the profits of all other trades - and as the profits of the farmer must necessarily decrease ... all other profits must diminish" (VI, 104)

Is it "illicit" to "translate" the "regulating" role of the farmer's profits - as found in this passage - as a "determining" role in relation to the profits of other trades, as Sraffa did ?

Malthus, too, had understood Ricardo's "regulating"

role of the profits of agriculture as a "determining" role, for he so denies it in a letter to Ricardo of 5 Aug. 1814: "it is not the particular profits ... upon the land which determines the general profits of stock and the interest of money" (VI,118).

In a more recent article (1988), Peach insists only that Ricardo's statements on the regulating role of the profits of agriculture are illegitimately interpreted by Sraffa to intend a relationship of unique determination:

"The plausibility of Sraffa's interpretation largely derives from the imposition of a precise logical meaning on Ricardo's words which is then attributed to him ... [as though] Ricardo conciously intended a relationship of unique determination" (p.108)

However, both Sraffa's interpretation and Peach's 1988 critique encompass the "regulating" statements in the Essay on Profits. Here, it is clear that general profits are "regulated" uniquely by the profits of agriculture, as in the following statement:

"The general profits of stock depend wholly on the profits of the last portion of capital employed on the land" (IV,21)

This is a "translation" for the "regulating" role of the profits of agriculture, as stated before in the same Essay:

"the general profits of stock being regulated by the profits made on the least profitable employment of capital on agriculture" (IV,13)

In his 1988 article, Peach refers to this proposition that general profits depend "wholly" on the profits of agriculture, but he attributes such "strong" statements to a presumed "enthusiasm" that Ricardo might have felt for his new theory of profits, which would have led him to "overstate" his supposedly imprecise notion of the regulating role of the farmer's profits. Perhaps Peach makes this suggestion by analogy with his own enthusiasm for his "new interpretation", which would have led him to such "strong" statements as:

"[Sraffa's] corn model is a gratuitous attribution to Ricardo" (1988,p.109)

"this interpretative manœuvre [Sraffa's "corn model rationale" upon the "imposition of a precise logical meaning on Ricardo's words which is then attributed to him"] rests on nothing more than pure, unfounded supposition" (1988,p.108)

It is superfluous to dwell on Peach's gratuitous attribution of Ricardo's "strong" statements to a supposed "enthusiasm". But it is interesting to note that Ricardo himself let us know that, in stating relationships between economic variables, he submitted them as propositions which admit a rational demonstration, in spite of anything like enthusiasm that he might have felt about his theories:

"I know the strong disposition of every man to deceive himself in his eagerness to prove a favourite theory, yet I cannot help viewing this question [the role of "difficulty" or "facility" of production in the determination of "natural price"] as a truth which admits of demonstration" (letter to Malthus of 30 Jan. 1818, VII, p.251)

Peach (1984,p.735) recognizes that, if Ricardo's own proposition on the regulating role of agricultural profits meant Sraffa's "translated position", then - as argued by Garegnani (1982,p.68) - it can find a "rational foundation" only in the "corn model" argument interpreted by Sraffa. Nevertheless, he argues, to believe that "the translated position was underpinned by a logically consistent model", or that "there must have been a logically coherent rationale for the interpreted position" (p.751), would be another "heroic interpretative assumption".

However, he seems to have recognized that Sraffa presented some textual evidence which, he believed, reveals a "rational foundation" underlying Ricardo's position. In fact, Peach (1984,p.736 et seq.) proceeds to argue that the pieces of evidence presented by Sraffa do

not support the "corn model" interpretation. Peach seems to have realized that the establishment of this point is a pre-condition for his conclusion that Sraffa's interpretation was "a projection on to Ricardo's writings: a figment of Sraffa's imagination" (p.750).

4. The evidence presented by Sraffa

Sraffa observes that the "corn-ratio" argument "is never stated by Ricardo in any of his extant letters and papers", but he presents some indirect evidence which, he believes, "echo" or "reflect" that "rational foundation" (1951a, p. xxxi-ii)

4.1. Malthus's critique of the "material rate of produce" upon the land

Sraffa suggests that Ricardo "must have formulated" the "corn-ratio" argument "either in his lost 'papers on the profits of Capital' of March 1814 [see VI, 102-5] or in conversation, since Malthus opposes him in the following terms which are no doubt an echo of Ricardo's formulation: 'In no case of production, is the produce exactly of the same nature as the capital advanced. Consequently we can never properly refer to a material rate of produce ... It is not the particular profits or rate of produce upon the land which determines the general profits of stock and the interest of money' [Letter of 5 Aug. 1814, VI, 117-8]."

Hollander (1979, p. 127-8) argues that "Ricardo's argument is perhaps extant; it may well be contained in the letter of 25 July ... upon which Malthus was actually commenting." He then quotes the relevant passage from Ricardo's letter of 25 July 1814 (VI, 114-5), emphasizing the following statement:

"The capitalist 'who may find it necessary to employ a hundred days labour instead of fifty in order to produce a certain quantity of corn' cannot retain the same share for himself unless the labourers who are employed for a hundred days will be satisfied with the same quantity of corn for their subsistence that the labourers employed for fifty had before." (VI, 114-5; the phrase quoted being from Malthus's letter to which this one is a reply, VI, 111)

Hollander (1979) thus recognizes a corn-ratio in this statement, but he rejects Sraffa's suggestion that Ricardo must have formulated his corn-ratio argument either in the lost manuscript on profits or in conversation. He thereby represents this "corn-ratio" statement as a casual reply to Malthus, rather than an integral part of Ricardo's early theory of profits.

Hollander (1983,p.168) says that Sraffa's reading of Malthus's comment as an "echo" of Ricardo's lost formulation is "entirely unconvincing", for it "neglects the context" of Malthus's objection. He argues:

"Malthus obviously had in mind neither Ricardo's manuscript nor his conversation as Sraffa suggests, but specifically Ricardo's letter of 25 July to which he was replying. There is no need then for any further speculation regarding the origin in Ricardo of Malthus's formulation."

However, the fact that "Malthus obviously had in mind ... Ricardo's letter of 25 July" does not warrant the conclusion that "Malthus ... had in mind neither Ricardo's manuscript nor his conversation as Sraffa suggests." This conclusion, not only does not follow from the premise, but it neglects the content and the context of Malthus's passage quoted by Sraffa. This passage includes the objection: "it is not the particular profits or rate of produce upon the land which determines the general profits of stock and the interest of money". However, Ricardo's letter of 25 July, to which Malthus was replying, contains no statement of Ricardo's position that "it is the profits of the farmer which regulate the profits of all other trades [and therefore the rate of interest]", as asserted in his letter to Trower of March 1814 (VI,104). Nor is the regulating role of the profits of agriculture stated in any other extant letter to Malthus before the reply of 5 Aug. 1814. Therefore one cannot accept Hollander's conclusion that "There is no need then for any further speculation regarding the origin in Ricardo of Malthus's formulation".

Instead of further "speculation", Sraffa presents additional facts. He observes (loc.cit.) that Malthus had argued before with Ricardo that "the profits of the farmer no more regulate the profits of other trades, than the profits of other trades regulate the profits of the farmer", as Ricardo let us know in his letter to Trower of March 1814 (VI,104). As noted elsewhere by Sraffa (1951b,p.3), this letter contains a summary of the argument in Ricardo's lost "papers on the profits of Capital", which he had written by March 1814, but which have not survived.¹ Sraffa notes that he "had shown" them to Malthus, as can be inferred from Trower's letter to Ricardo of 2 March 1814, where Trower mentions "your very interesting papers on the profits of Capital" and asks: "Have you Malthus's reply to you." (VI,102)

It is clear, therefore, that Malthus had read Ricardo's lost manuscript on profits. And what did he read there ? Something which appears summed up in Ricardo's letter to Trower of 8 March 1814:

"in short it is the profits of the farmer which regulate the profits of all other trades, - and as the profits of the farmer must necessarily decrease ... all other profits must diminish and therefore the rate of interest must fall" (VI,104)

Ricardo adds:

"To this proposition Mr. Malthus does not agree. He thinks ... that the profits of the farmer no more regulate the profits of other trades, than the profits of other trades regulate the profits of the farmer" (VI,104)

Returning to Malthus's letter of 5 August, we find him again denying Ricardo's position, in the following terms:

"It is not the particular profits or rate of produce upon the land which determines the general profits of stock

1 Sraffa (1951b,p.4,n.;VI,102,n.) suggests that the first part of the Essay on Profits (IV,10-26) may be a revised version of such "papers on the profits of Capital".

and the interest of money" (VI,118;emphasis mine)

He then argues:

"In no case of production, is the produce exactly of the same nature as the capital advanced. Consequently we can never properly refer to a material rate of produce" (VI,117)

Malthus seems to have understood Ricardo's theory as somehow connecting or identifying the rate of profits on the land with a "material rate of produce".

Hence Sraffa's conclusion that Malthus's objection in this letter of 5 Aug. 1814 is "no doubt" an "echo" of a "corn-ratio" argument which must have supported Ricardo's proposition stating the determining role of the profits of agriculture, either in the lost manuscript on profits on in conversation.

The difficulty posed by the textual evidence is that, where there is a corn-ratio, as in the letter to Malthus of 25 July, there is no statement of the determining role of the profits of agriculture; and where this role is stated, as in the March letter to Trower, there is no reference to a corn-ratio. Nevertheless, the connection between the two is suggested by Malthus's denial of both ideas together, in the letter of 5 August. It is also suggested by the fact that, in the March letter, Ricardo associates the regulating role of the farmer's profits with the proposition that they necessarily fall "unless there be improvements in agriculture" (VI,104); whereas, in the July letter, he argues that the profits of the farmer necessarily fall if it is "necessary to employ a hundred days labour instead of fifty in order to produce a certain quantity of corn ... unless the labourers who are employed for a hundred days will be satisfied with the same quantity of corn for their subsistence that the labourers employed for fifty had before" (VI,114-5). For Ricardo (as for Smith and Malthus), "improvements in agriculture" or new "facilities in the production of corn" will "afford the same produce with less labour", as he puts it in the

Essay (IV,19).

It seems evident that the regulating role of the farmer's profits and the material "rate of produce upon the land" - or rather the "corn-ratio" between the quantity of corn produced and the quantity of corn consumed for the subsistence of the labourers employed - are parts of the same argument in Ricardo's mind at that time (March-July 1814).

Since Ricardo assumes that the rates of profit must be uniform across all employments of capital, he could logically have added to the "corn-ratio" passage of the July letter a similar statement to the one in the March letter: "it is the profits of the farmer which regulate the profits of all other trades, - and as the profits of the farmer must necessarily decrease ... all other profits must diminish and therefore the rate of interest must fall" (VI,104). He did not. Yet Malthus included in his reply the objection: "It is not the particular profits or rate of produce upon the land which determines the general profits of stock and the interest of money".

However, Peach (1984) looks at the subsequent reply from Ricardo to Malthus in order to decide whether Malthus's objection is the "echo" which Sraffa believes it is. Peach argues that "If this had been so, we might expect Ricardo to have defended his 'corn model' assumptions when replying to Malthus". Having not found what "we might expect" - having found instead a distinction between the "estimation" of a nation's profits by money or by the "material production" comprising "commodities of all descriptions" (VI,121) - Peach suggests that "any previous reference by Ricardo to a 'material rate of produce' ... was not predicated on product-capital homogeneity" (p.737).

However, in view of Ricardo's previous letter to Malthus (25 July 1814), to which Malthus was replying, one may prefer not to accept Peach's suggestion, because in this letter one reads:

"The capitalist 'who may find it necessary to employ a

hundred days labour instead of fifty in order to produce a certain quantity of corn' cannot retain the same share for himself unless the labourers who are employed for a hundred days will be satisfied with the same quantity of corn for their subsistence that the labourers employed for fifty had before." (IV,114-5)

In this passage, Ricardo speaks of the "quantity of corn for their subsistence" as being the wages of the labourers, and thus these wages are conceived as consisting of corn. Moreover, since such labourers are employed in the production of corn it evidently follows that wages consist of the same commodity as the product, namely corn. Hence the "corn-ratio" between production and consumption, on which the profit "share" of the farmer depends.

Is Sraffa's "rational foundation" of Ricardo's determining role of the farmer's profits - "that in agriculture the same commodity, namely corn, forms both the capital (conceived as composed of the subsistence necessary for workers) and the product" - a mere "projection on to Ricardo's writings, a figment of Sraffa's imagination", as Peach concludes ?

Elsewhere in his argument, Peach (1984) comes to this letter of 25 July, though not in connection with Malthus's reply, or the "echo" suggested by Sraffa. Criticizing Hollander, Peach says that "surprisingly" he "divines" a "corn model" in this passage about the farmer's profits in the production of corn. He then argues that - as appears from the sentence following this passage (VI,115) - the production of corn is not supposed to be effected by "unassisted labour", and thus the capital employed by the farmer might include other inputs (particularly manufactures), besides wages advanced. This is indeed a possibility suggested by Ricardo's argument in this letter - irrespective of whether wages advanced consist only of corn, or, as Peach believes, include other commodities as well. This question is discussed in section 4.3 below in connection with Ricardo's explicit

inclusion of fixed capital in his description of the farmer's capital, in the argument of the Essay on Profits.

4.2. Ricardo's letter of June 1814

Sraffa (1951a,p.xxxii) points to a "striking passage" in Ricardo's letter to Malthus of 26 June 1814 as being the "nearest that Ricardo comes to an explicit statement on these [corn model] lines":

"The rate of profits and of interest must depend on the proportion of production to the consumption necessary to such production" (VI,108)

Hollander (1979,p.125) argues that, what Ricardo had in mind - and which "does not entail" the corn-model argument - is that the general rate of profit depends on the money wage rate, which is governed in turn by the money price of food. This is, indeed, stated by Ricardo himself immediately after the "proportion of production" statement in this letter.

Nevertheless, the fact that Ricardo had in mind the determination of the general rate of profits by means of the money prices of food and labour - and that this mechanism does not necessarily entail the corn-model reasoning - is not a proof that Ricardo did not have in mind a corn model. Hollander argues as if the former excluded the latter. Thus, for instance, he argues in his 1983 article that "the mechanism whereby manufacturing profits were already envisaged in 1814 as coming into line with those in agriculture entails upward pressure on money wages due to higher corn prices, and not that claimed by Sraffa" (p.172;emphasis mine) - "namely that 'if there is to be a uniform rate of profit in all trades it is the exchangeable values of the products of other trades relatively to their own capitals (i.e. relatively to corn) that must be adjusted so as to yield the same rate of profit as has been established in the growing of corn'" (p.173;the quotation being from Sraffa, 1951a,p.xxxi).

However, in Ricardo's "doctrine of 1814 regarding the squeeze on profits" (as Hollander describes it), how can the profits in other trades come into line with

diminished profits in agriculture by means of an "upward pressure on money wages due to higher corn prices", unless, as Sraffa describes, the exchangeable values of the other products fall relative to corn? How could a rise in the money prices of corn and labour lower profits in the production of manufactures if their money prices increased in the same proportion as, or in greater proportion than, the price of corn - that is to say, if their exchangeable values did not fall relative to corn?

As Hollander himself notes (1979, p.127), Ricardo thought at the time that the rise in the money prices of woollen or cotton manufactures "will not be in the same proportion as the rise of labour" (letter to Malthus of 11 Aug. 1814, VI, 120). Their exchangeable values will a fortiori fall relative to corn, since the money wage rate is certainly not supposed to rise in greater proportion than the money price of corn.

However, Hollander (1983) argues as if Ricardo thought of the mechanism of money prices without realizing that it entails changes in relative prices, i.e. exchangeable values. But one finds Ricardo, in this same letter of June 1814, explicitly referring to the rise in the value of corn as the means of lowering the rate of profit (and therefore the rate of interest):

"[If by refusing to import corn and all other commodities] a country were to enhance the value of the raw materials which it consumed, of which corn is the principal, it would thereby lower the rate of interest" (VI, 109)

Thus, it seems, it is by increasing the value of corn, not merely its money price, that restrictions on importation will lower the rate of profits - through the money price and value of labour.

Evidently, the rise in the money price, or rather in the value of corn, can squeeze the profits in other trades, but not in the production of corn. Here, no value changes can alter the ratio between the value or money price of the product and the value or money price of the

corn consumed, since both consist of the same commodity.

This is why, Sraffa suggests, Ricardo states in his letter of June 1814 that the rate of profits must depend on the "proportion of production to the consumption necessary to such production" - this proportion being understood as referring to the ratio between output and consumption of corn (as subsistence for the workers) in the production of corn.

However, Peach (1984, p.736-7) argues that "it is contextually obvious that the 'proportion of production...' expression does not specifically refer to events in the agricultural sector" - "contextually", that is, in the context of his quotation from this particular letter - and thus Ricardo does not seem to "apply the expression to agriculture on the assumption that corn is both the output and sole input", as Sraffa's reading has it.

Indeed, there is no particular reference to agriculture in Ricardo's statement; nor can it be inferred from the paragraph, or indeed the whole letter in which it is contained. However, this particular letter is of course part of a correspondence; and the reference to agriculture may be a necessary part of the ongoing discussion. Let me examine this possibility.

In this letter to Malthus, Ricardo closes his argument thus:

"This is a repetition you will say of the old story, and I might have spared you the trouble of reading ... what I had so often stated to you as my opinion before" (VI,109)
 What was it that Ricardo had stated to Malthus before? One statement is certain:

"it is the profits of the farmer which regulate the profits of all other trades, - and as the profits of the farmer must necessarily decrease with every augmentation of Capital employed on the land [presumably from diminished productivity of labour] ... all other profits must diminish and therefore the rate of interest must fall. ... Mr. Malthus does not agree. He thinks ... that

the profits of the farmer no more regulate the profits of other trades, than the profits of other trades regulate the profits of the farmer" (letter to Trower of 8 Mar. 1814, VI,104)

Thus, Ricardo had thought in March 1814 that the rates of profit and interest depend on the rate of profits of the farmer, which must decrease if the productivity of agricultural labour diminishes. If he thought likewise in June 1814 (as he did in the Essay of Feb. 1815), the statement that "The rate of profits and of interest must depend on the proportion of production to the consumption necessary to such production" might mean that the rates of profit and interest must depend on the "proportion of production ..." in agriculture.

In fact, Malthus replies to Ricardo's "repetition of the old story" in the June letter, in the following terms:

"the proportion of production to the consumption necessary to such production, seems to be determined by the quantity of accumulated capital compared with the demand for the products of capital, and not by the mere difficulty and expense of procuring corn. If it [is] necessary to employ a hundred days labour instead of fifty, in order to produce a certain quantity of corn, there seems to be no reason whatever that the person who possesses an accumulation sufficient to make the necessary advances should have a less remuneration for his capital ... In short all will in my opinion depend upon the state of capital compared with the demand for it. This will be the prime mover, and it is this which will determine the profits which a capital employed in agriculture shall yield, whether the land be naturally rich or naturally poor, much worked or little worked" (letter of 6 July 1814, VI,111)

It seems therefore that Malthus understood Ricardo's "proportion of production ..." expression as a reference to "the profits which a capital employed in agriculture shall yield". He argues that it is the general rate of

profits which determines the profits of the farmer, or the "proportion of production ..." (not the productivity of labour in the production of corn).

Malthus was in a far better position than we are now to understand what Ricardo meant by "proportion of production" in this June letter - because Ricardo "had so often stated" the "old story" to him. Besides, what he understood matches neatly what Ricardo stated in the letter to Trower of March 1814 and in the Essay on Profits of Feb. 1815. It seems, therefore, that "in agriculture" or "in the production of corn" may be read in Ricardo's expression "proportion of production to the consumption necessary to such production".

However, did Ricardo conceive "the consumption necessary to such production" as consisting of the subsistence necessary for workers, namely corn, as Sraffa suggests? It seems he did, for he replies to Malthus:

"The capitalist 'who may find it necessary to employ a hundred days labour instead of fifty in order to produce a certain quantity of corn' cannot retain the same share for himself unless the labourers who are employed for a hundred days will be satisfied with the same quantity of corn for their subsistence that the labourers employed for fifty had before" (letter of 25 July 1814, VI, 114-5)

In his reply to this letter, Malthus repeats what he had argued in the previous reply to the "old story":

"we can never properly refer to a material rate of produce, independent of demand, and of the abundance or scarcity of capital [and therefore independent of the general rate of profits]. The more I reflect on the subject, the more firmly I feel convinced, that it is the state of capital, or the general profits of stock and interest of money, which determines the particular profit upon the land; and that it is not the particular profits or rate of produce upon the land which determines the general profits of stock and interest of money" (letter of 5 Aug. 1814, VI, 117-8)

Although nearly an explicit statement on "corn

model" lines, Ricardo's "proportion of production" assertion, considered in the context of this particular letter of June 1814, still falls short of such a statement. However, the missing elements are found in the preceding and subsequent correspondence. Thus the passage in question, considered in the context of the correspondence, does support Sraffa's interpretation.

4.3. The numerical examples in the "Essay on Profits"

In attributing the "corn-ratio" reasoning to Ricardo, Sraffa mentions the numerical examples in the Essay, which he thinks "reflect this approach; and particularly in the well-known Table which shows the effects of an increase of capital, both capital and the 'neat produce' are expressed in corn, and thus the profit per cent is calculated without need to mention price" (Sraffa, 1951a, p. xxxi-ii).

Hollander (1973, p. 274; 1979, p. 136-7) argues that the Table in the Essay is made up of values in terms of corn - Ricardo's description of the value of the farmer's capital explicitly including fixed capital. Thus there is no assumption or implication of physical homogeneity between capital and produce - corn being merely the numeraire:

"capital is 'estimated in quarters of wheat', but does not consist entirely of wheat" (1979, p. 137)

In fact, in the Essay's numerical examples, capital employed in agriculture explicitly includes "fixed capital, such as buildings, implements, &c." (IV, 10).

In his 1983 article, Hollander purports to examine once again the evidence presented by Sraffa, but he does not examine Sraffa's reading of the Table in the Essay, nor does he insist on the points he had made against such reading.

It is clear that Sraffa does not argue that the relevant variables in the Table are physical quantities of corn; he merely argues that they are expressed in corn. Nor therefore does he argue that the numerical examples are an explicit formulation of the "corn model" argument - an argument which, he recognizes, "is never stated by Ricardo in any of his extant letters and papers". He suggests merely that they "reflect" such argument.

However, the other point made by Hollander - that in the Essay's numerical examples agricultural capital does

not consist entirely of the same commodity as the produce, namely corn - would seem to be a valid objection against Sraffa's corn-ratio interpretation, yet Hollander does not insist on this. He seems to have withdrawn this particular objection, for one reads in a previous article which he had written with Hicks:

"Notice (1) that the Essay on Profits (from which the whole story begins) uses a purely circulating capital; and (2) the central importance that is attached [in Ricardo's Principles] to the labor theory of value. The latter, as Ricardo explains it, is clearly the result of beginning from a model with no fixed capital and equal periods of production in all industries." (Hicks & Hollander, 1977, p. 368, n.)¹

Hollander's objection - that, in the Essay, agricultural capital does not consist entirely of corn (but includes fixed capital) - is taken up by Peach (1984, p. 738; 1988, p. 108) and Facarello (1986, p. 196). Peach (1988, p. 108) argues:

"[the illegitimacy of Sraffa's "corn model" interpretation] is exposed by cases where a lead role for agriculture is claimed by Ricardo when corn model assumptions are manifestly violated. Take the Essay, in which Ricardo explicitly allows that inputs to agriculture include 'buildings, implements, &c.' [Works, vol. IV, p. 10]. Unless these things were made out of corn, his later pronouncement [that 'general profits of stock depend wholly on the profits of the last portion of capital employed on the land' Essay, Works, vol. IV, p. 21] ... was evidently not thought by him to be contingent on corn model assumptions."

This is a simple and strong point: the supposed underlying rationale - that "in agriculture the same

1 For his part, Hicks does not reject Sraffa's "corn model" interpretation, in respect of the Essay on Profits: "It is afterwards that our roads diverge." (1985, p. 313, n.)

commodity, namely corn, forms both the capital ... and the product" (Sraffa, 1951a, p. xxxi) - is contradicted by Ricardo's explicit inclusion of "fixed capital, such as buildings, implements, &c." (IV, 10). Let me examine this contradiction more closely.

In the Essay's numerical examples of his theory of changes in rents and profits on the land, Ricardo describes the rate of profits of the farmer at the no-rent marginal land as: $\frac{\text{revenue minus circulating capital}}{\text{circulating capital plus fixed capital}}$, where the variables are values expressed in corn, circulating capital consists of the current expenses of production, and fixed capital consists of "buildings, implements, &c." (IV, 10).

Nevertheless, in the same numerical examples, the corn value of fixed capital employed on the marginal land remains constant as the marginal land becomes less fertile or more distant. This can be inferred from Ricardo's Table (IV, 17), where capital employed on successively worse marginal lands, in order to obtain the same produce, increases from 200 to 210, and then to 220... quarters of wheat; while the "net produce" after paying the "cost of production" (out of the same gross produce) is thereby diminished from 100 to 90 and then to 80... quarters of wheat. The differences in capital employed (fixed plus circulating) are thus equivalent to the differences in cost of production (circulating capital), so that the value of fixed capital is invariably the same.

However Ricardo does not suppose explicitly, nor does he seem to assume deliberately, that the corn values of fixed capital remain constant. Nor would he consciously believe so, for he later accepts Malthus's comment that the corn values of fixed capital would become lower as a result of the concomitant rise in the exchangeable value of corn (letter from Malthus of 12 March 1815, VI, 185; letter to Malthus of 14 March 1815, VI, 189).

Ricardo's argument using numerical examples thus

involves an inconsistency, of which he does not seem to have been aware until Malthus pointed it out. Another inconsistency resulting from the inclusion of fixed capital, of which Ricardo was later to become aware, affects the adjustment of values and prices in order for the profit rates of all sectors to be uniform. This adjustment as described in the Essay (IV,19-20) is incompatible with different proportions of fixed to circulating capital in different sectors. It seems therefore that fixed capital is not formally incorporated into the analytical argument of the Essay. It is not properly treated in the explanation of the variations of the rate of profits in agriculture, nor is it taken into account in the explanation of the adjustment of the profit rates in other trades to the rate in agriculture.

In his numerical examples, Ricardo seems to have included fixed capital merely as a nominal entity - perhaps as a concession to realism in the description of the farmer's rate of profits. This description is itself formulated as a numerical, quasi-empirical illustration: "if the capital employed by an individual on such land were of the value of two hundred quarters of wheat, of which half consisted of fixed capital, such as buildings, implements, &c. and the other half of circulating capital - if, after replacing the fixed and circulating capital, the value of the remaining produce were one hundred quarters of wheat, or of equal value with one hundred quarters of wheat, the neat profit to the owner of capital would be fifty per cent. or one hundred profit on two hundred capital." (IV,10)

That the inclusion of fixed capital is merely nominal, being a concession to realism, is suggested not only by the fact that fixed capital is not formally integrated into the analysis, but also by the fact that it is mentioned again in a footnote (IV,15-6,n.) where Ricardo seems to have been concerned with the realism of his argument, as he talks of the relation of his imaginary "data" to actual reality. He says, in

particular: "In proportion as the capital employed on the land, consisted [in reality] more of fixed capital, and less of circulating capital, would rent advance, and property [profits] fall less rapidly [than in these numerical examples]".

In addition, this passage suggests that Ricardo may have initially developed his argument and numerical calculations with circulating capital only, and subsequently included fixed capital, re-worked out the numbers and observed that profits fell "less rapidly". This new conclusion (added in a footnote) seems to contradict the statement in the text that "the degree of the fall of profits, and the rise of rents, depends wholly on the increased expense of production" (IV,18) - which can only be true if capital consists solely of the expense of production (i.e. circulating capital).

Hicks & Hollander (1977, p.368) suggest:

"[In Ricardo's Principles, fixed capital] is so far absent that it is tempting to conjecture that the Ricardian system was first worked out in circulating capital terms"

If it is "tempting to conjecture" this, in considering the Principles, then it becomes an irresistible conjecture when considering the Essay. In fact, if Ricardo had not included fixed capital (as a constant) in his numerical examples, he could still have developed the same argument about the causes and direction of changes in the agricultural rate of profits and in general profitability. The only difference affects the "rapidity" or rate of change of profitability in relation to variations in circulating capital.

Ignoring changes in the corn values of fixed capital - if not ignoring fixed capital altogether - Ricardo comes in the course of the argument in the Essay to the conclusion that nothing can affect the profitability of agriculture unless it changes "the produce compared with the cost of production on the land" (IV,26) - "cost of production" being treated as equivalent to circulating

capital. This ratio between produce and circulating capital - or, which is the same thing, the profit margin relative to cost of production - is either identified with the rate of profits on capital employed, or considered to be the unique determinant of it. If fixed capital is considered at all, it is considered as an inert entity, i.e. a constant, which does not affect this exclusive dependence. From the point of view of changes in the agricultural rate of profits, therefore, capital employed upon the land is virtually reduced to circulating capital.

Ricardo considers the rates of profit of other sectors too as depending entirely on their profit margins relative to cost of production - cost of production, or circulating capital, consisting of wages advanced. Fixed capital is never mentioned in the Essay's references to the profit rates of such sectors (other than agriculture), though "machinery" is mentioned as affecting the labour costs per unit of product and therefore their exchangeable values.

Ricardo's ignoring endogenous changes in the value of fixed capital employed on the land - if not completely ignoring fixed capital itself - still allows him to think of the rate of profits in agriculture as an independent variable that "regulates" the profit rates in all other sectors. He thinks so because he considers "the produce compared with the cost of production on the land" as being determined independently of the exchangeable values of commodities and of the profit rates elsewhere. The proposition that the general rate of profits is regulated by the rate of profits of agriculture is thus based on an independence which is peculiar to the profit margin relative to cost of production in agriculture.

Why, then, is "the produce compared with the cost of production on the land" independently determined, so that it is the rate of profits in agriculture which "regulates" the profit rates in all other sectors? A hint is given in the Essay:

"Profits [of agriculture] might even increase, because ... wages might fall; and instead of the value of one hundred quarters of wheat being necessary for the circulating capital, ninety only might be required [to obtain the same produce]" (IV,11;emphasis mine)

(Here again, a change in the profit margin relative to cost of production - cost of production or circulating capital consisting of wages advanced - is entirely sufficient to determine a change in the rate of profits of agriculture.) The ratio between produce and wages advanced is stated to change from an independent variation in the amount of wages expressed in terms of wheat - that is to say, in terms of the agricultural product. This continues to be so in the argument and numerical examples that follow, at the same time as the values of all other commodities in terms of wheat must change - both because all other profits must come into line with the changing profitability of agriculture, and because the exchangeable value of corn must rise from the increasing "difficulty" of production. Thus, the circulating capital employed on the land is independently determined as a value in terms of corn, and therefore "the produce compared with the cost of production on the land" is determined independently of such changes in the value of corn. This makes no sense unless circulating capital consists of no commodity other than corn - that is to say, unless circulating capital is composed exclusively of the same commodity as the agricultural product - and thus "the produce compared with the cost of production on the land" is a ratio between quantities of corn, being independent of the relative prices of commodities.

It does seem, therefore, that the numerical examples in the Essay "reflect" the "corn-ratio" approach - as suggested by Sraffa - even though the corn-ratio appears disguised as the ratio of produce to the corn value of circulating capital, and is further disguised by the inclusion of fixed capital in the calculation of the

farmer's rate of profits.

However, Sraffa also argues that, in such numerical examples, particularly in the Table, "both capital and the 'neat produce' are expressed in corn, and thus the profit per cent is calculated without need to mention price". Here, one must agree with Hollander that "the corn calculation of the table cannot carry the weight which Sraffa wishes to place upon it" - since, in that table, "capital is 'estimated in quarters of wheat', but does not consist entirely of wheat" (Hollander, 1979, p. 162-3, 137). There is then the "need to mention price", and Ricardo does mention the value of fixed capital in terms of wheat when calculating the rate of profits of the farmer (IV, 10; quoted above).

However, these facts cannot carry the weight which Hollander wishes to place upon them in rejecting Sraffa's corn-ratio interpretation. In spite of including fixed capital in his initial calculations of the profitability of agriculture, Ricardo proceeds in his argument by making this profitability depend wholly on "the produce compared with the cost of production on the land" - focusing on changes in circulating capital and ignoring (as Malthus pointed out) the fall in the corn value of fixed capital as cultivation expands and the value of corn rises relative to all other commodities.

In sum, although the numerical examples in the Essay may be considered prima facie counter-evidence to Sraffa's "rational foundation", owing to the explicit inclusion of fixed capital - and this is not taken into account in Sraffa's description of such numerical examples as "reflecting" the corn-ratio approach - a closer examination leads one to the conclusion that fixed capital is not an integral part of the theory of profits which underlies the textual argument in the Essay. In this underlying analysis, capital consists of wages advanced, and wages advanced consist of "food" or "corn". As Sraffa pointed out, this is the logical basis of the proposition that general profits are regulated by the

profits of agriculture.

5. Facarello's critique

In Sraffa's description of the "corn model", he states that, in agriculture, the determination of the rate of profit "is done directly between quantities of corn without any question of valuation ... no value changes can alter the ratio of product to capital, both consisting of the same commodity". It is clear that this statement means that this is so in agriculture. Sraffa adds:

"if there is to be a uniform rate of profit in all trades it is the exchangeable values of the products of other trades relatively to their own capitals (i.e. relatively to corn) that must be adjusted so as to yield the same rate of profit as has been established in the growing of corn" (Sraffa, 1951a, p. xxxi)

It is evident here that the general rate of profits is not independent of exchangeable values, i.e. of relative prices.

Yet Facarello describes Sraffa's "well-known" interpretation thus:

"Sraffa's well-known interpretation of the early Ricardian theory of profits ... is illustrated by the simple scheme of the 'corn-profit model', in which one agricultural product (called 'corn' or 'wheat') is the only basic commodity. The rate of profit is thus independent of the methods of production prevailing in any other trade and of the price system itself" (Facarello, 1986, p. 195; emphasis mine)

Facarello attempts to prove the "historical irrelevance" of this "corn-profit model", not of Sraffa's.

He argues that Ricardo's profit determination - in the 1813-15 correspondence and in the Essay on Profits, including the instances presented by Sraffa in support of his interpretation - is logically and textually bound with price determination according to the concept of "natural price" (i.e. the price which pays the general

rates of wages, profits and rent). Having represented the general rate of profits in Sraffa's corn model as being "independent of the price system", he concludes:

"Sraffa's model not only is at variance with the inner logic of Ricardo's 1813-15 texts but also represents a misreading of the dialectic of the Ricardo-Malthus correspondence from which it draws some of its crucial evidence. It would appear that Sraffa took over some of Malthus's misunderstanding of Ricardo's approach to prices [when Sraffa interprets Malthus's "corn model" objections to Ricardo as being an "echo" of Ricardo's own formulation]" (p.189)

It rather appears that Facarello has misread and misunderstood both Ricardo's early approach to profits and Sraffa's interpretation of it. He has obviously misrepresented the latter.

That Facarello has misunderstood and misinterpreted Ricardo's early position on profit determination appears from his account of the proposition that "it is the profits of the farmer which regulate the profits of all other trades", stated in Ricardo's letter to Trower of March 1814 (VI,104).

Facarello finds in a footnote of the Essay on Profits a passage which, he says, "restates" the terms of Ricardo's proposition in the letter to Trower. The passage reads:

"I am only desirous of proving that the profits on agricultural capital cannot materially vary, without occasioning a similar variation in the profits on capital, employed on manufactures and commerce" (IV,12,n.)

Facarello first says (p.196) that he "can even add" this "restatement" as a "second argument" to the one which, in support of the "corn model" interpretation, was presented by Sraffa on the basis of the numerical examples in the Essay. He later "comes back" to this "argument" of his own making, only to reject it:

"The context shows unambiguously that it [that passage of

the Essay which "restates" the proposition in Ricardo's letter to Trower] must be accepted in the broad sense of a fall of the general profit rate due to the rise in the price of food, and not to the decrease in the profits upon the land: 'general profits on capital, can only be raised by a fall in the exchangeable value of food' (ibid., p.22). 'A fall of a [in the] price of corn, in consequence of improvements in agriculture or of importation, will lower the exchangeable value of corn only - the price of no other commodity will be affected. If, then, the price of labour falls, which it must do when the price of corn is lowered, the real profits of all descriptions must rise; and no person will be so materially benefited as the manufacturing and commercial part of society' [ibid., pp.35-6]" (Facarello, 1986, p.197)

However, the context does not "show unambiguously" that the passage in question "must be accepted in the broad sense of a fall of the general profit rate due to the rise in the price of food, and not to the decrease in the profits upon the land". In the immediate context of the passage, the fall in the general rate of profits (from 50% to 43% and then to 36%,...) is due to the decrease in the profits upon the marginal land, and there is no mention of the rise in the price of food. The statement itself to which the footnote is appended reads: "In this state of society, when the profits on agricultural stock, by the supposition, are fifty per cent. the profits on all other capital ... will be also, fifty per cent." (IV,12)

Indeed, the Essay states unambiguously that general profits on capital can only be raised or lowered by a fall or rise in the exchangeable value of food. Nevertheless, it also states unequivocally that "general profits of stock being regulated by the profits made on the least profitable employment of capital on agriculture" (IV,13), or that "general profits of stock depend wholly on the profits of the last portion of capital employed on the land" (IV,21). These propositions

are . no doubt re-statements of the regulating-profits-of-agriculture proposition in Ricardo's letter to Trower (except, perhaps, for incorporating Malthus's "marginal" concept of "last portion of capital employed", as shown in chapter 4, section 4.2 above). Facarello leaves these propositions out of his account when criticizing Sraffa's "corn model" interpretation of such propositions.

As to the dependence of the general rate of profits on the "price system" (to use Facarello's expression), Sraffa explains that, if the profits in agriculture are determined independently of values, and if there is to be a uniform rate of profit in all trades, then the values of the products of other trades must be adjusted relative to corn so as to yield the same rate of profit as has been established in the growing of corn. Thus, "general profits on capital, can only be raised by a fall in the exchangeable value of food" - as stated by Ricardo (IV,22) and quoted by Facarello against Sraffa's interpretation. In terms of money prices, this "adjustment" of relative prices can only take place if the money prices of the products of other trades rise or fall relative to the money prices of corn and labour - as in the passage of the Essay (IV,35-6) which Facarello quotes as though it were incompatible with Sraffa's interpretation.

6. Conclusion

In his 1983 article, Hollander concludes:

"I submit that Sraffa's evidence is unconvincing for the reasons given ... My interpretation, by contrast, has the merit that it does not turn on the possible content of some apparently no longer extant 'more explicit statements' by Ricardo of his position. I base my case on the open books before us." (p.174)

In the "books", pertaining to the period 1813-15, it is obvious that changes in the productivity of labour in agriculture exert their influence on the general rate of profits by means of changes in the money price of food and the money wage rate. Hollander submits something like this¹ as his interpretation of Ricardo's early theory of profits. However, there is no need for an interpretation here, mere reading being sufficient.

By contrast, in the same "books" one reads the recurrent proposition that general profits are "regulated" by the profits of agriculture, without a reason being stated. In this case, an interpretation is necessary, even if only to establish that no particular reason is involved. Sraffa submits an interpretation of this proposition, whereas other writers refuse even to read it in the "open books", denying that Ricardo had in mind what he unequivocally stated, that is, denying that he had in mind a determining role of the profits of agriculture (Hollander), or a determining role of the profits of agriculture (Peach).

Sraffa's interpretation is evidently based on the "open books before us" - including "books" that he himself recovered and opened up to us, like the letters of Malthus to Ricardo.

1 Hollander misreads Ricardo's clear references to productivity of labour, by substituting for it "productivity of labour-and-capital" (1973,p.278,n.) or "productivity of agricultural resources" (1979,p.124).

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