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Quesnay and the analysis of the surplus in an agrarian capitalist economy*

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Abstract

In order to discuss the ‘rational foundation’ of certain aspects of Quesnay’s theory we use a simple formalization of the necessary connections between assumptions about the techniques in use, the distribution of income between the classes and sectors, the system of relative prices. We argue that Quesnay’s system was a truly capitalist agrarian economy and that he was indeed a pioneer of the classical political economy/surplus approach to economics as identified first by Karl Marx, Piero Sraffa and Pierangelo Garegnani, the physical surplus of grains being the necessary basis for his analysis of the distribution and relative prices.

Key Words: Physiocracy, Capitalist Agrarian Economy, Surplus Approach, Classical Political Economy.

JEL codes: B11; B12.

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I Introduction

The interpretations of Quesnay's contributions to economics are highly controversial. They range from one extreme, where Quesnay and the Physiocrats are seen as defenders of "feudalism" and the *Ancien Régime* to the other extreme where they are depicted as promoters of unbridled economic liberalism under capitalism. Between these extremes there are all sorts of intermediate positions and also those who point out that the Physiocratic system of ideas is fundamentally contradictory¹.

This paper is an attempt, necessarily modest due to the intrinsic difficulty of the topic and the vast and controversial literature, to shed some light on the 'rational foundation' of some aspects of Quesnay's theory. We want to discuss the question of Quesnay's view of the capitalist character of modern agriculture and are also particularly concerned with some issues raised by Sraffa (and much earlier by Marx) concerning the central role of the physical surplus (of grains) in Quesnay's theory, a role that is sometimes denied by commentators given the fact that the *produit net* (net product) is actually defined as a value magnitude.

As a tool, we make use of a simple formalization of the necessary connections between assumptions about the techniques in use, the distribution of income between the classes and sectors and the system of relative prices. We argue that Quesnay's system depicted a truly capitalist agrarian economy with nothing feudal about it. And we try to show that he was indeed a pioneer of the classical political economy/surplus approach to economics as identified first by Karl Marx, Piero Sraffa and Pierangelo Garegnani, the physical surplus of grains being the necessary basis for his analysis of distribution of income and relative prices.

The paper is organized as follows. Section II takes a closer look at Physiocracy as a political project. Section III recalls the main ideas of the Physiocratic system. Section IV deals with the analytical role of the physical surplus of grains. Section V deals with relative prices. Section VI examines the distributive variables in the context of a vertically integrated grains sector. Section VII offers brief final remarks.

¹ For a critical survey of these disparate views see McNally (1990).

II Physiocracy as a political project.

Quesnay's economic writings were written between 1756 and 1774 during the reign of Louis XV. France was increasingly lagging behind England from both the economic and geopolitical point of view. The defeat against England in the Seven Years War was a clear demonstration of this decline. To Quesnay, France at the time was economically underdeveloped (especially if compared to England), going through endemic food scarcity and periodic famines (Vaggi, 2002, 2004). Quesnay himself estimated that the population of the country had fallen from 24 to 16 million people from 1650 and 1750 (INED, 2005, p. 208, p. 259-260)².

Quesnay and the Physiocrats were concerned with the issue of good governance that would allow France to regain its supremacy in Europe from the political, military or economic point of view. In the conception of the Physiocrats, wealth was the basis of the power of a nation, since "wealth, much more than men, sustains the war" (INED, 2005, p. 437)³. In their view, the only way for France to compete with its powerful English neighbour was, then, to increase the country's wealth. Quesnay saw wealth as being the result of production, not of trade. For him the main purpose of the French government should be the implementation of reforms that could increase the size of the surplus product of the economy, which he called *produit net*. Quesnay was following the tradition of the surplus approach that started much earlier in England with William Petty (Roncaglia, 1977; Aspromourgos, 1996).

Quesnay and the Physiocrats consider that Political Economy is the study of the functioning of society, according to the principles of the *Ordre Naturel* (natural order) or *Lois Naturelles* (natural laws) and their permanent intrinsic logic and optimal nature (INED, 2005, p. 1010-1032). Besides, "the nation should be given instruction in the general laws of the natural order, which constitute the form of government which is self-evidently the most perfect" (INED, 2005, p. 566)⁴. The term *physiocratie*, which was coined by Quesnay's follower Dupont de Nemours in 1767 (Fox-Genovese, 1976, p. 9),

² The reliability of these figures is actually questionable, since modern studies show a slight increase of French population during this period (Dupaquier, 1988; Beauvalet-Boutouyrie, 2008).

³ "Ce sont bien moins les hommes que les richesses qui soutiennent la guerre".

⁴ "Que la nation soit instruite des lois générales de l'ordre naturel qui constituent le gouvernement évidemment le plus parfait".

clearly indicates that natural laws should prevail⁵. So there are immutable natural laws that should be studied and taught. It is only by respecting these rules that the economic system of a country can reach its full potential. The diversity of human institutions would only be a reflection of the lack of knowledge of the natural order by both the people and the rulers. In the Physiocratic approach, the social order is immutable, natural and physical. Hence, to the Physiocrats, Political Economy should study this ‘social physical order’ as guided by natural laws. They define Political Economy as “a physical science, accurate, clear and complete, the science of law, order, and natural government”⁶ (Dupont de Nemours, [1767], in Daire, 1848, p. 23). Quesnay and the Physiocrats had a materialist and scientific conception of society (Meek, [1962], 1993, p. 376; Vaggi, 1987, p. 20). In their view, material production determines both the structure and the mode of functioning of societies:

“The foundation of society is the subsistence of men and the wealth necessary to provide the authority required to defend them”⁷. (INED, 2005, p. 122)

Quesnay, in a handwritten note on a text by Mirabeau writes that “for us, everything is physical, and the moral comes from it”⁸ (INED, 1958, p. 734).

Besides, wanting to discover and expose the laws of natural order, the Physiocrats had the political ambition to implement these rules in the economy and in the society. They defended the idea of adopting a *despotisme légal* (legal despotism), where the absolutist king should know and follow the laws of natural order and disseminate it in his kingdom, through education and the creation of a suitable legislative framework (INED, 2005, p. 1010-1031). The *despotisme légal* of the Physiocrats, a notion that led to a lot of confusion among analysts of their work, must be understood as a translation and dissemination of the laws of nature in the society so that it reaches a higher level of development (Fox-Genovese, 1976, p.50). In the natural order, for example, private property is an essential

⁵ The term *Physiocratie* is formed from the Greek words *fūsis* (nature) and *cratéin* (dominate).

⁶ “Une science physique, exacte et complète, celle du droit, de l’ordre, des lois et du gouvernement naturel”.

⁷ “Le fondement de la société est la subsistance des hommes, et les richesses nécessaires à la force qui doit les défendre”.

⁸ “Pour nous, tout est physique, et le moral en dérive”.

droit naturel (natural right) because Quesnay was convinced that “in the absence of surety of ownership the territory will remain uncultivated”⁹ (INED, 2005, p. 567).

Quesnay dreams of a *Royaume Agricole* (Agricultural Kingdom), where compliance with the laws of natural order and a prosperous agriculture, using the most efficient techniques and organization, would ensure France a prominent place in the world. Given the scientific conception of the natural order, this ‘government of nature’ was actually a ‘government of science’, where “If the torch of reason illuminates the government, all positive laws harmful to society and to the sovereign will disappear”¹⁰ (INED, 2005, p. 122). He believes that absolutism is the best political system, but it must respect the rules of natural economic order, which was not the case in the France of Louis XV. Therefore, the absolutist government must help the introduction of capitalism in agriculture. By capitalism in agriculture, we here mean a system in which, in that sector, production is undertaken for money profit and workers sell their labour for a wage, employing techniques associated with an intensive use of produced means of production, owned by the capitalist farmers. It is important to note that we are not including in our definition of capitalism the free mobility of capital among different sectors and perhaps not even necessarily between different products within the same broad sector. Free capital mobility would characterize fully competitive capitalism for the whole economy, which of course was neither what Quesnay wrote about, nor existed at that time in France¹¹.

It is interesting to note that the Physiocrats themselves set the rules of the game, i.e., ‘discovered’ the natural laws. In this sense, despotism serves the purpose of the Physiocrats because it ensures that these natural laws are respected and that the mechanisms of the ‘machine of prosperity’ designed by the Physiocrats can function

⁹ “Sans la certitude de la propriété le territoire resterait inculte ”.

¹⁰ “Si le flambeau de la raison [...] éclaire le gouvernement, toutes les lois positives nuisibles à la société et au souverain, disparaîtront”.

¹¹ Contemporary of Quesnay, Turgot wrote about the mobility of capital in his *Réflexions sur la Formation et la Distribution des Richesses* (1766 [1997]), where he “conceives of the emergence of a uniform rate of return as the outcome of the competitive process” (Kurz & Salvadori, 1995, 39). Turgot can be considered a “fellow-traveller of the Physiocrats” (Meek, [1962] 1993, p. 311) in many ways, even if he “always refused to associate himself with the more doctrinaire aspects of physiocracy” (Fox-Genovese, 1976, 66). “Turgot was acquainted with Quesnay’s work on the theory of capital” (Groenewegen, 1971) but “Turgot, although he held views similar to them on a variety of topics, was not a member of the school [physiocracy]” (Groenewegen, 2002, p. 237).

correctly. Unlike Petty, Quesnay established a clear distinction between the tasks of the state and the role of civil society, even if Petty probably gave more emphasis to the role of the State. In fact, Petty often spoke indiscriminately of the State and the economy, not always distinguishing clearly the role of each one (Milgate & Stimson, 2004).

The accusation sometimes made against Quesnay of wanting to establish a “neo-medieval society” (Beer, 1939 [1966]) is thus unjustified. Quesnay is part of the movement of the Enlightenment in the sense that he realizes the need for a reform of social and economic structures¹². Besides, he wrote several articles for the *Encyclopédie* (Encyclopedia) of Diderot and d'Alembert¹³.

Quesnay and the Physiocrats had a radical but reformist agenda. They wanted a ‘revolution from above’, in which the *gouvernement économique* (economic government [INED, 2005, 565-596]) ruled by a legal despot would stimulate the full development of capitalism in agriculture in order to increase the wealth and military power of the French State. As pointed out by McNally (1990), the Physiocrats were not representing the interests of the existing agrarian *bourgeoisie*, since at that time this class did not really exist yet in France as a true political force. Quesnay was advocating for a massive expansion of capitalist farming in agriculture, which would be in the interests of the State and ultimately also of the landowners¹⁴.

¹² For a detailed analysis of the connection between physiocracy and Enlightenment, see Fox-Genovese (1976, p.43-52).

¹³ The entries “Evidence” (evidence), “Fermiers” (farmers), “Grains” (grain), “Hommes” (men) and “Impôts” (taxes) were written to be inserted in the *Encyclopédie*, anonymously, because Quesnay feared reprisals by the royal power that he served as court doctor.

¹⁴ Perhaps the political failure of the Physiocratic reforms before the French Revolution had more to do with the weakness of agrarian capitalist interests at the time.

III The Physiocratic System.

Quesnay divides society into three classes to explain the functioning of the economic system. But, this division of classes does not reflect the economic or social hierarchy as it is usually presented. Each class takes a particular role in the process of production and consumption and interact with the others in a way that make the economic system work. The '*classe productive*' (productive class), composed of the peasants, the agricultural workers and the capitalist farmers (*fermiers*) is in charge of agricultural production. The '*classe stérile*' (sterile class) refers to the artisans, merchants, firm owners and workers in manufacturing. It is responsible for all non-agricultural production, as well as trade. Finally, the '*classe des propriétaires*' (class of landowners) brings together the owners of land, the *décimateurs* (tithe-owners, mainly the Church) and the king. These landlords make up a class that does not participate directly in production, but plays an important role in the economic system.

Quesnay's originality was to identify the various methods of production that co-existed in French agriculture of the time and to show that each corresponds to a very different level of productivity. In the entry *Fermiers* (farmers) written for the *Encyclopédie*, Quesnay insists on the importance of the methods used in agriculture to determine the level of output that can be achieved:

“The different ways to treat the land we cultivate and the causes that contribute to it, decide the products of agriculture. You must thoroughly know the different types of cultivations to judge the current situation of agriculture of the kingdom”¹⁵. (INED, 2005, p. 128).

The three types of cultivation identified by Quesnay were subsistence agriculture, the *Petite culture* (small-scale cultivation) and the *Grande culture* (large-scale cultivation). Quesnay believes that subsistence agriculture is still present in many isolated regions of the kingdom and does not produce a surplus:

¹⁵ “Les différentes manières de traiter les terres que l'on cultive, et les causes qui y contribuent, décident des produits de l'agriculture; ce sont les différentes sortes de cultures, qu'il faut bien connaître pour juger de l'état actuel de l'agriculture dans le royaume”.

“A poor man whose labour extracts from the land only produce of little value, such as potatoes, buckwheat, chestnuts, etc., who feeds himself on them, and who buys nothing and sell nothing, works simply for himself alone”¹⁶. (INED, 2005, p. 199)

Quesnay quickly eliminates it from his analysis for being unrepresentative of French agricultural reality.

Thus, Quesnay's theory of agricultural production is based on the fundamental distinction made between the *Petite culture* and the *Grande culture*. The difference between these two modes of cultivation is featured by Quesnay in the entry *Fermiers* (INED, 2005, p. 128-159). In the model of *Grande Culture*, the farms are extensive and the leasehold is the dominant mode of production. The leasehold is a method of agricultural production where the landlord entrusts the operation of the farm to a *fermier* (farmer) who organizes the production as he wants and pays a fixed rent, regardless of the level of production. Modern techniques, such as crop rotation for the land to rest, are generally used. In the model of *Petite Culture*, however, the farms are small and the dominant mode of production is *métayage* (sharecropping), where the *métayer* (sharecropper) cultivates the land and delivers generally half of the product to the landlord. In this system there is strong pressure from the landlord to use ancient techniques that deplete the land.

However the big difference between the two types of cultivation, according to Quesnay, is in the respective levels of productivity. In fact, the *Grande culture* is much more productive than the *Petite Culture* because it uses more capital, produced means of production which Quesnay called *avances* (advances).

Quesnay notes that the cycle of agricultural production takes time (one year in the case of cultivation in France). Hence, before getting the harvest, there is a need to pay for many expenses, necessary for the production process to happen. These expenses constitute what Quesnay calls advances and are essential to the production process. So, Quesnay “develops in his writings a definite conception of capital employed in the production

¹⁶ “Un homme pauvre qui ne tire de la terre par son travail que des denrées de peu de valeur, comme des pommes de terre, du blé noir, des chataignes, etc., qui s'en nourrit, qui n'achète rien et ne vend rien, ne travaille que pour lui seul”.

system as ‘advances’ prior to the resulting output, both in agriculture and manufacture; though given the special role assigned to agriculture as the only surplus-producing sector, it is natural that he concentrates on the significance of capital advances in that sector” (Aspromourgos 1996, p. 121).

In the Physiocratic typology, the advances are of various types, with the *avances annuelles* (annual advances) the *avances primitives* (original advances) and the *avances foncières* (land advances). The “annual advances consist of the expenses which are annually incurred for the work of cultivation¹⁷” (INED, 2005, p. 547). They consist of wages set at a subsistence level and the raw materials, what we now call circulating capital, as well as the food given to the animals used for cultivation¹⁸. “The original advances [...] constitute the fund for the establishment of cultivation and [...] are valued at about five times the annual advances”¹⁹ (INED, 2005, p. 547). They are the durable means of production, such as horses, tools, what we now call the fixed capital, used to prepare the soil and improve production. The *avances foncières*²⁰ are used for the improvement of the land. They are “the initial expenditures on clearing, draining, fencing, building” (Schumpeter, 1954, p. 236). The *avances foncières* are considered permanent and the deterioration of this capital is usually neglected.

In the Physiocratic system, the basis of efficiency and high productivity are the advances. This is why Marx considers that Quesnay and the Physiocrats were the first to have a satisfactory definition of capital and argued that the Physiocrats can be considered pioneers in the study of capitalism. In the words of Marx:

“The analysis of *capital*, within the bourgeois horizon, is essentially the work of the Physiocrats. It is this service that makes them the true fathers of modern political economy”. (Marx, 1961-63, p. 352)

¹⁷ “Les avances annuelles consistent dans les dépenses qui se font annuellement pour le travail de la culture”.

¹⁸ Trabucchi (2008) highlights the importance of animal food as part of the circulating capital of the farmers in Quesnay’s theory, but not in the *Tableau*.

¹⁹ “Avances primitives [...] forment le fond[s] de l’établissement de la culture et [...] valent cinq fois plus que les avances annuelles”.

²⁰ Actually called by Quesnay ‘dépenses foncières’ (INED, 2005, p. 923). The widespread use of the term *avances foncières* is due to Quesnay’s followers (Kuczinski, 1989, p. 279).

In the *Grande Culture*, “the farmers must be rich by themselves” (INED, 2005, p. 148)²¹ in order to finance the annual and original advances, for a value far greater than in the *Petite Culture*. Only the *avances foncières* are to be financed by the landlord (or the State). The farmer is the organizer of production. He uses wage workers to cultivate the land. In the *Petite Culture*, which corresponds to a quasi-feudal mode of production, the advances are financed by the landlord, who is not concerned with the introduction of new techniques. The consequence of the low capital intensity resulting from this attitude is low productivity.

The *Grande Culture* employs horses, much more efficient, whereas the *Petite Culture* only uses oxen. This is representative of the difference in capital intensity between the two types of cultivation. In the words of Quesnay:

“In the Grande Culture, a single man leads a horse-drawn ploughshare which does the same work as three ploughshares pulled by oxen and driven by six men. In the latter case, for lack of advances in order to establish a large-scale cultivation, the annual expenditure is excessive and almost does not give any net income”²². (INED, 2005, p. 409)

The *Grande Culture* should then replace the *Petite Culture* for France increase its surplus and be able to compete with England. This surplus, called by Quesnay the *produit net*, is what an economic system produces beyond the level necessary for its reproduction, which corresponds to the concept of surplus, present in all the classical tradition²³. It is measured in monetary terms, as the difference between the value of production and the value of the necessary expenses (advances). In the words of Quesnay, the *produit net* is defined as follows:

“Product [...] that exceeds the expenses of the work of cultivation, and the expenses of the other advances necessary for the operation of that cultivation.

²¹ “Il faut que les fermiers soient riches par eux-mêmes”.

²² “Dans la grande culture, un homme seul conduit une charrue tirée par des chevaux, qui fait autant de travail que trois charrues tirées par des bœufs, et conduite par six hommes. Dans ce dernier cas, faute d'avances pour l'établissement d'une grande culture, la dépense annuelle est excessive, et ne rend presque point de produit net”.

²³ We adopt the classical conception of the economy developed by Marx and deepened by Sraffa and his followers (Garegnani, 1984).

All these expenses are refunded by the product that they generate, the surplus is net product²⁴. (INED, 2005, p. 1024)

Quesnay argued that agriculture was the only sector where a *produit net* is produced. He claimed that the other sectors (manufacture and trade) products were only transformed but not created:

“The product of the artisan’s labour is worth only the expense: if it costs more a loss would be involved. The product of the cultivator’s labour exceeds the expense; the more it exceeds it the more profitable it is and the more it increases the nation’s opulence”²⁵. (INED, 2005, p. 996).

“Trade is only an exchange of value for equal value”²⁶ (INED, 2005, p. 983).

The *produit net*, although measured in monetary terms, is based on a physical surplus. Despite recent commentators’ attempts to say otherwise²⁷ (Cartelier, 1991, p. 22-25), Quesnay seems quite clear about this issue when he writes that “the origin, the principle of each expense and of each wealth is the fertility of the soil, whose products only can be multiplied by its products themselves ”²⁸ (INED [2005, p. 979])²⁹. This physical surplus of agricultural products appears ‘most palpably’ as a higher quantity of the same use

²⁴ "Produit [...] qui excède les dépenses du travail de la culture, et les dépenses des autres avances nécessaires pour l’exploitation de cette culture. Toutes ces dépenses étant restituées par le produit qu’elles font naître, le surplus est produit net".

²⁵ "Le produit du travail de l’artisan ne vaut que la dépense ; s’il coûtait plus, il y aurait de la perte. Le produit du travail du cultivateur surpassé la dépense ; plus il la surpassé, plus il est profitable, et plus il augmente l’opulence de la nation".

²⁶ "Le commerce n’est qu’un échange de valeur pour valeur égale".

²⁷ "There is no way to support the theory of produit net with physical arguments" (Cartelier, 2014).

²⁸ "L’origine, le principe de toute dépense, et de toute richesse, est la fertilité de la terre, dont on ne peut multiplier les produits que par ses produits mêmes".

²⁹ Marx also found this great quote from Paoletti, a late Italian follower of the Physiocrats:

"Give the cook a measure of peas, with which he is to prepare your dinner; he will put them on the table for you well cooked and well dished up, but in the same quantity as he was given, but on the other hand give the same quantity to the gardener for him to put into the ground; he will return to you, when the right time has come, at least fourfold the quantity that he had been given. This is the true and only production".

(Marx 1861-3, 234)

values used as inputs³⁰. Note that is precisely because of the physical nature of the surplus in agriculture that some Physiocrats could, when necessary, rationalize the *produit net* (that is usually measured in terms of value) for politico-ideological purposes as a ‘gift of nature’³¹.

Quesnay estimates that the *produit net* is much larger in the scheme of *Grande Culture* than in the *Petite Culture*:

“Major expenses on cultivation triple and quadruple the product of the land, insufficient expenses for a good cultivation do not give 30% more than the costs; but expenses brought to the appropriate level produce a 100% profit, partly for the State and partly for the farmer”³² (INED. 2005, p. 312)

This surplus goes to the landlord class and the State in the form of land rent and taxes and to the farmers in the form of profits. Actually, the inclusion of profits into the *produit net* is a rather controversial issue among Quesnay’s analysts. Many scholars (Meek, [1962], 1993, p. 280, 384-385; Cartelier, 1976, p. 52-55 & 77-82, 2014; Gilibert, 1979; Théré &

³⁰ Marx writes: “The difference between the value of labour-power and the value created by it — that is, the surplus-value which the purchase of labour-power secures for the user of labour-power — appears most palpably, most incontrovertibly, of all branches of production, in agriculture, the primary branch of production. The sum total of the means of subsistence which the labourer consumes from one year to another, or the mass of material substance which he consumes, is smaller than the sum total of the means of subsistence which he produces. In manufacture the workman is not generally seen directly producing either his means of subsistence or the surplus in excess of his means of subsistence. The process is mediated through purchase and sale, through the various acts of circulation, and the analysis of value in general is necessary for it to be understood. In agriculture it shows itself directly in the surplus of use-values produced over use-values consumed by the labourer, and can therefore be grasped without an analysis of value in general, without a clear understanding of the nature of value. Therefore also when value is reduced to use-value, and the latter to material substance in general. Hence for the Physiocrats agricultural labour is the only productive labour, because it is the only labour that produces a surplus-value, and rent is the only form of surplus-value which they know. The workman in industry does not increase the material substance; he only alters its form” (Marx 1861-3, p. 224).

³¹ As it seems to have been the case of Mirabeau, the elder. Mirabeau writes: “Le produit provient de deux agents combinés. Ces deux agents sont le travail dispendieux de l’homme et le don de la nature” [“The product comes from two combined agents. These agents are costly work of man and the gift of nature”] (Mirabeau 1760, p. 368).

³² “Les grandes dépenses pour la culture triple[nt] et quadruple[nt] le produit des terres, les dépenses insuffisantes pour une bonne culture ne rendent pas 30 pour % de plus que les frais ; mais les dépenses portées au degré qu'il convient produisent 100 pour % de profit, en partie pour l’État et en partie pour le laboureur”.

Charles, 2009) have considered that profits are not usually included in the *produit net*³³. These commentators argue that Quesnay, from the publication of the Third edition of the *Tableau* (INED, 2005, p. 424) and in all his late writings (INED, 2005, p. 460, 1024), excluded the profits from the repartition of the *produit net*. However, in the entries *Grains* (INED, 2005, p. 164-165), *Impôts* (INED, 2005, p. 239) and *Hommes* (INED, 2005, p. 312) of the *Encyclopédie*, in the second edition of the *Tableau* (INED, 2005, p. 408) and in an unpublished text written with Mirabeau between the second and the third edition of the tableau (Théré & Charles, 2009), Quesnay determined that profits were a constituent of the *produit net*. We think that this evolution in Quesnay's writings is due to the fact that he tried to hide the potential conflict between farmers and landlords that would arise from the repartition of the *produit net*³⁴. Besides, profits as a share of the *produit net* are essential for the process of accumulation that will lead to the generalization of the *Grande Culture* in the Kingdom. Therefore, we adopt the view that profits are included in the *produit net*.

The advances, which are essential to agricultural production, are in part manufactured products. Similarly, manufacturing production requires advances in the form of agricultural products and raw materials for the production process. "The two sectors [manufacturing industry and agriculture] are technically interrelated" (Vaggi, 1987, p. 47). The recognition of this interdependence was a great improvement on Richard Cantillon's theory, who is generally (and correctly, in our view) considered as being the main predecessor of Quesnay (Gilibert, 1979, 2007; Aspromourgos, 1996).

Like Quesnay and the Physiocrats, Cantillon believed that the surplus is produced only by agriculture, in the countryside. But, in the theory of Cantillon, cities could only survive with the production of food from the countryside, while the countryside was basically self-sufficient. Because of that, Cantillon argued that for the city (and manufacturing) to prosper, it was necessary for the landowners to develop a strong taste for luxury goods. Only this would make the countryside want to increase output and produce more food

³³ Even Meek ([1962], 1993 p. 304) have to admit some exceptions when he writes that "profit will clearly persist only so long as large-scale cultivation is not universal [...] or only up to the renewal of the farmers' leases".

³⁴ Vaggi (1987, p. 122) also adopt this perspective.

than their own needs and use that extra output to buy luxuries made in the cities (Cantillon, 1755 [1997]).

The Physiocrats are much more sophisticated in their analysis because they show the linkage effects between agriculture and other sectors, which are concentrated in the cities. They are aware of the necessity of permanent interdependence between the sectors to implement an economic system of high productivity in the countryside, like the *Grande Culture*. The high productivity in agriculture is only possible with the incorporation of equipment and tools produced by the artisans and manufacturers. Likewise, artisan and manufacturing sectors can only grow with the increase of agricultural production (Vaggi, 1987, p. 46-48).

Therefore the real key to Quesnay's system is neither land nor agriculture as such but the *Grande culture*. The crucial point is the perceived vast technical superiority of capitalist agriculture. Capitalist in both the social and the technical sense. Socially, in that production should be organized by farmers who advance the capital and hire free labour for wages. And technically, in that methods of production that used more produced means of production per worker are seen as being much more efficient.

In the specific situation depicted by Quesnay in the *Tableau Économique* the process of diffusion of the *Grande Culture* has been completed. In the “*Analyse de la Formule Arithmétique du Tableau Économique*” (Analysis of the Arithmetic Formula of the *Tableau Économique*), Quesnay gives the main features of the economy described in the *Tableau*:

“Let us assume, then, a large kingdom whose territory, fully cultivated by the best possible methods, yields every year a reproduction to the value of five milliards; and in which the permanent maintenance of this value is ensured by the constant prices which are current among trading nations, in a situation where there is unremitting free competition in trade and complete security of property in the wealth employed in agriculture³⁵”. (INED, 2005, p. 546)

³⁵ “Supposons donc un grand royaume dont le territoire porté à son plus haut degré d'agriculture, rapporterait tous les ans une reproduction de la valeur de cinq milliards ; et où l'état permanent de cette valeur serait établi sur les prix constants qui ont cours entre les nations commerçantes, dans le cas où il y a

Thus, in the *Tableau*, the economy has reached a final stationary state with zero net accumulation of capital. Of course, in that final *Tableau* stationary state, surplus profits are zero because capitalists only consume and there is no need for further accumulation.

constamment une libre concurrence de commerce, et une entière sûreté de la propriété des richesses d'exploitation de l'agriculture”.

IV The Social Surplus as a physical quantity of grains

With this theoretical background in mind, we shall now make use of a drastically simplified analytical scheme to study the necessary connections between the technical conditions of production, the physical surplus, the distributive variables and the system of relative prices in a situation in which all agricultural output is produced in the capitalist “Grande Culture” sector. Given our specific concern with the physical origin of the surplus and the technological interdependence between agriculture and manufactures we shall depart from tradition (and Quesnay’s own presentation in the Tableau) and formalize Quesnay’s system as producing three commodities instead of aggregating the two sectors.

We assume that we are studying an economy that produces three goods: grains in the agriculture sector and iron and *carrosses* (carriages) in the manufacturing (and trade) urban sector. Production of each of the three goods is made using a single method of production that uses only circulating capital, with wages also included in the circulating capital advanced (*avances annuelles*).

In agriculture, grains are produced using grains as seed and iron (for ploughshares and horseshoes) as an input. In the urban sector both the method that produces iron and the one that produces carriages use only iron as a direct input.

Real wages are given at subsistence level and consist only of grains. Real profits per unit of output are also given exogenously, for simplicity as a traditional ‘capitalist subsistence’ amount of corn, presumably a much higher amount of corn than that of the subsistence of the workers (after all Quesnay spoke of ‘rich’ farmers). The amount of real wages per worker and real profits per unit of output is assumed to be given in agriculture (grains) and in manufacturing. But they could be different in the manufacturing and possibly ‘Colbertist’ urban sector since there is no capital mobility between agriculture and manufacturing. Inside the manufacturing sector, while there may be some degree of mobility, we cannot assume that there is enough mobility of capital to equalize total profits as a proportion of capital between the production of iron and carriages. We assume that landowners receive the surplus as homogenous rents paid in grains in the agricultural sector. Moreover, we shall assume that all taxes and tithes are later paid out also in fixed amounts in terms of grains.

In this economy the technical conditions of production can be described as the following three methods of production:

grains $a_{11}, a_{21} \rightarrow 1$

iron $a_{22} \rightarrow 1$

carriages $a_{23} \rightarrow 1$

where a_{ij} are the technical coefficients: a_{11} for grains per unit of output needed as inputs in the production of grains; a_{21} for iron per unit of output needed as inputs in the production of grains; a_{22} for iron per unit of output needed as inputs in the production of iron and a_{23} for iron per unit of output needed as inputs in the production of carriage. Carriages are ‘luxury’ (non-basic in Sraffa’s sense) consumption goods since they are not used as inputs (INED, 2005, p. 1181). We shall assume that only the production of grains is ‘productive’ in the literal physical Physiocratic sense and thus, by conveniently choosing the units of measure of gross outputs in such a way that the vector of gross outputs is composed by one unit of each of the three goods³⁶, we have:

$$(1) \quad a_{11} < 1$$

Accordingly, we shall have to assume that the production of iron, even though it is a basic input for grains and hence an indispensable input for (*Grande Culture*) agriculture is technically viable but nevertheless still ‘sterile’ in the sense of not producing a physical surplus of itself. Therefore:

$$(2) \quad a_{21} + a_{22} + a_{23} = 1$$

In most formalizations of the ideas of the Physiocrats (by Cartelier, 1976; Gilibert, 1979; Vaggi, 1985 and many others) only two goods are produced and thus one by logic is forced to assume a positive physical surplus of manufactured goods in order to meet the final demand for manufactured luxuries coming from the landlords. This simplifies the model but is not really compatible with the Physiocratic idea of the physically ‘sterile’ character of manufacturing.

³⁶ See Petri (2014).

In order to economize on mathematical notation we shall bundle together in the augmented technical coefficients of grains a_{1j}^* all the grains per unit of output needed, not only as inputs, but also the subsistence wages of the workers and the subsistence profits of the capitalists. We then get the following augmented set of production coefficients:

corn: $a_{11}^*, a_{21} \rightarrow 1$

iron: $a_{12}^*, a_{22} \rightarrow 1$

carriages: $a_{13}^*, a_{23} \rightarrow 1$

This economy with its given technique and social norms of subsistence for the productive classes can only produce a physical surplus above that and thus pay rent (and/or ‘surplus’ profits) if we further assume that the technology for producing grains is capable of producing a surplus at least big enough so that:

$$(3) \quad a_{11}^* + a_{12}^* + a_{13}^* < 1$$

Given all these social and technical conditions, grains and iron are basics in the Sraffa (1960) sense of being both necessary, directly or indirectly, as inputs or ‘subsistence’ goods, for the production of all the three commodities in both sectors.

In our view, conditions (1) and (2) are the best way to reconstruct Quesnay’s argument that the method that produces grains is the only one that produces a physical surplus. This does not mean that capital is homogeneous in the agricultural sector, nor implies denying that the *produit net* is measured in terms of value. It means only that the cultivation of grains is seen as the only sector that is capable of producing a physical surplus of its own products

V Prices of Production, *Bon prix* and *Prix Fondamental*

We have specified the physical technical conditions of production. But in order to get to the value of the *produit net* we must, of course, know something about the relative prices.

Let us then write down the system of general price equations for this economy:

$$\text{grains} \quad p_1 = (a^{*11} \cdot p_1 + a_{21} \cdot p_2)(1+r_1) + t_1 \cdot f \cdot p_1$$

$$\text{iron} \quad p_2 = (a^{*12} \cdot p_1 + a_{22} \cdot p_2)(1+r_2)$$

$$\text{carriages} \quad p_3 = (a^{*13} \cdot p_1 + a_{23} \cdot p_2)(1+r_3)$$

where t_1 is the land coefficient (hectares per unit of output) and f the uniform rate of rent per hectare, and the r_i 's are the rates of surplus profits.

Note that, since the subsistence consumption of capitalists is already included in the augmented technical coefficients, our three rates of surplus profits refer to 'extra' or 'surplus' rate of profits over and above the minimum that would just pay the usual 'subsistence' profits of capitalists (that Marx calls a sort of necessary wage for the capitalists)³⁷. Thus, capitalists and capitalism can survive and prosper even when all rates of surplus profit happen to be equal to zero.

The price system written above has three equations and seven unknowns, namely, the rate of rent (f) the three rates of surplus profits (r_1, r_2, r_3) and the three prices of the goods (p_1, p_2, p_3). If we take grains as the *numéraire* ($p_1=1$) we reduce this to six unknowns. If we further get rid of the non-basic carriages, whose price can be left to be calculated after we sort out the relative price between grains and iron, we are reduced to two equations and four unknowns, namely, the relative price of iron, rent per hectare, and two rates of surplus profit:

³⁷ In the chapter VII of *Philosophie Rurale*, it is written that the income of the farmers include "the reward due to the care, the work and the risks of his enterprise" [*"la retribution due aux soins, aux travaux et aux risques de son entreprise"*] (INED, 2005, p. 662). Quesnay is considered the main author of this chapter, even if *Philosophie Rurale* was co-authored by Mirabeau and Butré (Théré & Charles, 2009; Sabbagh, 2015).

$$(4) 1 = (a^{*}_{11} + a_{21} \cdot p_2)(1+r_1) + t_1 \cdot f$$

$$(5) p_2 = (a^{*}_{12} + a_{22} \cdot p_2)(1+r_2)$$

Equations (4) and (5) tell us that, given the real wage and the technology, there is a potential conflict between rents, the profits in agriculture (grains), and profits in iron. The higher is the relative price of grains (i.e., the lower is p_2) the higher can be the rents and/or the farmers surplus profits. This seems to be the idea behind the doctrine of the *bon prix* (proper price). The doctrine of the *bon prix* is the argument that potential free foreign competition and actual lowering of domestic barriers to trade (toll roads, local trade monopolies, etc.) would lower the surplus profits rate r_2 and thus allow more of the physical surplus of grains to be appropriated by the productive (r_1) and/or proprietary classes (f).

There seems to be a consensus that the doctrine of the *bon prix* for grains meant to reduce the relative price of manufactures in general to its *prix fondamental*, which here means the price of iron p_2 calculated with r_2 equal to zero. So when there are no surplus profits in manufacturing iron, iron is sold at its ‘fundamental price’ and grains is sold at a *bon prix*.

On the other hand, there is a debate about what to call the relative price of grains when both the rates of surplus profits r_1 and r_2 are set to zero and then the whole surplus of grains is appropriated by rent and f reaches its maximum³⁸.

Many authors (Higgs, 1897; Salleron³⁹; Meek, 1962 [1993]⁴⁰; Cartelier, 1976; Gilibert, 1979) argue that in this case the relative price of grains is much higher than its *prix fondamental* because it is paying a lot of rent. These authors defend the idea that the fundamental price includes only the technical and subsistence necessary cost of

³⁸ Note that carriages are non-basic and r_3 also does not affect the distribution of the surplus of grains.

³⁹ The fundamental price is defined by Salleron as "expression habituelle pour signifier le prix de revient, le coût de production" ["common expression to mean the factory cost, the cost of production"] (INED, 1958, p. 529).

⁴⁰ "In the case of agricultural produce, the 'market value' was higher than the 'fundamental price' by an amount equal (roughly) to rent" (Meek 1962 [1993], p. 389).

production of commodities and cannot include rents. If the price of grains covers rent then it must be a *bon prix*.

On the other hand, Vaggi (1983, 1987; see also the critical reviews by Cartelier [1991b] and Gilibert [1989]) has argued that we should call the grains price with zero surplus profits in all sectors and maximum rent included as the *prix fondamental* for grains.

However, Quesnay himself gives the following definition of the *prix fondamental*:

“The fundamental price of commodities is determined by the expenses or costs which have to be incurred in their production or preparation. If they are sold for less than they have cost, their price sinks to a level at which a loss is made. If they are sold at a price which is high enough to yield a gain sufficient to encourage people to maintain or increase their production, they are at their proper price⁴¹. (INED, 2005, p. 276)

Vaggi considers that if rents are not paid, there will be a loss and, therefore, rents should be a part of the *prix fondamental*. In this view the *bon prix* would always include positive profits for the farmers. There are a few problems with Vaggi’s interpretation. The first is that if rents are not paid it is the landowners that incur losses, whilst if price sinks below the necessary costs of production it is the farmers that lose and they are the ones who organize production. Thus the loss alluded to by Quesnay in the passage quoted above seems to be that of the farmer, not of the landowner. Losses are “incurred in the production and preparation” of commodities and landowners do neither. The second difficulty is that Quesnay mentions in the same passage that the *bon prix* is necessary to favor not only the expansion but also the ‘maintenance’ of production. But this logically implies that if the price is below the *bon prix* as the *prix fondamental* is there will be a contraction of production. Thus a stationary economy needs the *bon prix*, not the *prix fondamental*. Given these problems we prefer to stick to the tradition of considering that rents are not a part of the *prix fondamental* and that the price of grains that includes both costs and rents (whether or not grains surplus profits are positive) is the *bon prix*. This

⁴¹ "Le prix fondamental des marchandises est établi par les dépenses, ou les frais qu'il faut avancer pour leurs productions, ou pour leur préparation. Si elles se vendent moins qu'elles n'ont coûté, leur prix dégénère en perte, si elles se vendent assez cher, pour procurer un gain suffisant pour exciter à en entretenir ou à en augmenter la production, elles sont à bon prix".

may be seen as a purely terminological issue but in fact it appears to be an attempt by Vaggi to argue that positive surplus profit in agriculture appears in Physiocratic theory even when the economy is in a stationary state (as in the *Tableau Économique*) and there is no net accumulation of capital, a view which we certainly do not subscribe to.

VI The Vertically Integrated Grains Sector.

This potential conflict between rent and surplus profits becomes much clearer if we replace (5) into (4). This makes us calculate what would be the vertically integrated grains sector of the economy in which the requirements of iron and the profits in the manufacturing sector are being also measured or expressed directly in terms of shares of the physical gross product of grains:

$$(6) \left[a_{11}^* + a_{21} \cdot \frac{a_{12}^* \cdot (1+r_2)}{1-a_{22} \cdot (1+r_2)} \right] \cdot (1+r_1) + t_1 \cdot f = 1$$

Here it becomes clear that while in general the rate of rent f depends both on the technology and relative prices, if the technique and the rules of distributing the sectoral value surplus r_1 and r_2 are known then the rent f can be ascertained in terms of grains as the difference between the gross product and the physical cost in grains production.

Moreover, if we happen to be in the particular situation depicted by Quesnay in the *Tableau Économique*, where surplus profits are assumed to have been driven down to zero in both iron manufacture and grains agriculture then we can write instead:

$$(7) \quad a_{11}^* + a_{21} \cdot \frac{a_{12}^*}{1-a_{22}} + t_1 \cdot f = 1$$

This concept of a sort of vertically integrated grains sector, where the physical surplus of grains is distributed as rent is probably what Sraffa (1960) meant when he spoke as a ‘point of contact’ between Quesnay doctrine of the *produit net* and Ricardo’s ‘material rate of produce’ in his the Essay of Profits⁴². Note that this point of contact, although evident, is not exact because, according to Sraffa, the ‘rational foundation’ of Ricardo’s theory of profits is that corn (here grains) is the only basic good. Sraffa seems to argue that the same was true of the Physiocrats, while in our scheme we consider the system as

⁴² Sraffa says: “Ricardo’s view of the dominant role of the farmer’s profits thus 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 ; whereas in manufacturing, where food and raw materials must be bought from agriculture, a surplus can only appear as a result of the sale of the product” (Sraffa, 1960, p. 93).

having two basic goods (grains and iron), even though there is a physical surplus only in the grains sector.

On the other hand, Marx on some occasions explicitly states that the Physiocrats thought agriculture did not need inputs from other sectors, but here it is important to remember that he is probably talking of the Physiocrats in general, of Turgot (and perhaps also Cantillon)⁴³ and not necessarily of Quesnay and certainly not of his *Tableau Économique*. Quesnay, as we saw above clearly emphasizes the importance of ‘iron’ in the *Grande Culture* of grains, specially (but not only) in the *Tableau*.

In fact, Quesnay’s arguments about the passage from *Petite Culture* to *Grande Culture* can be shown as follows. The *Petite Culture* does not use iron ($a_{21}=0$) but has a very high a_{11}^* , i.e., a small surplus of grains. On the other hand, the *Grande Culture* uses a lot of iron ($a_{21}>0$) but even taking into account how much the iron costs in terms of grains the total grains costs are much lower such that the following conditions are assumed to hold:

$$\text{In the } \textit{Petite Culture}: a_{11}^{*\textit{Petite_Culture}} < 1$$

$$\text{In the } \textit{Grande Culture}: \left[a_{11}^{*\textit{Petite_Culture}} + a_{21} \cdot \frac{a_{12}^* \cdot (1+r_2)}{1-a_{22} \cdot (1+r_2)} \right] < 1$$

$$\text{But: } a_{11}^{*\textit{Petite_Culture}} \gg \left[a_{11}^{*\textit{Petite_Culture}} + a_{21} \cdot \frac{a_{12}^* \cdot (1+r_2)}{1-a_{22} \cdot (1+r_2)} \right]$$

Note that a high rate of surplus profits in ‘iron’ manufacturing is the only thing that could wipe out the advantages of *Grande Culture*. No wonder then that the Physiocrats worried about the *bon prix* in agriculture depending on the reduction of the manufactured prices to its *prix fundamental* ($r_2=0$).

Marx mentions how contradictory is Quesnay’s objective materialist analysis of the higher yield of the *Grande Culture* as being connected with methods that use more produced inputs (horses with metal plough instead of cows with wooden ones for

⁴³ See Kurz & Gehrke (1998).

instance) and the doctrine of the surplus as a ‘gift of nature’, that he attributes to Mirabeau, the Elder.

Note that it would be very odd for Marx to praise Quesnay so much for introducing the analogue of his concept of constant capital and to perceive the revolutionary importance of the used of produced manufactured inputs in agriculture and then ignore that modern agriculture and manufacture were interdependent. In any case equation (7) is valid whether we assume sectoral interdependence or assume instead the absolute strategic predominance of agriculture ($a_{21}=0$), as Cantillon and (sometimes at least) Turgot appear to have done (something that would contradict Quesnay’s definition of *Grande Culture* as techniques that use a lot of produced means of production).

In any case, the popular argument according to which Marx (or Sraffa for that matter) thought that the doctrine of the *produit net* meant that Physiocrats ignored or had nothing to say about relative prices and only thought in physical terms seems to us totally without foundation.⁴⁴ Marx was obviously talking about technical and social conditions (1) and (3) above when he talked about the physical surplus of use values. On the other hand, even if we adopt the extreme version in which the only basic good is grains (if $a_{21}=0$) there would still be the relative prices of the non-basic goods (iron and carriages in our case) to be ascertained. The point is that the vertically integrated grains sector, with or without interdependencies, is strictly necessary to determine the rate of rent without which we cannot possibly know the price of grains nor any of the other relative prices. On the other hand, the authors who insist that the Physiocratic theory of the *produit net* is all based on money and market prices are of course incapable of explaining why the physical productivity of agriculture is so important for the Physiocrats, because they have no way of relating the physical surplus and the social rules for distributing it between rent

⁴⁴ Some authors in the Marxist tradition seem to actually interpret the Physiocrats in this way. For instance Napoleoni writes that "the problem of evaluation is present in the Physiocrats in its most primitive form, i.e. not as a measure of the difference between two magnitudes of value, but rather, as a measure of the difference between two physical quantities" (Napoleoni, 1983, p. 27). He adds: "When the Physiocrats present the problem of measuring the *produit net* (surplus) with the aim of building their quantitative framework, this problem is solved empirically, taking as given the market prices" (Napoleoni, 1983, p. 26). Neither of the two statements can be sustained. The first would mean that capital is homogenous in agriculture (and it is not in *Grande Culture*). The second would mean that Physiocrats had no theoretical notion of prices and of course they had the *prix fondamental* and the *bon prix*.

and profits and the relative price system. If these interpreters are right the Physiocrats were then either similar to ‘mercantilists’ who explained the surplus in value in terms of ‘buying cheap and selling dear’ or even worse, what Marx called ‘Vulgar economists’ which did nothing apart from trying to ‘explain prices with prices’. Moreover, if the physical surplus was irrelevant for the Physiocrats, one would wonder why they insisted on saying that agriculture was productive and manufacturing sterile. It is clear that the physical surplus is necessary for the *produit net* in value to be positive. It is extremely doubtful that the Physiocrats did not understand the simple idea that if the value of the necessary consumption were enough to buy the whole physical amount of products then there could be no value surplus.

In another curious attempt to disconnect the notion of physical surplus from the notion of value surplus in the theories of the old classical economists Brewer has argued that:

“Although a physical notion of surplus [...] must clearly underlie Quesnay’s system, it is not at all clear that he understood the relationships involved. If he had, he could surely not have claimed, as he did, that an increase in agricultural prices would increase the surplus. In his own framework, this does not make sense. If non-agricultural prices cover costs, they must rise in line with any increase in agricultural prices, so the *produit net* is unchanged in real terms”.

(Brewer, 2008, p. 20)

There are two alternatives here. Either Quesnay really does not understand his own notion of *produit net* or perhaps Brewer has not noticed that when Quesnay argues that high relative prices of grains increase profits he is talking about a situation in which the price of manufactures is above the *prix fondamental* and there are surplus profits in ‘iron’ ($r_2 > 0$ in equation (7) above) that could be reduced to increase agricultural surplus profits and/or rents . In other words, Quesnay doctrine of the *bon prix* for grains may be instead based precisely on the fact that non agricultural prices do not just cover costs, as he thought they should.

VII Final Remarks

The upshot of our discussion is that Quesnay was clearly dealing with a capitalist economy or at very least that there was capitalism in the modern agricultural sector. Marx was wrong when he said that capitalists in agriculture were paid functionaries of the landowners⁴⁵. They were not paid by landlords. The landlords were paid by them. They rented the land exactly as Ricardo's farmers did. The big difference here is the lack of free capital mobility, not of capitalism as such⁴⁶.

Quesnay had not developed yet the notion of the general (uniform) rate of profits, nor separated clearly within profits the wages and salaries of management from the pure income from advancing capital. That was left for Turgot and Smith. He also did not have a complete theory of how the surplus would be divided between rent and sectoral profits outside the final stationary state depicted in the *Tableau*. That had to wait until Ricardo's notion of differential rent. But in our view it is a serious mistake to argue that there was anything 'feudal' about his system⁴⁷. The fact that Quesnay thought of profits as part of necessary consumption whilst rents are part of the surplus and the implied conclusion that all taxes should fall on rents may easily show that his main concern was to guarantee the

⁴⁵ "The Physiocrats...regarded rent as the only surplus, and capitalists and labourers together merely as the paid employees of the landlord" (Marx, in Aspromourgos [1996, p. 122]).

⁴⁶ Quesnay certainly did not assume free capital mobility across sectors but what about inside fully capitalist agriculture as between producers of grains and wine, for instance? It may be tempting to assume that, within capitalist agriculture, competition could make the rates of surplus profits equal for Quesnay writes in the *Maximes Générales du Gouvernement Économique d'un Royaume Agricole* (General Maxims of the Economic Government of an Agricultural Kingdom):

"*Que chacun soit libre de cultiver dans son champ telles productions que son intérêt, ses facultés, la nature du terrain lui suggèrent pour en tirer le plus grand produit possible*" [“That each person should be free to cultivate in his fields such produce as his interests, his means, and the nature of the land suggest to him, in order that he may extract from them the greatest possible product”] (INED, 2005, p. 569).

However, in a note to the same text he also writes that : “*La culture des vignes est la plus riche culture du royaume de France ; car le produit net d'un arpent de vignes, évalué du fort au faible, est environ le triple de celui du meilleurs arpent de terre cultivé en grain*” [“The cultivation of vineyards is the most wealthy branch of cultivation in the French kingdom, for the net product of an *arpent* of land given over to vineyards, valued on an average basis, is about three times that of an *arpent* of the best land given over to the cultivation of corn”] (INED, 2005, p. 583). Therefore, there is no clear textual basis for such an assumption.

⁴⁷ Most of Marx's passages in the Theory of Surplus Value on the feudal aspect of Physiocracy are quite explicitly ironic but a few give the impression of being serious and therefore inadequate. Matters are not helped by some apologetic remarks by other Physiocrats such as Mirabeau, the elder.

profitability of modern capitalist agriculture, which he argued was the key to French prosperity.

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