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# DIFFERENT EMPLOYMENT OF CAPITALS IN VERTICALLY INTEGRATED SECTORS: SMITH AFTER THE AUSTRIANS

by

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## *1. Introduction*

After arguing that "Smith's failures to persuade economists were, like his successes, of two sorts: failures that were proper, and failures that would have been successes", Stigler (1976) claims that "the most conspicuous of Smith's proper failures was the hierarchy of employments of capital, presented in book 2, chapter 5, 'Of the Different Employments of Capital'"[1]. Stigler's position is not isolated. Chapter V, Book II, of *The Wealth of Nations* (henceforth: Chapter V) has attracted so many criticisms both in the classical period ("a doctrine so manifestly erroneous", McCulloch 1864: 121) and in modern times ("the most illogical argument", Cannan 1917: 68; "at first sight this is an awful muddle", O'Brien 1975: 208; "an argument that has struck many commentators as tortuous in the extreme", Blaug 1962: 56; "among the less successful parts of the edifice", Campbell and Skinner 1976: 32; "ambiguous, confusing and mutually inconsistent", Negishi 1989: 95) that nowadays it is either ignored as an innocuous *divertissement* or is regarded as one of the gravest contradictions of Smith's system of thought[2].

The purpose of this paper is to part from the mainstream of these interpretations and to show that Chapter V is rather one of Smith's "failures that would have been successes". It will be argued that the key for getting to this conclusion lies in two notions that have been developed in economic theory long after Smith wrote the *Wealth*. One is the old Austrian notion of time-consuming methods of production and the related principle of the higher productivity of more roundabout methods (Böhm-Bawerk, 1888 [1959]). The other is the notion of vertical division of labour

[1] The true title of Smith's chapter is "Of the Different Employment [singular] of Capitals [plural]". From what follows it results that Stigler's misprint is not devoid of analytical consequences.

[2] For a few exceptions, see Anspach (1976) and Jeck (1994, 1998). For two alternative reconstructions, see Hollander (1973) and Negishi (1989).

(Hayek, 1941:.73-74) and the more modern notion of vertical integration (Hicks, 1973; Pasinetti, 1973). These notions, it will be argued, are implicit in Smith's theory of capital and can be utilized in reconstructing his arguments on the different employment of capitals. This reconstruction will be achieved in this paper by determining not so much what Smith *meant* (an impossible task if it is true that they are not only "tortuous" but also "ambiguous, confusing and mutually inconsistent"); but rather what he *should have meant* to be consistent with other parts of his theory or, more precisely, what his arguments *mean* after the improvements added to the intergenerational theory of capital by the Austrians (by Böhm -Bawerk, in particular). In this sense the paper is an attempt to specify Marshall's remark on Smith that "there is scarcely any economic truth now known of which he did not get some glimpse" (Marshall 1961: 757) or Samuelson's more general remark that "inside every classical economist is a modern economist trying to get out" (Samuelson 1977: 42)[3].

The paper is structured as follows. Section 2 provides a sketch of the links between the Classical (Smith's) and the Austrian (Böhm-Bawerk's) theory of capital through Hicks's and Pasinetti's notions of vertical integration. Sections 3 and 4 focus on the different arguments of Smith's Chapter V and on the two points of view (of an individual and of society at large) from which capital can be observed and without which these arguments cannot be understood. The arguments of Chapter V are then re-examined in Sections 5 to 10 in the light of the Austrian principle of the higher productivity of roundabout methods and of the two viewpoints from which capital can be observed. The notion of vertical division of labour is utilized in section 8 in association with this principle in order to reconstruct Smith's own notions of "quantity" and "productivity" of productive labour. A summary of our reconstruction of Smith's arguments is provided in Section 11.

## *2. The Austrian method and the notion of vertical integration*

The links between the classical (Smith's) and the Austrian (Böhm-Bawerk's) theories of capital have been seldom noticed in the literature. What keeps them apart and what makes them look like two alternative theories are the very different theories of *value* on which they are based. The gulf between the classical and the Austrian theory of value is indeed so deep that it must have obstructed any attempt to identify similarities between the corresponding theories of *capital*[4]. If, however, we

[3] This remark should be understood in the light of Samuelson's earlier observation that "there is a worse sin than the anthropomorphic one of reading modern analysis into older writers' works. There is in addition the sophisticated-anthropomorphic sin of not recognizing the equivalent content in older writers because they do not use the terminology and symbols of the present" (Samuelson 1949: 373).

[4] The differences between the classical and the Austrian theory of *value* are so deep, and their grounds so

leave aside the theory of value and we focus instead on the few *concepts* on which the classical and Austrian theories of capital stand rather than on the forest of *words* in which these theories are wrapped up by different authors in different ages, some similarities emerge to the benefit of the classical theory. Some of these similarities have been noticed by Hicks:

"The concept of production as a process in time, with capital (the *capital account*) as the 'report' that is made in the present on the state of that process, is not specifically 'Austrian'. It is just the same concept as underlies the work of the British classical economists, and it is indeed older still – older by far than Adam Smith….What Böhm-Bawerk did was to take the classical concept of capital, and to marry it with the theory of individual choice which he got from Menger. To his contemporaries (such as Marshall and Clark) who were already converted to a utility theory that was fairly similar, the latter part of his work was not particularly striking. They were much more impressed by his trenchant re-formulation of the classical concept of capital, which seemed to them quite outré, *because they themselves were rejecting it*. The principal reason why they rejected it was that it could not find a place in static theory. The only capital that could find a place in a static theory was a capital that meant capital goods –'appliances', as Marshall likes to say" (1973: 12-3).

The similarity indicated by Hicks is a similarity of method. For, given the three methods available "when constructing a model", i.e. the "method of sectoral disintegration" (exemplified in the input-output scheme), the "method of von Neumann" (by which firms are regarded as buying whatever they need at the beginning and selling whatever they have at the end of an arbitrarily short period), and Hicks's own "Neo-Austrian method" (by which activities are viewed as stages of a vertically integrated process along which original inputs are turned into final outputs according to a *single* production *plan*), Hicks (1973) argues that the latter method, which is most evidently adopted in the Austrian theory of *capital* and underlies its crucial notion of time-consuming (roundabout) methods of production, is also implicit in the classical theory of capital.

It is interesting to note, however, that the method of vertical integration can be used in two different analytical contexts depending on whether it is part, as in Hicks's Neo-Austrian method, of a vertically-integrated "production plan" (i.e. of an individual mind planning the whole course of production from *extracting* the raw materials to *selling* the consumption goods) or of a vertically-integrated "set of activities" from the *extraction* of raw materials to the *sale* of consumption goods. The latter context can rather been noticed behind Pasinetti's adoption of the same method (1973) (for this author rather starts from the "horizontal" data of the input-output scheme and turns them into the "vertical" data of the vertically-integrated processes by his inverse-matrix device). In spite

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little investigated, that they seem to be responsible not only for the neglect shown by Austrians and non-Austrians alike for the similarities between the two theories of *capital* but also for the scorn that some modern-day Austrians have poured on Smith's system of thought (which does indeed hinge on his labour theory of value). See, for an astonishing example, Rothbard (1995, Vol. I, chapter 16).

of these differences, Pasinetti joins forces with Hicks at least in noting that "very few notions in economic analysis are so seldom explicitly mentioned as the notion of vertical integration and are at the same time so widely used, implicitly or without full awareness". He also points out that Smith and the other classical economists are among those who made use "implicitly or without full awareness" of the notion of vertical integration.

This paper starts from Hicks's and Pasinetti's common method in order to prove that the notions of vertical integration and of time-consuming methods of production, though never "explicitly mentioned" in classical economics, are applied by Smith "without full awareness" and are very helpful in clarifying the "ambiguous, confusing and mutually inconsistent" arguments of Chapter V.

### *3. Smith's five arguments on the different employment of capitals*

Smith's Chapter V is a development of the statement of Chapter III that capital "maintains but productive hands" or, which is exactly the same, "pays the wages of productive labour". This development starts as follows:

"Though all capitals are destined for the maintenance of productive labour only, yet the quantity of that labour which equal capitals are capable of putting into motion, varies extremely according to the diversity of their employment; as does likewise the value which that employment adds to the annual produce of the land and labour of the country" (*WN*, II, V: 381).

The most significant aspect of this sentence is the parallelism between (a) the *quantity* of labour "which equal capitals are capable of putting into motion" and (b) the *value* "which that employment adds to the annual produce of the land and labour of the country". Argument (a) will here be called the "quantity argument" and argument (b) the "value argument". After saying that these "equal capitals" are the capitals of four different *individuals* called the "farmer", the "manufacturer", the "wholesale merchant" and the "retailer" and after referring the diversity of their employment to whether they are employed in the corresponding *sectors* of "agriculture", "manufactures", "wholesale trade" and "retailing", Smith introduces a third argument. This refers to the role played by the capitals of these individuals in *replacing* the capitals employed by their suppliers. This argument will here be called the "replacement argument" and will be labelled by letter (c). Later in the chapter, however, and in the following Book III Smith develops two further arguments that are somewhat related to the previous arguments. They will here be called the "international argument" and the "stages-of-growth argument". These arguments, here to be labelled by letters (d) and (e), will be discussed at the end of the paper as if they were two different annexes to arguments (a), (b) and (c).

### *4. Two points of view in Smith's theory of capital*

Our analysis of Smith's arguments will start from argument (c). This argument applies to each of the four individuals mentioned above and is rendered as follows with regard to the "retailer":

"The capital of the retailer replaces, together with its profits, that of the merchant of whom he purchases goods, and thereby enables him to continue his business. The retailer himself is the only productive labourer whom it immediately employs. In his profits, consists the whole value which its employment adds to the annual produce of the land and labour of the society" (*ibid*.: 383).

A proper understanding of argument (c), as well as of arguments (a) and (b), requires a previous understanding of the distinction between the point of view of an *individual* and the point of view of *society* on which Smith's theory of capital is based[5]. The starting point for identifying the relationship between this distinction and the arguments above is Smith's statement about the "four different ways" in which "a capital may be employed" (i.e. in agriculture, manufacturing, wholesaling, retailing), each of these ways being necessary either to "the existence or extension of the other three, or to the general conveniency of the society" (*WN, II*, V: 381). This statement should be related to the introductory statements of Chapter I, Book II, of the *Wealth of Nations* where Smith deals with the "two different ways" in which "a capital may be employed so as to yield a revenue or profit to its employer": while these statements show that an individual can reap a profit from his capital either "by keeping it in his own possession" or "by parting with it", the statement above may be simplified as follows: granting that capitals are employed by their owners (in either of those two ways) in order to reap a profit for themselves, how can this employment contribute to "the general conveniency of the society", i.e. to the wealth of the nation (national revenue)? Smith's answer seems to be: in any of the "four different ways" discussed in Chapter V. But why is each of these four ways a necessary condition for the existence or extension of the other three? Here Smith's answer could run as follows: those four different ways are *alternative* ways of employing a

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[5] This distinction did not escape Böhm-Bawerk's attention to the extent that he regarded it as "the source of egregiously important consequences for the development of the concept of capital" (1888 [1959], Vol. II, pp.19-20) and, we should add, of the *theory* of capital itself. For, as Böhm-Bawerk pointed out, "we have been confronted ever since by that strange phenomenon which was to become the fountainhead of so much error and confusion, and which consisted in the oddity that two radically different series of phenomena and problems were treated under the same name" (*ibid*., p.209). See also, more generally, the initial chapters of the *Positive Theory*.

capital of given size in a given period when this capital is considered (as *money* capital) from the point of view of an *individual* (its owner) while they are *complementary* stages in the process by which the "rude produce" is annually turned into the "necessaries, conveniences and amusements" available in the whole society, i.e. when it is considered from the point of view of *society* (as *real* capital). This implies a distinction between the process by which *profit* accrues to an individual and the process by which *wealth* accrues to a nation, however intertwined the two processes may be[6]. Capitals can indeed be studied according not only to their *direct* impact on the accounts of their owners (i.e. on the profits these individuals reap from their own capitals) but also to their *indirect* impact on the economy of society (i.e. through the multiplication of the use values resulting, according to the arguments of Chapter V, from their role in raising the rude produce, manufacturing this produce, transporting it where it is wanted, parcelling it out to its proper consumers). From this higher standpoint, the sectors in which the capitals of these individuals (whether "farmers", "manufacturers", "wholesale merchants" or "retailers") are employed can be studied either in the light of the "horizontal" approach of the modern input-output scheme or in the light of the "vertical" approach of the Austrian method. According to this method, they can also be regarded as different *stages* of the vertically-integrated process along which the "rude produce" (for the existence of which no previous labour was expended) is first extricated from the ground, the water, the womb etc. and is later turned by labour into the necessaries and conveniencies that make up the final output to be consumed by the different members of a nation[7]. Thus, as one descends from one to another of these stages along the vertically integrated process, two parallel increases occur: one is

[6] For a wider discussion of these processes and of the notions of "relative" and "positive" profit associated with them, see Meacci (2006). This point is completely missed by McCulloch, one of the early critics of Chapter V. See, for instance, McCulloch, 1864, Ch. VI and p.124. For an Austrian view of the link between *money* capital (the "originary form" of an individual capital) and *free* capital (i.e. Smith's "funds destined to the maintenance of productive labour" as the "originary form" of the capital of society), see Strigl (1934 [2000]).

[7] Chapter V is not the only place where Smith's outdated *terminology* must be separated from his underlying *analysis*. This separation is almost always needed when interpreting or reconstructing Smith's system of thought from his crucial –and rather convoluted- theory of value to his popular -and scarcely understood- distinction between productive and unproductive labour (sometimes and misleadingly rendered by Smith as a difference between two sets of *labourers*). See, in this connection, Schumpeter's remarks about the "irrelevancies" which accompany the essential meaning of this distinction in Smith's "clumsy and inconsistent" handling of it (1954: 192). Schumpeter's remarks echo Marx's appeal to separating the *esoteric* from the *exoteric* aspects of Smith's theory and provide the benchmark for the reconstruction of Chapter V attempted in this paper. Indeed, the Austrian tradition is here utilized to achieve this separation within Smith's "clumsy and [apparently] inconsistent" treatment not only of productive and unproductive labour (see below section 8) but also of the relation between capital and productive labour (the central subject of Chapter V).

the increase of *use values* due to the application of the productive labour supported by the capital employed in each stage; the other is the increase of *exchange values* due to the profits to be paid on the capital employed in each successive stage. To prevent an unwarranted flow of capitals from one stage to another (a disequilibrating phenomenon which is not taken into consideration in the stationary economy assumed throughout Chapter V) these profits must be equal on capitals of equal size whatever the stage in which they are employed by their owners[8].

***5. The replacement argument***

The two points of view from which capital can be observed and without which the arguments of Chapter V cannot be understood are necessary for coordinating the replacement argument, the quantity argument, and the value argument mentioned above. This amounts to a coordination of the meanings of the verbs "to replace" and "to put into motion" which are repeatedly used in Chapter V for indicating two different functions performed by the same capitals in each particular stage. One is the function by which a given (individual) capital employed in a particular stage replaces another (individual) capital employed in a previous stage; the other is the function by which this capital puts into motion, as a fraction of the capital of the whole society, a certain quantity of productive labour. It goes without saying that the *forms* by which capital presents itself in the former case are different from the forms by which it presents itself in the latter: these are the forms of *money* capital in the former, and of *wage* capital (free capital) in the latter case. And it goes equally without saying that the function performed by capital is, in the former case, to bring about a change of *property* and a circulation of *money* whereas it is, in the latter case, to bring about a change of *matter* and a creation of real *wealth*. Thus Smith's convoluted arguments imply that, as one descends from one stage to another, the function performed by a given capital is weaker and weaker if this capital is

[8] The equality of profits on the equal capitals employed in different stages is needed in Smith's analysis in order to coordinate the existence of different capitalists along the vertically-integrated process with the different amounts of labour commanded by their capitals in each particular stage. This analysis is based on a snapshot of a capitalistic economy irrespective of any increase or decrease of its total capital. In this sense, Chapter V is (along with Chapter IV) just an appendix or a note to Chapter III, *The accumulation of capital, or of productive and unproductive labour*, which is the core of Book II of the *Wealth of Nations*. This implies that what Garrison (1998) calls the "intertemporal Adam Smith" is not the author of Chapter V. The reason for this is not that the intertemporal dimension is missing in this Chapter (this paper is indeed devoted to highlighting this dimension) but that no accumulation of capital is here thought to be under way and no saving or productive labour is here thought as being added to the amount already existing in the whole society. Garrison's "intertemporal Adam Smith" is, rather, the author of Chapter III, Book II (the title of which is, for once at least, neither "clumsy" nor "inconsistent" with its central arguments). He is the author, that is, of the "principle that prompts to save", of the impact of this principle on the accumulation of capital and of the further impact of this accumulation on the increase of national wealth.

considered in the former sense (i.e. from the point of view of society) whereas it is stronger and stronger if it is considered in the latter (i.e. from the point of view of an individual).

### *6. The quantity argument.*

That a given capital contributes less and less to the employment of productive labour as one proceeds downward towards the final stage is best understood if labour is considered as *living*, rather than as *dead*, labour. For, when it comes to the initial stage, the given capital can buy nothing but *living* labour: no transformation has been carried out prior to this stage and no dead labour must accordingly be purchased by the capital employed in this stage[9]. Thus Smith's famous phrase about the higher profitability of capital employed in agriculture where "nature labours along with man" must be taken to mean that in these circumstances man labours along with *nature*, i.e. with something which is *not* the product of previous labour and must *not* be purchased as the product of such labour[10]. This explains why the "quantity of productive labour" that is purchased by a given capital in this stage is greater than the quantity purchased by an equal capital in any other (downstream) stage. For the amount of *dead* labour that *must* be purchased by this capital is greater and greater while the amount of *living* labour that *can* be purchased by the same capital is smaller and smaller as one moves from the initial to each subsequent stage. Hence the crucial meaning of the terms "immediately" and "indirectly" used by Smith in this connection: the quantity of productive (living) labour which is "immediately" put into motion by a capital of given size is smaller and smaller while the quantity of productive labour which is "indirectly" put into motion in previous stages by the replacement of the capitals employed in these stages is greater and greater as one moves downwards from the initial to the final stage[11]. Thus Smith's equal-capitals assumption

[9] The circularity internal to the initial stage (for example, corn and iron produced by means of iron and corn) simply means that this stage has long ceased to be the initial stage in the abstract sense, or in the sense of an abstract agriculture, adopted in this reconstruction of Smith's arguments. A sophisticated attempt to come to grips with this problem can be found in Löwe's three-sectors and four-stages model (1976).

[10] Thus, when Smith later says that in manufactures "nature does nothing, man does all", the term nature should be intended to mean not so much (as Ricardo does in a famous passage of his *Principles*, Chapter II, p.76) the *forces of nature* but rather the *absence of produced inputs*: unlike agriculture (which epitomizes the initial stage of vertically-integrated processes), the manufacturing sector *must* rely on these inputs for turning out its output (hence the Austrian meaning of Smith's "man does all" against the naïf meaning adopted by Ricardo in his misplaced criticism of Smith's "nature does nothing").

[11] If *LL* represents living labour, *DL* dead labour and *K* the €100.000 capital, Smith's argument boils down to this: $\frac{LL}{K} + \frac{DL}{K} = 1$ with $\frac{LL}{K} \to 0$ and $\frac{DL}{K} \to 1$ as one moves from the initial to the final stage. Consider

reveals that his arguments are framed in terms of what can be purchased per unit of capital employed in each stage; and could be framed as well in terms of how much living and how much dead labour is required in different stages per unit of the output obtained in the final stage.

### *7. The value argument*

In consistency with the general statement quoted at the beginning of this paper, Smith argues that the "capital employed in agriculture" puts into motion a greater *quantity* of productive labour and "adds a much greater *value* to the annual produce of the land and labour of the country, to the real wealth and revenue of its inhabitants" than an equal capital employed in any other sector (stage) (*WN*: 385, italics added). This argument reinforces Smith's ambiguity, that is embodied in that general statement but also in many other passages of his work, whereby he uses the terms *quantity* and *value* as if they were equivalent[12]. How, for instance, is it possible to "add a value" to the "annual produce of the land and labour of the country" which is a quantity? This question raises a problem in so far as the term value signifies something different from what it meant at the end of the section above when it was used to express the money value of an individual capital or the money value of living labour (i.e. its money wages). Then what kind of value is this that a capital of given size adds to the "annual produce of the land and labour of the country" rather than to the assets owned by the individual who made the advance? On the other hand, is not this latter addition

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the similarity between these ratios and the DPLA (Direct Productive Labour Activation) and IPLA (Indirect Productive Labour Activation) ratios in Anspach (1976).

[12] Smith's tendency to neglect the differences between *value* and *wealth* as well as between *gross* and *net* revenue has been highlighted by Ricardo (*Principles*, Chapter XX and Chapter XXVI). But it remains to be seen whether Ricardo's criticisms have clarified Smith's ambiguities on both accounts. Concerning, for instance, Malthus's resumption of Smith's idea that "no equal quantity of productive labour [i.e. of living labour, as one should intend after our discussion above] employed in manufactures can ever occasion so great a reproduction as in agriculture", Ricardo argues that "if Adam Smith speaks of value, he is correct; but if he speaks of riches, which is the important point, he is mistaken" (*Principles*, Ch. XXXII: 429). To which it can be objected that Smith's "mistake" is a mistake only if value is *not* intended in Smith's sense of labour *commanded* but only in Ricardo's own sense of labour *embodied*. Ricardo's misunderstanding of the notion of value and the resulting weakening of the notion of productive labour seem to be at the roots not only of Ricardo's criticisms of Chapter V in his own chapter on gross and net revenue but also of the recent interpretation of the superiority of agriculture in terms of its greater "employment-generating capacities" (see for instance Spengler 1959; Hollander 1973: Ch. 10). Since, however, Hollander does not fail to point out that Smith's concern is with the maximization not of employment but of income per head, he seems to share the "Smithian" view that a *full-employment* economy need not be a *full-development* economy (Bladen 1960). Smith's concern for income per head is proved by the fact that it is the maximization of this variable (not of employment) that is hindered by Smith's *bête noire*, i.e. by any artificial redirection of capital across sectors (whether vertically integrated or not).

the profit which is said by Smith himself to accrue to the capitals employed in any stage and which must actually be the same for capitals of equal size?

The answer can be found in Smith's chapter on productive labour (*WN, II*, III) as well as in his chapter on real and nominal value (*WN, I,* V). As for productive labour, it is known that one of Smith's definitions points to the increase of the "annual produce" resulting from the employment of this kind of labour while another points to the increase of the "power of purchasing" (commanding) more labour than the labour initially employed. As for real and nominal value, it should be noted that the value implied in the arguments based on the standpoint of society is *real* value; and that the value of the "annual produce" must accordingly be intended as the value of this produce in terms of the living labour that it exchanges for in the economy at large: the greater the "annual produce" the greater, given the wage rate, the amount of labour that it can command. Thus the "value added" to the annual produce is nothing but the extra quantity of labour commanded by the greater annual produce resulting from the (previous) employment of productive labour.

***8. The productivity of productive labour: an Austrian approach***

The reconstruction of the quantity and value arguments pursued above was framed in the context of Smith's own theory of value but was intended to be a step in our reconstruction of Smith's notion of "quantity of productive labour" in Austrian terms. The clue for proceeding in this direction may be taken from O'Brien (1975) and Negishi (1989). In their discussion of Chapter V these authors suggest that "the quantity of productive labour implies not only the number of labourers but also their productivity" (Negishi 1989: 96) and that the "greatest quantity of productive labour" (put into motion in agriculture) means "the most productive of productive labour" (O'Brien 1975: 208). These suggestions refer us back to Malthus's idea of a "scale of productiveness" of productive labour[13] and call for an answer to the problem as to whether the quantity and productivity (or "productive powers" in Smith's terms) of productive labour should be measured in the same manner as the quantity and productivity of *any* kind of labour.

This issue may be tackled by noticing in the first place that one thing is to ascertain what an individual *capital* does in each stage of the vertically-integrated process; another thing is to ascertain what the productive *labour* put into motion by this capital does in the same stage. We have

[13] Malthus's idea of a scale of productiveness applies to labour as such (regardless of whether it is productive or unproductive) and was dropped in the second edition of the *Principles* (1836). This was done for good reasons (not to be discussed here) and does not prevent us for reviving Malthus' idea with exclusive regard to *productive* labour.

seen above that an individual capital performs two functions (it puts into motion productive labour either "immediately" or, by replacing another capital, "indirectly") and that productive labour performs two functions as well (it increases the annual produce and adds a value to this produce). Now it should be added that, however inaccurate Smith's language may be, his "annual produce" is nothing but the output of the last stage, i.e. the "necessaries, conveniences and amusements" which constitute the "conveniency of the society": this is the fund from which wages and profits (plus rents when the case arises) are paid. Thus the profits to be paid on the capitals replaced at the end of any stage are drawn from the output of the final stage resulting from the productive labour put into motion in all the (previous) stages. This output is the greater the greater the "quantity" of productive labour employed in the previous stages or, which comes to the same thing, the larger the number of stages preceding the final stage; or, again, the greater the "vertical" division of labour from one stage to another. Since, however, the annual produce that commands living labour is the produce created in the final stage, both the quantity and the value of this annual produce are the greater the more distant from the last stage is the productive labour employed in each preceding stage. This implies the Austrian principle of the greater productivity of roundabout methods of production[14].

Once this principle is established and once the division of labour has spread accordingly, we can look at an economy from a "vertical" as well as from an "horizontal" point of view: in the latter case, the economy looks like a set of different sectors coexisting at any particular time whereas in the former case it will appear as what we have noticed above, i.e. as a set of vertically integrated sectors each of which corresponds to a different stage. In the same sense, Smith's "quantity of productive labour" can be split into two notions: one is the *horizontal*, the other is the *vertical* quantity of productive labour. The question as to how much productive is productive labour

[14] Negishi's assertion that a slower turnover of capital and a greater use of tools and materials per worker are associated with a greater division of labour implies a "vertical" view of this division and may be used to extend his own hint that there is "a strong resemblance" between an increase in the division of labour and the lengthening of roundabout methods of production (1989: 95ff. and note 14). Negishi's reconstruction of Chapter V, however, is based on the relation between the accumulation of capital and the division of labour and is accordingly focused on this division being *increased* rather than, as assumed in Chapter V, being taken as *given*; or, which comes to the same thing, on the fixed-circulating capital ratio *changing* from period to period rather than, as implied by Smith's silence in this connection, remaining *constant* from stage to stage in a given period. A more explicit recognition of Negishi's "strong resemblance" is provided by Hollander (1973: 152-3) although Hollander does not make use of it in his own reconstruction of Chapter V. It should be noted that a Classical-Austrian line in the theory of capital runs throughout the development of this theory. See, for instance, Senior (1836), Young (1928), Hicks himself (1973) and Bowley (1975). It should finally be noted that this line of thought is concerned with the notion and context of *productivity* (rather than *production*) and is focused therefore on the *deepening* (rather than the *widening*) of capital. It should also be added that the greater productivity of roundabout methods of production is, in classical terms, the greater productivity of productive labour in terms of *final* output.

pertains, therefore, to the second rather than to the first of these notions. Although both of them include the element of time (a typical ingredient of productive labour), they differ in this, that while the "horizontal" quantity of productive labour answers the question as to how many man-years of productive labour (how many "productive labourers" in Smith's elementary words) are employed *in one year*, the "vertical" quantity of productive labour answers the question as to how many man-years of productive labour are employed *for how many years*[15].

Thus Smith's "annual produce" may be said to increase because the quantity of productive labour increases either in its horizontal or in its vertical dimension. It should however be noted that what does increase in the second case is not only the *produce*; it is also the *productivity* of productive labour. For one thing is the increase in the annual produce (or in its value in terms of the labour it will command), another thing is the number of times a profit must be paid on each €100.000 capital employed in each stage, these two things being coordinated by the condition that the increase of the annual produce be great enough (and its forms be fit enough) to pay not only the profit on the given capital employed in the final stage but also the profits on the capitals employed in all previous stages. Hence the greater productivity (in terms of final output) of the productive labour put into motion in the earlier stages and the need for distinguishing the productivity of productive labour from the productivity of labour *as labour*: while the productivity of labour as labour is measured in terms of the *contemporaneous* output produced by a given amount of any kind of labour, the productivity of productive labour is rather measured in terms of the *future* profit (in the sense of "positive profit", i.e. of an increase of the annual produce in its final forms) that result from employing productive labour in all the previous stages of production. This future profit is the fund from which the profits paid on the "equal capitals" employed in each stage are drawn and corresponds to the *compound profit* of the vertically integrated process taken as a whole.

The relation between the profits paid throughout the stages and the compound profit generated by the vertically integrated process as a whole is not discussed in Chapter V. It had been hinted at by Smith, however, in a previous chapter where he argued that "in the progress of the manufacture not only the number of profits increase, but every subsequent profit is greater than the foregoing; because the capital from which it is derived must always be greater" (*WN, I,* VI: 57). This "progress

[15] The distinction between horizontal and vertical quantity of productive labour can be regarded as an early image of Jevons' distinction between the "amount of capital invested" ["employed" in Smith's language] and the "amount of investment [employment] of capital" (Jevons, 1879: 249) and corresponds to Wicksell's distinction between the growth of capital "in height" and "in breadth" (Wicksell, 1934, Vol.1). On Jevons as a link between the Classics and the Austrians, see Schumpeter (1954: 902ff).

of the manufacture" has nothing to do with what Smith calls elsewhere the "progress of improvement"[16]. The former, one is tempted to say, is a *vertical* progress. The idea of a vertical progress is confirmed by Smith himself when he later refers to the "stages of manufacture" to conclude that "the rise of profit operates like compound interest" (*WN, I,* IX: ). This idea raises the following question: since the "number of profits" increases with the increase in the number of stages, how is it possible to *produce* a compound profit out of which all these profits can be *paid*? Smith's answer is indirect and vague. From what was argued above, however, it results that the missing answer should come from the principle of the higher productivity of the productive labour employed in the earlier rather than in the later stages of the process[17].

***9. The international argument***

From what was argued above it results that arguments (a) (b) and (c) focus on the question as to whether a capital of given size commands a greater or smaller quantity of living labour (and, consequently, a smaller or greater quantity of dead labour) in different stages of the vertically integrated process. In the middle of Chapter V, however, Smith shifts his analysis from this question to the question as to whether the "equal capital" employed in a *given* stage of this process, i.e. in the stage of the wholesale trade, contributes to the formation of the "real wealth and revenue" of *one* country (the merchant's country of residence) *or* of *another*. Starting from the idea that the capital of a wholesale trader replaces two distinct capitals (i.e. the capital employed in the production of a particular commodity in one *region* of the world and the capital employed in the production of a different commodity in *another*) and that this trade comes in three sorts (home trade, foreign trade of consumption and carrying trade), Smith simply argues 1) that, if the two regions are parts of the merchant's country of residence (home trade), the merchant's capital enables two capitals to continue their operations in this country (thereby pushing forward two vertical processes and thus contributing twice to the formation of the wealth of this country); 2)

[16] This latter kind of progress is the specific object of Book III and will be discussed below in Section 10.

[17] If, for instance, 1 unit of labour $L$ is assumed to produce 1 unit of output $Q$ in time $t$, 2 units of $L$ employed in two consecutive periods $t-1$ and $t$ according to a "wisely chosen" roundabout method of production must result in more than 2 units of $Q$. It follows that the amount of $Q$ exceeding 2 units is entirely due to the unit of labour employed in period $t-1$ and represents the higher productivity of this unit of labour (measured in terms of final product) compared to the unit employed in period $t$. Since, however, what applies to $L_{t-1}$ applies also to $L_{t-2}$, $L_{t-3}$, $L_{t-4}$, it can be concluded that the earlier the stage in which 1 unit of labour is applied the higher is its productivity in terms of the final product (or, which comes to the same, the higher the productivity of direct labour in terms of this product).

that, if one region belongs to one country and the other region to another (foreign trade of consumption), the merchant's capital enables one capital to continue its operations in his country and the other capital in a different country (thereby pushing forward only one vertical process in any of these countries); and finally 3) that, if both regions belong to countries other than the merchant's country of residence (carrying trade), the situation is even worse. For "the capital of the Dutch merchant, which carries the corn of Poland to Portugal, and brings back the fruits and wines of Portugal to Poland, replaces by every such operation two capitals, neither of which had been employed in supporting the productive labour of Holland", i.e. in creating the "real wealth and revenue" of the merchant's country of residence (Holland) (*WN*: 389ff.)[18].

Thus Smith's "international argument" adds little to the analytical weight of arguments (a), (b) and (c) and rather seems to be an introduction to Smith's attack on Mercantilism which is fully developed in Book IV[19].

### *10. The stages-of-growth argument*

While the international argument differs from arguments (a), (b) and (c) in the sense that it is focused on a given stage (sector) of the vertically-integrated process (the wholesale trade) and tackles the question of the international allocation of the benefits resulting from the employment of capital in this stage, the stages-of-growth argument, or argument (e), shifts the analysis from the *static* approach of all previous arguments to the *historical* approach adopted in Book III, *Of the*

[18] Smith's strictures against the second and third sort of the wholesale trade are compounded by his observation that "the returns of the foreign trade of consumption are very seldom so quick as those of the home-trade" (*WN*: 390). This argument has been criticized by Cannan on the grounds that if this doctrine had been applied earlier in the chapter "it would have made havoc of the argument as to the superiority of agriculture" (*ibid*.: n.1). Cannan's criticism, however, ignores another aspect of the equal-capitals assumption, namely that these capitals are not only of equal *size*: they are also of equal time of *circulation*. Indeed, when Smith comes to this form of the wholesale trade in the context of argument (d), he notes not only that one of two capitals replaced by the merchant's capital belongs to another country but also that this capital circulates more slowly than previously assumed. Now a capital that circulates, for instance, twice as slowly as another capital is equivalent to one half of this capital and cannot be considered a capital "equal" to it (hence the damage inflicted to the home country by an artificial redirection of this capital into the foreign trade).

[19] This attack is anticipated as follows in Chapter V: "The riches, and so far as power depends upon riches, the power of every country, must always be in proportion to the value of its annual produce, the fund from which all taxes must ultimately be paid. But the great object of the political economy of every country, is to increase the riches and power of that country. It ought, therefore, to give no preference nor superior encouragement to the foreign trade of consumption above the home-trade, nor to the carrying trade above either of the other two" (*WN*: 394). However, since carrying trade is "the natural effect and symptom of great national wealth" albeit not its "natural cause", Smith's policy prescription is intended only for those statesmen who "seem to have mistaken the effect and symptom for the cause" (*WN*: 395).

*different Progress of Opulence in Different Nations* to which this new argument more properly belongs[20]. Thus what in Chapter V is regarded as a step in the journey by which the rude produce is turned into the final output of a particular country in a given year, is now reconsidered as a step in the journey by which a growing economy moves from one phase of development to another. Thus the stages of vertically integrated sectors of Book II become in Book III the stages of development of an economy growing "according to the natural course of things". This course is said by Smith to run in such a manner that "the greater part of the capital of every growing society is, first, directed to agriculture [first stage], afterwards to manufactures [second stage], and last of all to foreign commerce [final stage]" (*WN*: 405).

This change of approach is not without analytical consequences. While, for instance, arguments (a), (b), (c) and (d) above imply that individuals must be *indifferent* between employing their capitals in one stage or another of the vertical progress of manufacturing (due to the equal profits paid on equal capitals and however diverging their contributions to the real wealth and revenue of the country may be), the central thesis of argument (e) is that at the beginning of the "natural course of things" these individuals, far from being indifferent, do indeed *prefer* to employ their capitals in the initial stage (agriculture) or, after this natural course has taken off, in a subsequent stage (home trade or foreign trade, for example). The motives for the two kinds of behaviour are, accordingly, different. While in arguments (a) (b), (c) and (d) the behaviour of capitalists is determined by their expectations of equal profits from the "equal capitals" employed in any stage, in argument (e) this behaviour depends not so much on the greater profitability of the capitals employed in the earlier stages but either on the alleged *necessity* of growing food for the subsistence of a given population or on the alleged *security* resulting from the "natural inclinations of man" to have his capital "under his view and command" (*WN, III*, I)[21]. It should, however, be noted in support of Smith's consistency that what prompts individuals to prefer agriculture at the beginning of the "natural course of things" and to be indifferent between agriculture and other stages later on is, barring the

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20 The approach implied in the historical argument dates back to the *Lectures on Jurisprudence* where, however, it serves a different aim (Campbell and Skinner 1976: 11-6). On the relationship between Smith's economic analysis and his "theory of economic history", see Campbell and Skinner again (*ibid*.: 1-60).

21 The weakness of Smith's argument (e) lies not so much in the motives which set the "natural course of things" into motion but rather in his failing to explain *why* a growing economy should move to ever new stages. Consider, however, some arguments made by Smith elsewhere such as the one about the nature of agriculture as not admitting "of so many divisions of labour, nor of so complete a separation of one business from another, as manufacture" (*WN*: 9-11); or as the argument about the desire of food being "limited in every man by the narrow capacity of the human stomach" (*ibid*.: 183).

details discussed above, the unifying *principle of natural liberty*. It is this principle which allocates the capitals of individuals throughout the vertically integrated processes of a fully-developed economy and which directs as well these very capitals into agriculture rather than elsewhere at the beginning of the "natural course of things"[22].

### *11. Concluding remarks*

It was argued above that the supposed "ambiguous, confusing and mutually inconsistent" argument of Chapter V can be split into five different arguments. These have been identified above as (a) the quantity argument, (b) the value argument, (c) the replacement argument, (d) the international argument and (e) the stages-of-growth argument. Arguments (a), (b), (c) and (d) have been reconstructed above in the light of the Austrian notion of the higher productivity of time-consuming (roundabout) methods of production along with the distinction (which is shared by Böhm-Bawerk and which supports the whole of Smith's theory of capital) between the point of view of an individual and the point of view of society.. These arguments imply that "capitals of given size" play different roles in different stages of the same production process depending on whether they are considered from the point of view of their individual owners (to them they must yield the same profit, whatever the stage) or from the point of view of society (the amount of productive labour they command in each stage and the volume of output they contribute to the final stage are different from stage to stage). Arguments (a), (b), (c) have been distinguished above in one sense from argument (d) and in another sense from argument (e) while arguments (a), (b), (c), (d) and (e) have been distinguished in turn from the arguments of Chapter III, Book II, on the "principle that prompts to save" and on the accumulation of capital as such. The upshot of this reconstruction is that Smith's "agriculture", "manufactures", "wholesale trade" and "retail trade" can be viewed as the stages of vertically integrated processes (sectors) according to the modern notion of vertical integration. This view has made it possible to go deeper into Smith's notions of quantity and productivity ("productive powers" in Smith's own terms) of productive labour and to bring to light the roles played by this quantity and productivity in their *vertical* and *horizontal* dimensions in the formation of the "real wealth and revenue" of a society as well as of the "revenue or profit" of its individual members.

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22 This is an indirect proof that the ultimate aim of Chapter V is to pave the way for the attack on Mercantilism carried out in Book IV rather than for a defence of Physiocracy. This "system of political economy" is partly criticized in Book IV and may have influenced Smith's arguments of Chapter V on different grounds than those usually noticed.

The aim of the whole paper was not to determine what Smith meant by his “tortuous” arguments. It was, rather, to determine what Smith should have meant to be consistent with other parts of his theory. This aim has been achieved by showing that the Austrian notions of time-consuming methods of production and vertical division of labour can be used not only to separate the chaff from the wheat in what is just a section of Smith’s theory of capital but also to strengthen the ever-lasting wheat that can still be found in the whole of this theory.

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