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Dornbusch and Fischer on Capital and Income

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DORNBUSCH AND FISCHER ON CAPITAL AND INCOME

ABSTRACT

In this paper I critically analyze the relationship that professors Dornbusch and Fischer establish among the concepts of GNP, NNP and aggregate income. In principle, aggregate income is NNP; indeed, the whole point of introducing the concept of NNP is to determine what is the income of the economy in the aggregate. The definition of NNP excludes depreciation from aggregate income. But depreciation must be made good, and it must be so out of current production. On the ground that the factors that produce the goods that make up for depreciation must be paid, Dornbusch and Fischer conclude that the value of the portion of current output that makes up for depreciation becomes income in the aggregate. Since it is indubitable that the value of the other portion of output (that which consists of the goods not required to make up for depreciation) becomes income too, then it follows that aggregate income is GNP, not NNP. Then, Dornbusch and Fischer hold contradictory views. The cause, which I attempt at diagnosing in this paper, is a miscomprehension of the nature of capitalistic production.

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Introduction

The goal of this paper is to discuss the theoretical basis on which Dornbusch and Fischer establish one of the basic propositions of national accounting, namely, that the aggregate value of output, GNP, is equal to aggregate income.

Dornbusch and Fischer say explicitly that aggregate income is equal to GNP if depreciation is zero. This view is obviously true. And, if there is no depreciation, there is no room for the question as to whether aggregate income is equal to GNP or to NNP, simply because there would be no distinction between GNP and NNP. But it is a fact that production involves depreciation, and this means that we have to tell what has depreciation to do with income, or better, whether the value of the output of production goods that makes up for depreciation gives rise to the equivalent income.

Dornbusch and Fischer provide contradictory answers to this question. In some places, they say that the amortization of depreciation does not give rise to income; in some other places, they say that it does. On the whole, the view that emerges as dominant is the erroneous one that aggregate income is equal to GNP, that is, that the amortization of depreciation gives rise to an equivalent income.

Thus, the value of amortizations becomes either wages or profits in the aggregate. In the aggregate, what in the accounts of the particular firms of the economy is reckoned as amortization fund, gives rise to the equivalent in wages and profits when the firms purchase goods with these funds in order to make up for depreciation. In corporate accounting, part of the output of the firm must be devoted to making up for depreciation and cannot become wages or profits; in national accounting, on the contrary, no part of national output fails to become wages and profits. The reason is that, in the aggregate, the spending of the amortization funds gives rise to an equivalent income, either as wages or as profits. Though, of course, Dornbusch and Fischer do not state it explicitly, and even might be unaware of it,

this view carries the odd implication that aggregate capital is zero, a view that makes it impossible to understand the workings of a capitalistic economic system.

In this paper, my aim is to show why the view that prevails in Dornbusch and Fischer's textbook, which is but the standard view in today's Macroeconomics, is erroneous. I purport to bring to light the fallacy that has led us to this error with the aid of the analysis of the textbook of professors Dornbusch and Fischer. On the ground provided by this criticism, I want to restate the contrary proposition, which, in my view, is the true one, namely, that GNP must be greater than aggregate income in a capitalistic economy. This contrary view is no discovery of mine, and, as I hold elsewhere, it can already be found in Dr. Quesnay's "*Tableau Economique*".

The false proposition that GNP is equal to aggregate income is no invention either of professors Dornbusch and Fischer. They are totally innocent of this mistake which is the standard view in national accounting since Adam Smith. If I have chosen to write a paper on the textbook of professors Dornbusch and Fischer because I saw an opportunity to show to the profession how the study of the History of Economic Thought can help us in making Economic Theory today.

Let there be no misunderstanding: my choice of the textbook by professors Dornbusch and Fischer is not meant to involve any negative assessment of the quality of their work; all the contrary: I have chosen to trace the presence of Smith's proposition in their book because I consider it to be a fine textbook which I would not hesitate to use to teach Macroeconomics. I might have chosen any other textbook, true, but professors Dornbusch and Fischer's introduction to national accounting is the best I have found in the textbook literature, for, in addition to providing clear definitions of the accounting terms, it explains the theoretical basis of the system of national accounts.

I have chosen to focus on the second edition of the textbook. I know that there has been an eighth edition, but the treatment of the theoretical basis of national accounting has been drastically shortened. On this score, the second edition fits better the end of this paper, since the view on the subject remains the same.

The reader might feel some surprise to see that I challenge such a basic proposition as the equality of aggregate income and GNP. She or he might, perhaps,

feel a still greater surprise to see that the proposition that the value of output is equal to aggregate income was the subject of strong debate among some outstanding representatives of the Economics profession early in the 19th century. For some reason, the view of the French economist Jean Baptiste Say (see Say, 1817, vol. 2, 63-4), which is a version of Adam Smith's, prevailed over all the others and has gone unchallenged up to the present day. It is true that, after Say, some outstanding economists have arrived, from the treatment of a wide variety of problems, at putting to task the thesis that GNP equals aggregate income, most notably Keynes and Pigou. However, even these outstanding economists failed to understand that the prevalent view was actually wrong and, as a matter of fact, the profession deemed the question as satisfactorily answered by Say, leaving Keynes' and Pigou's obscure arguments in oblivion.

I have analyzed in detail the writings of the economists who have come across problems related with the thesis that GNP equals aggregate income, or what is the same, with the distinction between capital and income. The economists that I have analyzed are, in chronological order: Quesnay, Smith, Ricardo, Storch, Ramsey, Say, Marx, Marshall, Keynes, Pigou, Hayek and Leontief. The paper in which I aimed at analyzing their debates on the question as to whether GNP equals aggregate income became too long, and I had to split it into several papers. What the reader has now in her or his hands is the final chapter of that series. As she or he can easily understand, it makes sense in the larger context of the debates among the classics. However, it is self-contained because the treatment of professors Dornbusch and Fischer is self-contained.

The substance of what Dornbusch and Fischer say about the equality of GNP and income is contained in a few texts which are very clear and explicit. I have decided to quote them in full and to comment upon them with detail, so that the reader can easily see the logic of the arguments and check out whether my comments point to the conclusions that I intend to establish.

The paper has a very simple structure. It is divided into two sections. In the first section I quote the relevant texts of Dornbusch and Fischer and make the comments that I understand to be in order. In the second section, I establish the main conclusions that follow from the preceding critical commentary.

1. Analysis of the Texts

The subject of this paper is whether the aggregate value of output is equal to aggregate income, that is to the sum of the incomes of the productive factors in the economy. To begin with, Dornbusch and Fischer supply the reader with some basic definitions:

“Before we delve into the details of national income accounting, we briefly indicate the main relationships among the key variables. The central concept is gross national product (GNP), which measures the value of all final goods and services currently produced in the economy and valued at market prices. GNP is thus a measure, indeed the basic measure, of the total output produced in the economy in a given year.(...) Starting from the concept of GNP it will be shown, first, that the value of output produced gives rise to the total income received by wage earners and the recipients of interest, profits and dividends. Second, total spending on goods and services in the economy is equal to the value of output. And third, total spending is therefore also related to the value of all incomes received.” (Dornbusch and Fischer, 1981, 28).

In addition to defining GNP, Dornbusch and Fischer state here some basic identities: first, that GNP is equal to aggregate income; second, that GNP is equal to aggregate spending, and, third, that aggregate spending is equal to aggregate income.

“There are a number of subtleties in the calculation of GNP that are important to keep in mind. First, we are talking about final goods and services. The insistence on final goods and services is simply to make sure that we do not double-count. For example, we would not want to include the full price of an automobile in GNP, and then also include the value of the tires that were sold to the automobile producer as part of GNP. The components of the car, sold to the manufacturers, are called intermediate goods, and their value is not included in GNP.” (Dornbusch and Fischer, 1981, 29)

The fact that the tires are one of the factors required to produce a car or, in other words, the fact that the tires are an input to the production of cars, implies that the price of the tires is a part of the price of the car, and this implies that the price of the tires is already included in the price of the car. The price of the tires must be

covered by the price of the car for exactly the same reason that the price of the labor that produced the car must be covered by the price of the car, namely, to allow the amortization of the capital invested in producing cars. In a capitalistic economy, the ultimate goal of producing cars is to produce profit, but this, obviously, requires the amortization of the capital invested.

It is clear that the value of the tires is already included in the value of the car; look, however, at what Dornbusch and Fischer have literally said:

“The components of the car, sold to the manufacturers, are called intermediate goods, and their value is not included in GNP.” (Dornbusch and Fischer, 1981, 29)

This sentence is equivocal. Taken at face value, it says that the value of tires is *not* included in GNP, which is false, for the value of tires is included in the value of the car; therefore, the value of tires must be included in GNP. It is easy to see that what Dornbusch and Fischer meant to say is, rather, that the value of the tires is not to be counted *if the value of the car has already been counted*; in other words: that the value of tires is to be counted *once*, not *twice*. Then, the meaning of the statement is that the value of tires is to be counted, but not *separately* from the value of the car, but *within* the value of the car. As we are about to see, the problem is about double counting of the value of intermediate goods:

“In practice, double-counting is avoided by working with value added. At each stage of the manufacture of a good, only the value added to the good at each stage of manufacture is counted as part of GNP. The value of the wheat produced by the farmer is counted as part of GNP. Then the value of the flour sold by the miller minus the cost of the wheat is the miller’s value added. If we follow this process along, we will see that the sum of value added at each stage of processing will be equal to the final value of the bread sold.” (Dornbusch and Fischer, 1981, 30).

Therefore, the full value of bread is value added. Since bread is, in this text, the representative of final goods in general, as opposed to intermediate goods, the thesis that Dornbusch and Fischer are telling the reader can be summed up as follows:

1) The aggregate value of output is the aggregate value of the output of final goods.

2) The aggregate value of the output of final goods is the aggregate value added.

The first sentence says that, in order to reckon the value of output, we are not to add the aggregate value of inputs to the aggregate value of outputs. If we did so, we would be counting twice the aggregate value of inputs, for this value was already included, and, therefore, reckoned, in the aggregate value of outputs. I agree with this first sentence.

But I disagree with the second one, which says that the aggregate value of outputs is value added. I contend that this sentence is false. In fact, it is alternative statement of the proposition that GNP is equal to aggregate income. To show why, let us look at the example that, supposedly, shows that it is true.

There is an economy made up by two industries: flour and wheat. Flour is the representative of final goods, whereas wheat is the representative of intermediate goods. Dornbusch and Fischer tell us that the miller adds value to the wheat. What does this mean? That the value of flour is greater than the value of wheat. The excess is the wages of the labor employed in transforming the wheat into flour and the profit of the capital of the miller. To put it otherwise, the price of wheat is a part of the price of flour, which, besides the price of wheat, has two other parts: the wages of the labor employed in producing flour and the profits of the capital invested on producing flour.

Before proceeding any further, it is good to make explicit the meaning of some key terms. By “capital of the miller”, Dornbusch and Fischer mean “the wheat that the miller purchases from the farmer”. As I will show later on, this conception of capital is too narrow; in my opinion, by “capital of the miller” we should understand the value of *all* the productive resources employed by the miller. The productive resources employed by the miller are two: 1) wheat; 2) labor. This miller does not need a mill to produce flour: it produces it just with labor and wheat. Accordingly, the capital of the miller is, in my view, the value of the wheat and of the labor employed by him; in other words: 1) the purchases of wheat from the farmer; 2) the wages paid to the laborers employed in the flour industry. The market value of flour is such that, in addition to covering these two investments,

labor and wheat, it leaves a surplus which does not cover any investment and which is the profit of the miller.

Dornbusch and Fischer, on the contrary, understand that the capital of the miller is the wheat that he purchases from the farmer. Thus, they exclude the value of labor, wages, from capital. In what follows, I adopt their definition of capital, not mine. According to it, the value of the flour is greater than the value of the wheat (which is the capital of the miller), and the excess is the value added by the miller. This value has two parts: 1) the wages of the labor hired by the miller; 2) the profits of the miller.

It is clear that not the full value of the final good, flour, is value added. Some part of the value of flour is the value of the wheat consumed in producing flour. This part is not value added by the miller, but the value to which the miller added value. Accordingly, the example seems to show that it is false that the aggregate value of final goods is equal to aggregate value added: the value of wheat is part of the value of flour and is not value added. Remember what Dornbusch and Fischer wrote:

“The value of the flour sold by the miller minus the cost of the wheat is the miller’s value added. If we follow this process along, we will see that the sum of value added at each stage of processing will be equal to the final value of the bread sold.” (Dornbusch and Fischer, 1981, 30).

But, for what we have just seen, this paragraph should rather read:

“The value of the flour sold by the miller minus the cost of the wheat is the miller’s value added. If we follow this process along, we will see that the sum of value added at each stage of processing will NOT be equal to the final value of the bread sold.” (Dornbusch and Fischer, 1981, 30).

The reason is that the value of the final good has been shown not to be equal to the value added in that good. Now, the issue is about wheat: is the value of wheat equal to the value added in wheat? Or is there anything else to which value is added by the farmer? In other words: does the farmer, like the miller, have a capital to which he adds value?

If he did, the full value of wheat would not be value added; there would be a value to which the farmer adds value, namely the capital of the farmer. On the contrary, if the farmer does not have any capital, the full value of wheat is value added. Then, the value of GNP would consist entirely of value added: the value added in flour plus the value added in wheat. We can state this conclusion in a more explicit way. The second sentence of Dornbusch and Fischer, namely, that which says that the aggregate value of final goods is equal to the aggregate value added in the economy, is true if and only if the producers of intermediate goods do not have any capital, that is, do not consume any productive means in order to produce productive means.

In other words: Dornbusch and Fischer's second sentence would be true in an economy in which the producers of intermediate goods operate miracles on a regular basis, for producing goods without any productive means is, for all I know, no minor miracle in this cruel world. In economies in which miracles are not the foundation of the system, as, for good or for bad, real economies are, reckoning GNP as aggregate value leads necessarily to false results. Dornbusch and Fischer's second sentence is true only in miraculous economies; in real economies, it must be false. Note also that it carries the odd implication that, in a capitalistic economy, the producers of production means do not have capital, which does not seem to be very far from a contradiction in terms: a capitalistic economy in which the production of capital goods does not involve any capital.

Then, how are we to count GNP without making double counting? It is a pity that value added does not work. It is interesting to remember, however, that aggregate value added, as defined by Dornbusch and Fischer, is the value of commodities over and above the capital invested on their production, that is, over the value of the inputs employed. Since the capital of the economy consists of the stock of production (or intermediate) goods other than labor (I view which I will challenge later), it follows that aggregate value added consists of aggregate wages and aggregate profits. But the sum of aggregate wages and aggregate profits is precisely aggregate income; thus, if the aggregate value of the output of final goods is not equal to aggregate value added, it cannot be equal to aggregate income either. But remember what Dornbusch and Fischer wrote above:

“Starting from the concept of GNP it will be shown, first, that the value of output produced gives rise to the total income received by wage earners and the recipients of interest, profits and dividends. Second, total spending on goods and services in the economy is equal to the value of output. And third, total spending is therefore also related to the value of all incomes received.” (Dornbusch and Fischer, 1981, 28).

It follows that GNP is equal to “the total income received by wage earners and the recipients of interest, profits and dividends” only in miraculous economies in which the producers of intermediate goods do not consume any capital. In real economies, on the contrary, GNP must be greater than “total income” (aggregate income), because the capital of the producers of production goods must be produced as it is consumed. Of course, the capital of the producers of consumption goods is also to be produced as it is consumed, but it suffices to focus our attention on the production of intermediate goods.

At this point, Dornbusch and Fischer introduce the notion of Net National Product; they write:

“Net national product (NNP) as distinct from GNP deducts from GNP the depreciation of the existing capital stock over the course of the period. The production of GNP causes wear and tear on the existing capital stock; for example a house depreciates over the course of time, or machines wear out as they are used. If resources were not used to maintain or replace the existing capital, GNP could not be kept at the current level. Accordingly, we use NNP as a better measure of the rate of economic activity that could be maintained over long periods, given the existing capital stock and labor force. Depreciation is a measure of the part of GNP that has to be set aside to maintain the productive capacity of the economy, and we deduct that from GNP to obtain NNP.” (Dornbusch and Fischer, 1981, 30)

Thus, the income of the economy is NNP, for NNP excludes the value of the part of the output of the economy that cannot be consumed without impairing production. The obvious suggestion is that aggregate income is NNP, not GNP; indeed, the whole point of distinguishing NNP from GNP is to determine the balance of production against depreciation.

Note, first, that capital consumption is made good so as to keep constant the capital stock of the economy. Thus, Dornbusch and Fischer place themselves in

a stationary economy in which there is no accumulation of capital and production stays at the same level all the time. This is accidental, for the consumption of capital must also be made good in a growing economy, and for a stronger reason.

What is depreciation? In principle, “de-preciation” means to remove or take “preciation”, that is, “pretium” (price) or value. Depreciation is loss in value, which shows as fall in price. The cause of the loss in value is the partial destruction of the good that is the subject of value. Since value is a property of goods, the destruction of goods, their consumption, involves the destruction of that which has value, and thereby, of value itself. The capital stock is depreciated simply because the goods employed in production are destroyed or consumed in production. Some goods are destroyed “*pari passu*” with production, as the seeds, for instance, which have to die if wheat is to be generated. Other goods can enter several production processes, and can be said to be destroyed gradually, as the mill, for instance.

The destruction of the seeds, or of the mill, involves a destruction of value, which is consequent upon the destruction of production goods. At this point it is good to remember that production processes are, actually, re-production processes, and more so in a capitalistic economy. In a capitalistic economy, in which the accumulation of capital is the end, production is a cycle. Since the accumulation of capital has no limit, inputs are to be converted into output and output is to be converted back into input. Depreciation implies a parallel process of “preciation”, that is, of production of the productive goods that are being destroyed in production. In other words: production is a process which consumes goods and, at the same time, provides for the replacement of those goods. Inputs are transformed into outputs and, at the same time, outputs are transformed into inputs.

The circular cycle input-output and output-input is the necessary counterpart of the flow of capital as money, which has a circular structure as well. On this score, the English language is very clear: capital as money is “advanced” by the investor and gives rise to a “return” for him. But the return is but the starting point for a new “advance”, and so on, “*ad infinitum*”. The cycle advance-return is the counterpart in terms of money of the cycle input-output. Some part of output must make up for depreciation because, if it does not, the circulation of capital stops. Let me look at this idea in less abstract terms.

In principle, depreciation is to be reckoned in the capital account, not in the income account. However, since depreciation must be compensated by production, there arises the need of building amortization funds, and the source of these funds is in the sale proceeds accruing to the firm, which implies that depreciation in the capital income has a direct effect on the income account. That the funds of amortization in the capital account have their source in the income account reflects the fact that depreciation is compensated from production itself. It reflects the fact that not the whole of production can be consumed outside production, that some part of production must be consumed within production, in order to make up for the destruction of production goods.

The farmer advances money when he purchases seeds. The advance of money shows as an exchange of money for goods. This exchange (advance) is not conceptually a spending, for the money parted with will return. Money can be advanced only if there are goods ready for sale. When the farmer gets the wheat and sells it, the money that he advanced returns to him, together with a profit, which is the reason why he set the process in motion. But, since the goal of the farmer is value in exchange as such, that is, as money, or profit maximization, the point of arrival becomes automatically the point of departure for a new cycle. He has to advance again his increased capital, which will return to him together with a profit. The advance of capital, or of capital as money, requires the existence of seeds; to put it otherwise: it requires that depreciation has been compensated by a new production of the goods destroyed.

To make a distinction between GNP and NNP amounts to acknowledging this fact. NNP is the part of output that can be consumed outside production: the excess of GNP over NNP is the part of output that cannot be consumed outside of production without impairing production. The return of the advance to the investor calls for the re-production of the goods that were consumed in production. The value of these goods is the capital that the investor is advancing again and again. To put it otherwise: nobody questions that, in a capitalistic economy, it is fit to say that $GNP = NNP + \text{depreciation}$. The problem is: what is the relationship of GNP and NNP to income? Is it income for the class of investors of the economy as a whole

the full value that accrues to them as a result of the sale of output? Does depreciation give rise to its equivalent in income or does not?

Note that it is confusing to say, as Dornbusch and Fischer do, that NNP is a better measure than GNP of the rate of economic activity that could be maintained over long periods. To say so is confusing because the length of the time period has nothing to do with the notion of GNP nor NNP. It is not the case that there is a distinction between GNP and NNP because GNP is suitable for short periods and NNP for long periods, or the reverse. The point of distinguishing GNP from NNP is to distinguish the part of output that can be consumed outside production from the part of output that must remain enclosed within production. In other words: the distinction of the capital that has turned over (advance-return) in the period in question from the income that this capital has yielded. The primary interest, the ultimate goal of all economic activities in a capitalistic economy is *surplus* value, that is, income, because this is the source of the accumulation of capital.

Now, let us go the point: what is the income of the economy? GNP or NNP? Or something else still to be defined? The text already quoted gives us a hint.

Dornbusch and Fischer say there that some part of GNP must be set aside in order to keep constant the capital stock of the economy. The counterpart of depreciation (capital account) in the income account they call “capital consumption allowance”. This is the part of GNP that must be “set aside”, according to Dornbusch and Fischer; but aside of what? If of GNP, it should be noted that it does not make sense to set a part of GNP aside of GNP itself. Moreover: GNP was said to be the value of the output of goods and services during a period of time. According to this, there is nothing “aside” of GNP. Their text says, taken at face value, that a part of GNP is to be set aside of GNP, which is nonsense.

They right, however, in sensing that depreciation involves the need to set aside some part of output, or of its value, of something. But it is nonsense to set any value aside of GNP. What Dornbusch and Fischer had in mind is NNP; the last sentence in the last quotation should run:

“Depreciation is a measure of the part of GNP that has to be set aside OF NNP to maintain the productive capacity of the economy, and we deduct that from GNP to obtain NNP.” (Dornbusch and Fischer, 1981, 30)

Now, it makes sense. But Dornbusch and Fischer have still to tell whether depreciation gives rise to its equivalent in income. Thus, they write:

“Our statement above equating the value of output and income is correct with two qualifications:

1. The first correction arises from depreciation. As already noted, part of GNP has to be set aside to maintain the productive capacity of the economy. Depreciation should not be counted as part of income, since it is a cost of production. As a rule, depreciation amounts to about 10 per cent of GNP. Depreciation is usually referred to in the national income accounts as the *capital consumption allowance*. After subtracting depreciation from GNP, we have NNP.

2. The second adjustment arises from indirect taxes, in particular, sales taxes, that introduce a discrepancy between market price and prices received by producers. GNP is valued at market price, but the income accruing to producers does not include the sales taxes that are part of market price, and thus falls short of GNP. Indirect taxes, along with some other items of the same nature, account for about 10 per cent of GNP.

With these two deductions we can derive *national income* from GNP (...). National income gives us the value of output at *factor cost* rather than market prices, which is GNP. It tells us what factors of production actually receive as income before direct taxes and transfers.” (Dornbusch and Fischer, 31-2).

The idea is: GNP is not equal to aggregate income because there are indirect taxes and depreciation. If we abstracted from these two elements, GNP would be equal to aggregate income.

Note first that what the existence of indirect taxes implies is that some part of GNP or aggregate income accrues to the government instead of to private individuals. Dornbusch and Fischer hold that the existence of this share for the public sector breaks down the equality between aggregate income and GNP; the reason is that the part of aggregate income that accrues to the public sector as indirect tax revenue does not obviously accrue to the private sector as income. Note that what Dornbusch and Fischer write would imply the odd thesis that GNP exceeds aggregate income by the indirect tax revenue.

The reasoning of Dornbusch and Fischer is defective. The existence of indirect taxes has nothing to do with the equality between GNP and aggregate income. The fact that the government shares in aggregate income through the

indirect tax revenue implies that it also shares in GNP to the same extent, so that GNP and aggregate income are always equal, no matter how they are distributed between the public and the private sectors of the economy.

The explanation of Dornbusch and Fischer of why the existence of indirect taxes breaks down the equality between GNP and aggregate income shows, as a matter of fact, that they employ the term “aggregate income” in an equivocal way, that is, with two different meanings. When Dornbusch and Fischer say that the existence of indirect taxes breaks down the equality between GNP and income, by “aggregate income” what they actually mean is “aggregate income of the private sector excluding the income of the public sector”. If, on the contrary, “aggregate income” is taken to mean the sum of all the incomes of the economy, as it is actually taken to mean in what precedes the quotation that I am discussing, then the existence of indirect taxes does not imply that GNP ceases to be equal to aggregate income, but only that some part of aggregate income is not income of the private sector. The presence of indirect taxes is irrelevant for the question at issue, namely, whether the value of aggregate output is equal to aggregate income.

Having excluded indirect taxes from the discussion, let us take up depreciation, which is the source of the real problem.

In the example of the miller and the farmer, Dornbusch and Fischer held that GNP is equal to aggregate income because every purchase is a sale and the reverse: this is why what is cost of production for the miller is income for the farmer. Every cost of production implies an equivalent income for some other producer in the economy, and this is why GNP was said to be equal to aggregate added value. As the reader can see, the quotation under discussion contradicts the previous thesis held by Dornbusch and Fischer themselves that every cost of production is an income for some producer and that every income is cost of production for somebody else: now depreciation is excluded from aggregate income precisely because it is a cost of production. Thus, depreciation is excluded from income, on the ground that, being a cost of production, it is not an income.

If depreciation is excluded from income on this basis, then wages and profits should also be excluded from income. If costs of production are to be excluded from income, then aggregate income must be zero, because every income

is cost of production when looked at from the other side of the transaction. What is going on here?

My interpretation is that, though Dornbusch and Fischer are pointing in the right way when they exclude depreciation from income, they fall prey to the error of identifying flow of money with flow of income, as if capital did not circulate. Let me show how.

What is it that makes depreciation such a special cost of production in relation to wages and profits? As I see it, what troubles Dornbusch and Fischer is that it is not clear who is the other party of the transaction when it comes to the compensation of depreciation. It is clear that the wages of the worker are a cost for the employer, but, to whom does the economy make a payment in order to make up for depreciation? Since the goods that make up for depreciation are to be provided by the productive system itself, it seems to follow that depreciation is a payment from the economy to the economy.

The key is that the problem of depreciation is not at the level of a single producer, but at the level of the economy as a whole. Depreciation involves a loss for everybody in the economy. The actual reason why Dornbusch and Fischer exclude depreciation from aggregate income is not because it is a production cost, but because it is a production cost *for the economy as a whole*. Contrary to depreciation, wages, for instance, are not a production cost for the economy as a whole, but only for the class of employers of labor. The income of the sellers of labor, or better, the money payment to the sellers of labor, is but the other side of the coin of what shows as production cost for the buyers of labor. In contrast to depreciation, wages are not a cost of production for the economy as a whole, but just for a particular class of people in the economy.

The example of the miller and the farmer is a good place to illustrate this point. The replacement of the consumption of seeds by the farmer is a production cost which gives rise to no income whatsoever in the economy: it is a cost both for the farmer and for the miller, and income for none of them. The output of wheat or its value represents the value destroyed by the economy when producing wheat and flour. This value can also be expressed in terms of wheat and flour, and this would

be more significant and would make more clear the view that I am defending in this paper.

Dornbusch and Fischer are pointing to the right way when they write that depreciation does not give rise to an equivalent income because it is a production cost, but failed to express it rightly; they should have added the tag “for the economy as a whole”. Without this tag, their statement that depreciation is not income because it is cost of production stands in contradiction to their view that GNP can be calculated by the adding up of values added. In the quotation that we are examining at present, Dornbusch and Fischer realize that depreciation is consumption of production means; as consumption, depreciation is no part of the output of the economy; moreover, it contributes to the diminution of the output of the economy. As consumption, depreciation involves a loss of value for the economy as a whole, and this is why their instinct leads them, rightly, to exclude it from aggregate income.

But this exclusion poses a problem, for it seems to imply that the factors engaged in producing capital goods do not get profits and wages, that is, that they are not paid:

“In this section we show that *income is equal to the value of output* because the receipts from the sale of output must accrue to someone as income. The purchaser of bread is indirectly paying the farmer, the miller, the baker, and the supermarket operator for the labor and capital used in production and is also contributing to their profits.” (Dornbusch and Fischer, 1981, 31)

This is a complicated remake of the example of the farmer and the miller. Let us strip it of unnecessary complications; it would run as follows:

“In this section we show that *income is equal to the value of output* because the receipts from the sale of output must accrue to someone as income. The purchaser of flour, the miller, is indirectly paying the farmer for the labor and capital used in production and is also contributing to his profits.”

In a nutshell: income is equal to output because the farmer gets as income the value that he gives out as wheat. In other words. income is equal to output

because the farmer is paid by the miller in exchange for wheat. Now, it is easier to see where the error of Dornbusch and Fischer lies: it is not the case that the value of the full output of wheat becomes wages and profits in the farming industry, for the farmer cannot sell his full output of wheat. He has to keep for himself as seeds some part of his output of wheat. Since the farmer makes up for depreciation out of his own output, that is, “*in specie*”, the return of the capital of the farmer to the farmer is not recorded as a flow of money. In order to make things clearer, let us suppose that this return needs a transaction intermediated with money.

This would be the case if the farmer purchased his seeds from another farmer; in this case, our farmer could sell his full output of wheat to the miller. But note, and this is crucial, that part of the sale proceedings accruing to him from the miller cannot become wages or profits, because he has to purchase seeds from his fellow farmer. This means that the farmer must build a fund out of his sales in order to make up for his consumption of seeds. This fund of money represents the value of the seeds. Thus, we can see that the fact that the farmer purchases seeds from a fellow farmer or keeps for himself part of his output of wheat is irrelevant for the question at stake. In both cases, there is a part of the value of the output of wheat which is not available as wages or profits because it has to be allocated to making up for depreciation (consumption of seeds), either through a monetary exchange with a fellow or directly, that is, without any intermediation of money, “*in specie*”. Note, by the way, that our farmer can sell more wheat to the miller when he does not keep any wheat as seeds to the extent that his fellow farmer can sell less wheat to the miller: instead of selling to the miller, he now sells to our farmer.

The conclusion of the preceding comment is: the fact that the factors that produce the goods that make up for depreciation are paid in money does not imply that this money is income for them. What it implies, rather, is that some part of the flow of money in the economy does not represent income, but the circulation of capital. We can rewrite the passage so as to bring to light what Dornbusch and Fischer had in mind:

“In this section we show that *income is equal to the value of output* because the receipts from the sale of output must accrue to someone as MONEY.”

In other words: income is equal to output because every producer gets the money equivalent of what he sells, no matter whether he produces consumption goods or capital goods. This argument conceals a fallacy, namely, that of identifying “income” with “money”. Such an identity cannot exist in a capitalistic economic system, because it rules out automatically the very existence of capital. It fails to see that the notion of income is the correlative of that of capital, and suggests that the end of a capitalistic economy is consumption, maximization of output or anything else than maximization of profit. But the defining property of a capitalistic economy is profit maximization, that is, that there is such a thing as capital, and that the nature of capital is to yield income.

We can now correct the text of Dornbusch and Fischer; it should run as follows:

“In this section we show that *THE AGGREGATE FLOW OF MONEY is equal to the value of output* because the receipts from the sale of output must accrue to someone as MONEY.”

They should have continued:

“This is not to be taken to mean that the flow of money is the same as the flow of income, because the value of the goods consumed within production involves a cost of production for the economy as a whole, which must be made good out of production itself. Therefore, only a part of the total flow of money represents a flow of income; the other part represents the return of the capital invested to the investor. This flow of capital back to the investor does not represent an income for anybody in the economy. The fact that the miller pays money to the farmer in exchange for wheat does not imply that this money is income for the farmer; likewise, the fact that the farmer pays money to the miller in exchange for flour does not imply that this money is income for the miller. Both the miller and the farmer cannot distribute the whole of their sale proceeds as wages and profits: the part that they cannot distribute represents their capital, which continually flows away from them and back to them: it yields income, but does not become income, even when, instead of returning “*in specie*”, it returns by the intermediation of money.”

Dornbusch and Fischer say, implicitly, but very clearly, that if we deny that depreciation gives rise to the equivalent in income, we are thereby denying that the producers of capital goods are paid for what they sell. This mistake is made

because of the prior confusion of income with money. The right view is as follows. To say that depreciation does not give rise to its equivalent in income does not amount to saying that the producers of capital goods are systematically robbed; it just means that the flow of money that accrues to them is not, conceptually, a flow of income.

Only a part of the money accruing to the producers of capital goods represents income, that is, wages and profits. There must be a part which represents their capital. But note also that only a part of the money accruing to the producers of final goods represents income, that is, wages and profits. Some part of that flow of money represents capital. The flow of the capital of the producers of final goods is easier to see because they have to get their capital goods from the producers of intermediate goods, and these transactions are intermediated by money. Through these transactions, the producers of intermediate goods can turn the value of their wages and profits into consumable goods.

Let me make the point in an alternative way. All the way through the second chapter of their textbook, Dornbusch and Fischer make the mistake of holding that the value of the output of production goods that makes up for depreciation becomes income. They think so because, after all, it is the output of the industries that produce productive means: as output, it is part of the aggregate output of the economy and, therefore, of GNP, just like the output of consumption goods. So far, they are right. Their mistake is to lose sight of the fact that this production of productive means is just making good the loss of value of the stock of productive means owing to productive consumption. The loss of value is being balanced by the creation of new value, which is truly *new* value, but not *surplus* value, because, formally, it represents a replacement. The excess of the new value, that is, of the value produced, over the original value invested is the income of the economy: it is that which can be consumed without impairing production, that is, the output of consumption goods that are not required in production. This is why the production of productive means is but a stage in the process of the maintenance of the capital stock of the economy. It is *value added*, but not *excess value added*, because it just replaces the goods consumed within production: the value of these goods represents the value originally invested, and, in amortization, it reappears in

the same shape after having existed in the shape of money: the productive goods are bought again and a new turnover of capital begins.

2. Conclusions

In this paper I have discussed the thesis that the aggregate income of a capitalistic economy is equal to the aggregate value of its output. I hope to have convinced the reader that this thesis is false. In a capitalistic economy, the constitutive end of which is the accumulation of capital, aggregate income cannot be equal to GNP: it is equal to aggregate income plus the value of the capital that has actually turned over within the time period in question and has given rise to aggregate income. That it has turned over means that it has been amortized out of production. This capital, or the value of it, is what is currently pointed to by the word “depreciation”. Then, my view, which is a restatement of Quesnay’s, is that the process depreciation-amortization does not give rise to any income for anybody in the economy. The flow of money that represents the amortization of depreciation is not a flow of income, but a flow of capital. Part of GNP cannot be income for anybody in the economy, because it has to make up for the consumption of production goods, and cannot be consumed either by wage or by profit earners.

The growth of GNP does not imply the growth of national income, because there is a part of GNP which is not national income, but national capital. National income may fall, either in relative or absolute terms, or even in both, at the same time that GNP increases, this would be the case if national capital grew by a proportion greater than that by which GNP grows. The growth of GNP is for the national economy the same as what the growth of sales is for a particular business firm: a partial datum about capital accumulation which must be duly netted by deducting from it the capital that has turned over within the time period examined.

Let me remind the reader that I am leaving aside the part of the capital invested on labor as wages. According to Quesnay, NNP was total product minus depreciation *minus wages*. I have preferred not to treat of the relationship between wages and income in this paper, because it would become too long and, above all, because professors Dornbusch and Fischer, in contrast to what is the case for

depreciation, do not show any doubt as to the thesis that wages are income. Again, they take this second standard and fundamental error from Adam Smith, but never put it to task explicitly. In view of these facts, I have preferred to deal with this second fundamental error in another paper solely devoted to Adam Smith's clumsy distinction between capital and income.

1) It is false that GNP is equal to aggregate value added; aggregate value added (which is the same as aggregate income) is equal to NNP. There is a part of total output which represents the value to which value was added during the time period considered. This part is depreciation, which is the part of the value produced that replaces the equivalent worn out in production, and is not part of the value added.

2) Aggregate value added is equal to aggregate income and aggregate income is equal to aggregate demand. But neither of the three is equal to GNP, because GNP, in addition to aggregate income, includes aggregate capital. Accordingly, if the goal of the economy is the growth of income, then it is not the growth of GNP, but of what Dornbusch and Fischer call "NNP": the value in excess of the value of capital consumption.

One may dispute the view that the goal of a capitalistic economy is the growth of capital: one might reply that it is the growth of income. However, the two theses do not stand in opposition. The only source of capital accumulation is income: income gives rise to capital and capital gives rise to income. Capital and income are two faces of the same coin, which is the accumulation of wealth as value in exchange. The point made in this paper is that the income of the economy is not the same thing as the capital of the economy; or better: capital and income are different concepts in general, and do not cease to be so in the particular case of national accounting.

My rejection of the equality of GNP and aggregate demand seems to entail a serious objection for my view, which may be posed as follows. According to the standard view, aggregate demand = aggregate income = aggregate spending = GNP. If I say that income is smaller than GNP, and income is equal to demand, I am implying that demand is smaller than GNP. Therefore, it seems that my view implies that aggregate demand is unable, by definition, to purchase the whole of the goods that are brought to the market for sale.

Let me put the objection in another way: how is it possible that aggregate wages + aggregate profits purchase the full output of goods of the economy, the value of which, according to my view, includes aggregate profit + aggregate wages + capital consumption? It seems that, if I were right, the workers and the capital owners together would be unable to purchase the output of the economy, because they cannot pay for capital consumption; they could pay, at most, for wages and profits, but not for the consumption of capital. Am I say that the full output of the economy cannot be sold because of a systematic lack of demand?

No; I am not. My answer is: there is no paradox. The workmen and the capital owners together *can* purchase the full output of the economy because they do not have to pay for capital consumption. And they do not have to pay for it because it cannot be sold to them. Nobody in the economy has to pay for the seeds of the farmer simply because the farmer cannot sell this part of his output of wheat to anybody. In an economy in which no producer provides for himself “*in specie*” and all the goods are marketed, this proposition holds good too: the part of the total flow of money equivalent to the value of the replacement of depreciation does not become either wages or profits: it represents the value of the capital of the economy that has turned over during the period in question.

3) The distinction between capital and income allows us to close the gap between corporate and national accounting. There is a strong asymmetry between corporate accounting and national accounting. The name of the game in corporate accounting is profit: every bit of information makes sense in relation to profit and is organized in relation to profit. We can say that the end of corporate accounting is to estimate income in order to make capital grow: to determine the best way to make

money in order to make money. Without the distinction of capital and income, the whole edifice of corporate accounting falls down.

The landscape changes abruptly when we look at national accounting. Here, the name of the game is GNP, not profit. If GNP falls, we have a recession; if GNP rises, we have a boom. GNP is equal to aggregate income: when GNP falls, aggregate income falls; when GNP rises, aggregate income rises. When aggregate income rises, welfare rises, and we are better off; when it falls, welfare diminishes, and we are worse off. GNP is the name of the game in national accounting.

But GNP is, in a significant sense, the contrary to profit. To say that the goal of the economy as a whole is the maximization of GNP amounts to turning corporate accounting upside down. Whereas profit is the excess of the value produced by the firm over the value invested as capital, GNP is not the outcome of a balance, and tells us that, after all, sales and costs are the same thing looked at from different points of view. National accounting does estimations of depreciation and NNP, certainly, but these are just different “measures of the rate of economic activity”, to use Dornbusch and Fischer’s phrase, which carries the suggestion that, in the end, there is no conceptual difference between GNP and NNP. In corporate accounting, this means that there is no essential distinction between sales proceeds and profits.

If, as I propose in this paper, we acknowledge that there is such a thing as aggregate capital, that is, that the amortization of depreciation does not represent any income, then we can see that the economy as a whole does not function upon principles different from those upon which its constituent units do. We can see that the economic system as a whole is organized around profit maximization, which is the principle upon which its constituent units or firms are organized. The reasoning that led us to reject in national accounting the fundamental principle of corporate accounting that capital and income are different is removed and we can thus get a coherent picture of the workings of the economy as a whole. Otherwise, we cannot lay a rational basis for economic policy.

The distinction between capital and income is another expression of the very nature of capitalistic production. Since we live in a political society which is a capitalistic one, national accounting must take the distinction between capital and

income as a fundamental principle, if it is to be informative, and not a source of conceptual confusion.

4) Dornbusch and Fischer's view that the amortization of depreciation becomes income carries the implication that the capital of the economy is zero. So does the thesis that the aggregate value of output is equal to aggregate value added. If the full value of total output becomes income for somebody in the economy, then aggregate capital must be zero.

5) If the flow of capital is not the same as the flow of income, then investment does not give rise to any income, but to capital, or better, to an increased flow of capital. Indeed, investment is defined as the change in capital. The commonly accepted proposition that investment spending gives rise to the equivalent income rests on the erroneous premise that the recipient of the money invested does not have any depreciation that is to be made good. In the end, this was the silent premise upon which the example of the miller and the farmer was built. The farmer produces wheat without any seeds, with labor alone. If the farmer has to make up for capital depreciation, that is, if the recipient of investment spending has to make up for capital consumption, as it must needs be, then a part of the circulation between the two producers considered cannot become either wages or profits.

Investment is the addition to capital, not to income. The idea that investment gives rise to an equivalent income comes, at least partly, from the error of considering that investment purchases labor and, thus, gives rise to wages. Against this view, it is to be noted, first, that it is false that the whole of investment purchases labor; some part of it must purchase machinery, raw materials and production means other than labor. Secondly, even though investment gave rise to an equivalent fund of wages, wages are not income, but capital. Wages are the price of a production good, labor, and are a production cost. The fact that the sale of labor gives rise to a flow of money from the firm towards the worker does not mean that this flow of money represents an income for the worker. In fact, this money is but a part of the capital of the firm which will be recouped together with the corresponding profit.

Consumption spending must be clearly distinguished and set against investment spending. Strictly speaking, investment is no spending at all. In fact, the notion of “investment spending” is a contradiction in terms, because the money invested returns back to the “spender” or investor, so that, in the end, it becomes apparent that he had not spent the money. An spending that gives rise to the return of the money “spent” to the investor is no spending whatsoever. To say that investment is spending is to tell half the story, and, in this case as in many others, half the story is not half the truth, but a mistake and a want of understanding of economic concepts. According to what I have explained in this paper, investment is the first moment of the cyclical flow of capital, not any moment of the flow of income.

In “investment spending” we do not have an exchange of money for commodities that pass into consumption, but of money for commodities that produce goods that are sold and give rise to a returning flow of money which is greater than the flow of money that was invested. The process as a whole is that money is invested in order to get more money. Aggregate demand and income do not grow when there is investment; what grows is aggregate capital.

On the light of what has been said, the expression $Y=C+I$ takes on a new meaning. It says: the income of the economy is the surplus value accruing to the class of investors, Y. The money in which this income is expressed is either exchanged for consumption goods, C, or for production goods so as to increase the magnitude of the total capital invested, I. Note, in particular, that Y does not include wages. Wages are part of capital, not of income, even though they are paid in money.

I has nothing to do with the amortization of depreciation either: the distinction between gross and net investment is a by-product of the error that the amortization of depreciation gives rise to the equivalent in income. I stands for the change in the value of the capital advanced, and, by definition, is a net magnitude, because the amortization of depreciation is not a part of income.

A Note About Double Counting

Dornbusch and Fischer say that GNP is the value of final goods on the ground that if you counted the value of final goods plus the value of the intermediate goods, you would make double counting. This is true but conceals a fundamental mistake.

The example proposed by Dornbusch and Fischer is that of a car. You should not count the car and the wheels separately, or the bread and the flour. Bread is the final good; flour the intermediate good. It is true that the aggregate value of output is not the value of the bread plus the value of the flour, but only the value of bread. However, if the production of bread is a capitalist business, its goal is the accumulation of capital and the process must go on continually. This means that, as flour is consumed to bake bread, fresh flour must be produced; with this fresh flour, fresh bread will be produced, so that the process of capital accumulation can go on continually. This implies that the economy is producing new flour in addition to bread; otherwise, production (and with it, capital accumulation) must stop. Therefore, the output of flour is to be counted separately from bread, though certainly not as income, but as capital. Such a procedure does not entail double counting and is required by the nature of capitalist production. The key is that the output of flour which makes up for the consumption of flour by the bread industry is not income, but replaces the capital of the baker.

The truth of my criticism to the commonly accepted view can be shown from a consideration of depreciation. In an economy in which only bread and flour are produced, the consumption of flour is the depreciation of the “capital stock”, the consumption of capital. If, at the same time that bread is produced, flour were not produced, the production of bread must eventually stop. Therefore, the two production processes must go on together, and each one must yield its corresponding output. The value of the output produced in the economy as a whole is, undoubtedly, the value of bread plus the value of flour. However, Dornbusch and Fischer say that we are not to count the value of output as the value of bread and the value of flour, because the value of flour is already included in that of bread. This is true about the flour *consumed* in the production of bread, but *not* of the flour *produced* in order to make up for the consumption of flour by the bread industry. The production of bread presupposes the previous existence of flour, and this

starting point is to be reproduced *at the same time that bread is produced*. The accumulation of capital demands this.

I agree with Dornbusch and Fischer that the value of the flour consumed for the production of bread is not to be counted separately from the value of the bread in which it is included. But they are wrong in holding that the output of flour that makes up for the consumption of flour is not to be counted. They are right in holding that it is not to be counted *as income*, but wrong in holding that it is not to be counted *altogether*: my point is that it is to be counted *as capital*. Dornbusch and Fischer fail to see this because their thesis that aggregate income is equal to the value of the output of final goods imply that capital is zero. Therefore, a logical conclusion is that there is no account for capital: the economy has just an income account.

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