

Article

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Critical Reflections on Rothbard's Concept of Gross Investment

Abstract: This paper critiques Rothbard's ([1962] 2004. *Man, Economy, and State – A Treatise on Economic Principles*. Auburn, AL: Mises Institute) concept of gross investment. Rothbard introduced the concept in order to demonstrate his point that it is not consumer spending that primarily drives the economy, like the mainstream Keynesian view maintains, but the capitalists' spending. In this paper, it is argued that, contrary to Rothbard's opinion, the amount of gross investment as he defines it does not contain significant information concerning the question as to whether the capital structure of a society can be upheld or not. Instead, it is an arbitrary figure that depends on the length of the different stages of production. This problem has not been recognized by Rothbard because his exposition rests upon the assumption of an equal time length for all stages. Apparently, he has been led astray by his intention to find arguments against the importance of consumer spending in the determination of output.

Keywords: gross investment, structure of production, Murray Rothbard

DOI 10.1515/jeeh-2013-0001

1 Introduction

Since the publication of Friedrich von Hayek's (1935) seminal work on prices and production, the so-called structure of production has become a central concept in Austrian capital theory and, therefore, also in Austrian business cycle theory. It has been dealt with in several monographs (e.g. Skousen, 2007; Hülsmann, 2011) and articles, both theoretical (e.g. Filleule, 2005, 2007; Mulligan, 2002) and empirical (e.g. Young, 2012), and was part of the explanation of the production

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process in three major treatises on economics (Rothbard [1962], 2004), macroeconomics (Garrison, 2001), and banking (Huerta de Soto, 2009).¹

This paper is not thought to criticize this concept as a whole but it is rather dedicated to the critique of one of its elements only – *gross investment*. The latter concept had been part of the original explanation by Hayek (1935, 45) under the name of “new and renewed investments,” but only with Rothbard ([1962], 2004) did it start to be systematically employed in several arguments, especially in the criticism of the conventional method to determine GNP figures. The function of the concept is to demonstrate that it is not consumer spending that primarily drives the economy, like the mainstream Keynesian view maintains, but the spending of capitalists. In the following critique, it will become clear that the amount of gross investment in an economy, as defined by Rothbard, does not provide any significant information. Instead, the whole concept is arbitrary. Its most important component – the payments for intermediate goods – is inversely related to the length of the individual production stages. This length is merely a matter of the organization of the production process and does not reflect the contribution of capitalists to the maintenance of the production structure as Rothbard supposes. The problem has been overlooked due to the assumptions that accompanied the exposition of the concept of gross investment.

It must be stated at the outset that this article only criticizes the version of the concept of gross investment that can be found in Rothbard ([1962], 2004) and that has been adopted by other authors, most notably by Huerta de Soto (2009). It does not deal with other versions of the concept, like the one characterized by Garrison (2001, 41).

2 The structure of production

2.1 The stages of production

To understand the role of gross investment, it is necessary to have at least a general idea of the structure of production first. The role of the structure of production within Austrian economics is to illustrate that the relationship between the aggregated magnitudes of consumer spending, investment spending, and saving is not as unproblematic as indicated in mainstream macroeconomics. There, as can be seen from the so-called Keynesian cross, which is used in nearly every macroeconomics textbook, consumption (spending on

¹ Barnett II and Block (2006, 40, n. 3) provide a list of further references.

consumption goods) and investment (spending on new capital goods and inventories) determine aggregate demand which, in turn, determines production and income. Aggregate savings result as a corollary and, in equilibrium, must equal aggregate investments.

According to Austrian authors, this conventional analysis overlooks the fact that investment is not a one-dimensional magnitude. It is impossible to lump all possibilities of investment together and treat them as homogeneous parts of the production sector, as investments differ from each other with respect to their maturity.

The idea of stressing the heterogeneity of production and investment goes back to Carl Menger, the founder of the Austrian School. In his famous *Grundsätze der Volkswirtschaftslehre*, he distinguished not only between the consumption and the production sphere, as the classical authors had done before him (Skousen 2007, 16), but introduced the notion of the different orders of goods. Consumption goods he called goods of the first order. Goods that helped to produce these were goods of the second order. Those that helped to produce these were goods of the third order and so on (Menger 1968, 7 ff.). That is, not all goods produced are goods of the first order. A large part of these goods consists of goods of the higher orders, such as raw materials, tools, and machines, and these are not homogeneous but occupy different stages in the production process.

Hayek (1935) provided a graphical illustration of this thought. However, as Rothbard is the one author most responsible for the concept of gross investment, the topic of this paper, and as many later authors have adopted the concept from him, the following representation is based on Rothbard's exposition in his treatise *Man, Economy, and State* (Rothbard [1962] 2004).

On page 369 of this work, we find the structure of production depicted for one individual consumption good (see Figure 1). These types of diagrams can be conceived in two different ways. They can represent the successive stages of the production of the output of any given moment of time, but also the processes of production going on simultaneously in a stationary society (Hayek 1935, 40). In the following discussion, we will solely focus on the second interpretation, because it is the basis of Rothbard's concept of gross investment.

The main point of Figure 1 is to demonstrate that the story of production and investment does not end once the consumers pay the 100 ounces (of gold) for the consumption good to the capitalist of the first stage who sells these goods. Even if we assume, as Rothbard ([1962] 2004, 394, 397) did, an equilibrium situation – with no net savings out of income – this capitalist still has to pay salary and rent to the owners of the originary factors of production land and labor, here 15 ounces, and 80 ounces to the capitalist of the second stage for the

and therefore it can highlight and illustrate problems that would otherwise remain unnoticed.

2.2 The “illogicality” of the conventional gross national product figures

According to Rothbard ([1962] 2004), the analysis of the structure of production brings to light the “illogicality” (p. 401) of the current way of determining the gross national income. As he sees it, the net national income, though being a “legitimate and often useful” (p. 397) figure for some purposes, does not pay due attention to the vast amount of spending that takes place between the capitalists at the different stages of production. Instead, it focuses on consumer spending on the one hand and the net income received by the capitalists and the owners of land and labor on the other. The additional payments between the capitalists that can be seen if one takes a look into the structure of production are neglected. In his own words, the “[u]se of the net ‘national’ income figures [...] leads one to believe that the really important element maintaining the production structure is consumers’ spending” (p. 397). Thus, from the net figures one could easily be misguided to infer that “the various factors and capitalists receive their net income and plow it back into consumption, thus maintaining the productive structure and future standards of living, i.e., the output of consumers’ goods.” That is, one could be led to think that “even without any savings, consumption expenditure is alone sufficient to maintain the productive capital structure intact” (p. 397).

Rothbard acknowledges that economists have reacted to this problem and have been led to include “some ‘grossness’ in their product and income figures” (p. 401). However, he is dissatisfied with the conventional concepts of the gross national product and gross national expenditures. He complains that they are “not gross at all, but only partly gross,” and therefore the “height of illogicality” (p. 401). And indeed, the current gross income and product figures do not include *all* investment expenditures of capitalists, but only expenditures on durable capital goods and inventory (Froyen 2005, 16). That is, if a capitalist purchases a good from another capitalist and, within the same period, sells it (or its product) again to another capitalist or a consumer, his investment is not counted as being part of the conventional gross national product figures. The reason given is that such “intermediate goods” show up in the gross product figures anyway “because they contribute to the value of the final goods they are used to produce. Counting them separately is double counting” (ibid.). The production of durable capital goods and the increase of inventory, on the other

hand, are included in the conventional gross figures because they are currently produced output that is *added* to the stock of goods in society (ibid.).

For Rothbard ([1962] 2004, 401), this procedure is fallacious because “there is no great difference between durable and less durable capital”:

Both are consumed in the course of the production process, and both must be paid for out of the gross income and gross savings of lower-order capitalists. In evaluating the payment pattern of the production structure, then, it is inadmissible to leave the consumption of nondurable capital goods out of the investment picture. It is completely illogical to single out durable goods, which are themselves only discounted embodiments of their nondurable services and therefore no different from nondurable goods. (p. 401)

2.3 The structure of payments

In Rothbard’s opinion, it should be the purpose of “gross” figures to highlight those transactions that are not directly connected to net income and, by implication, to consumer spending. This emphasis is necessary, he explains, for “with production divided into stages, it is not true that consumption spending is sufficient to provide for the maintenance of the capital structure” (p. 398). To stay in the example depicted in Figure 1, in order to maintain the capital structure, it is not only necessary that the capitalists at the first stage earn 100 ounces in revenues from the consumers. The capitalists at the second stage must earn 80 ounces; the capitalists at the third stage must earn 60; those at the fourth stage 45, and so forth.

In order to understand the nature of these revenues in Rothbard’s model, a look at what they resolve into is necessary. Therefore, Table 1 depicts the structure of payments underlying the structure of production as shown in Figure 1.

Table 1: The structure of payments for six stages

Stages	1	2	3	4	5	6	
Gross income of capitalists	100	80	60	45	30	20	$\Sigma = 335$
Income of other factor owners	15	16	12	13	8	19	$\Sigma = 83$
Interest income	5	4	3	2	2	1	$\Sigma = 17$
Payment for intermediate goods	80	60	45	30	20	0	$\Sigma = 235$

The capitalists at the first stage, for example, earn 100 ounces of gross income. These 100 ounces resolve into, first, their interest income (5 ounces); second, the income payments of the factor owners they employ (15 ounces); and, third, the 80 ounces they hand over to the capitalists at the second stage for intermediate goods. In the same way, also the 80 ounces of gross income of the latter capitalists

resolve into interest income, factor owner income, and payments to the capitalists at the third stage. Thus, at each stage, a portion of the original amount of consumer spending leaks out and becomes net income of either the capitalists or the factor owners until, at the sixth stage, the whole gross income of the capitalists (20 ounces) become interest income (1 ounce) or factor income (19 ounces). In other words, the 100 ounces of consumer spending are passed on from stage to stage with each stage subtracting a portion for the payment of net incomes.

Rothbard's point is that if capitalists stopped to pass parts of their revenues on to the higher stages, the capitalists at these stages would no longer make profits, and consequently cease to produce. The production structure would collapse, the economy would revert to "barbarism" and the standard of living would fall "catastrophically to the primitive level" (p. 400).

Therefore, he demands that the payments for intermediate goods should be included in the gross figures of national income. Total gross income in the economy then results as the sum of the gross income of all capitalists (335 ounces) and the income of the owners of the originary factors of production (83 ounces), amounting to 418 ounces in total.

These 418 ounces stem from the "[t]otal expenditures on production," as Rothbard calls them, that is, from 100 ounces of consumer spending and 318 ounces "of money spent on future-good factors." The latter he calls the *total gross investment* and explains that it must equal *total gross savings* (p. 398). Thus, he (p. 398) states, a very heavy proportion of saving and investment – in the present case three times the amount spent on consumption – is necessary simply to maintain capital, i.e., the production structure.

It is important to note that the gross investment – the money spent on future-good factors (318 ounces) – consists of two components: money spent on originary factors (83 ounces) and money passed on to the capitalists at the higher stages for intermediate goods (235 ounces). It will be shown that the latter component, the intermediate payments, is an arbitrary figure that changes with the legal organization of the production process.

3 Critique of the concept of gross investment

3.1 The assumption of equal time length of all production stages

According to Rothbard, both components of the expenditures by capitalists – for the services of the originary factors and for intermediate goods – are part of

gross investment. Without this investment, the structure of production and society as a whole would fall back to a primitive level. As the conventional net and gross national product figures ignore the whole or at least a large part of these expenditures, they indicate that the maintenance of the production structure depends on consumer spending, not on investment. In the following analysis, it will be argued that Rothbard has been led astray by his intention to find arguments against this purported importance of consumer spending in the determination of output.

That the main point of this investigation, namely that Rothbard's concept of gross investment is arbitrary, has not been recognized thus far can be imputed to the assumptions it rests upon, especially those concerning the length of time of the separate stages of production. Admittedly, Rothbard declares that, in the case of one single product, “[i]t is not necessary to make any restrictive assumptions about how many separate stages occur or what the time intervals between individual stages might be” (p. 368). However, a few sentences later, he assumes – “for convenience only” – that “each stage takes the same length of time” (p. 368). He further assumes throughout most parts of the discussion that “each stage takes one year” (p. 368).

How does he defend his assertion that it is not necessary, at least in the case of one single product, to assume anything about the time intervals between the separate stages of production? It is interesting to note that he illustrates the possibility of removing this assumption only in regard to the determination of *net* income, that is, interest and the income of factor owners. He does not cover the implications for *gross* income and *gross* investment. Following his logic,

a firm might “vertically integrate” two stages and advance the money to owners of factors for the period covering *both* stages before selling the product for money. The net return on the investment in any stage will adjust itself in accordance with the length of the stage. Thus, suppose that the uniform interest rate in the economy is 5 percent. This is 5 percent for a certain unit period of time, say a year. A production process or investment covering a period of two years will, in equilibrium, then earn 10 percent, the equivalent of 5 percent *per year*. The same will obtain for a stage of production of any length of time. *Thus, irregularity or integration of stages does not hamper the equilibrating process in the slightest.* (p. 372, emphasis by Rothbard)

When we turn to the *aggregate* production structure, Rothbard again maintains that it is not necessary to assume anything about the time intervals between the different stages. Again, that “[o]ne firm may ‘vertically integrate’ within itself one or more stages [...] presents no difficulty at all, just as it presented no difficulty in the case of particular processes” (p. 391). However, he does not provide any proof for this statement. In brief, Rothbard maintains, on the one

hand, that his whole analysis is independent of the time length of the different stages of production, and, on the other hand, that for convenience, it is helpful to assume stages of equal length of 1 year each. Now, if there was no problem extending the discussion to cases where the period between different stages varied, nothing could be said against this convenient assumption. Nevertheless, as the following sections will demonstrate, the said assumption is not only convenient, but it is *essential* for the gross investment concept as defined by Rothbard. Without it, one of the components of gross investment – the intermediate payments – is an arbitrary figure.

3.2 Relaxing the assumption

Let us look at the same production structure as before. Consumers spend 100 ounces on consumption goods. Technically, the production is conducted in the same way as before. The same land and labor factors are employed and their owners earn the same amount of money, i.e., the 83 ounces. Furthermore, the same machines are employed and the same intermediate goods are produced. The only difference consists in the fact that now, the time period between the different stages is cut in half. That is, what has been accomplished by one capitalist before within 1 year is now accomplished by two subsequent capitalists within half a year, each.

To give an example: before several ordinary factors and other input have been combined at one *single* stage in order to, first, produce workable pig iron and, afterward, to make steel out of the latter, in which the process as a whole took 1 year. Now one stage is dedicated to producing pig iron and another one to make steel, whose processes each take only half a year. In other words, the work that was done by one stage is now accomplished by two of them. The production structure for a society where each stage only takes half a year can be seen in Figure 2. The numbers have been rounded in order to be more easily comparable to the numbers of the first example!

The depicted structure resembles Figure 1 in most aspects. It differs only in the number of stages – 12 instead of 6 – and in the length of the periods between the stages – 6 months instead of a year. As a consequence, net income earnings *per stage* have diminished. This should be apparent for the ordinary factor owners as they now deliver roughly half the amount of services per stage as compared to the previous structure. However, this is also true for the interest income of the capitalists. As the money the capitalists pay at any stage to the factor owners and to the capitalists at the next higher stage is invested only for half a year, it consequently only earns (roughly) half of the interest income as compared to the structure in Figure 1.

Figure 1, that is, the same amount of output and the same amount of input per period of time, the only difference being the number of stages. So far, this is not the case as, apparently, in the structure depicted in Figure 2, the same amount of output is produced within half the time as compared to Figure 1, namely within half a year instead of a full one. In order to bring the structure of Figure 2 into harmony with the structure of Figure 1, we have to, first, consider not only half a year, but a full one, and second, take account of the fact that, to be equal, both structures must produce the same amount of output and employ the same amount of input. To that end, we depict the annual production process not in one, but in two diagrams, as illustrated in Figure 3.

Each diagram contains a production structure for only half a year, together constituting the structure for a full year. The figure can be interpreted in the following manner: The left diagram contains all gross (and net) income, gross investment, and overall consumer spending that accrue during the first half of the year. The magnitudes are, as can easily be seen, half the size of those in Figure 2 as they only relate to the first half year. The right structure contains these magnitudes for the second half of the year.

This is a rather inconvenient way of figuring the production structure and it is obvious why Rothbard assumed a 1 year period per stage. But only in this manner are we able to depict the changes which follow if we double the number of stages and keep everything else equal. Figure 3 contains all payments that would accrue within 1 year if the structure depicted in Figure 1 were changed such that, *ceteris paribus*, the number of stages doubled.

The second thing we have yet to factor in so as not to violate the *ceteris paribus* condition is the money relation. Although the number of stages, and therefore the number of payments,² has more or less doubled, prices in the new structure have not changed at all. In the new structure, as depicted above, 100 ounces of gold are again paid within 1 year for the same amount of consumption goods. However, if we assume that the quantity of money in society does not change at all, this result is very unlikely. As Haberler (1931, 54 f.) notes, the total demand for money by the producers depends on the number of stages money has to pass through until it is paid out as income to the originary factors of production. A doubling of the number of stages thus implies an increased demand for money and therefore, if the supply of money remains unchanged, a fall in prices as well. Of course, in reality, prices would not change uniformly

² One reviewer asked whether the fact that the amount of payments for intermediate goods varies with the number of stages does not itself violate the *ceteris paribus* condition. As will become clear in the following, however, this is exactly the point: the amount of these payments is not an independent variable but simply *reflects* the number of stages.

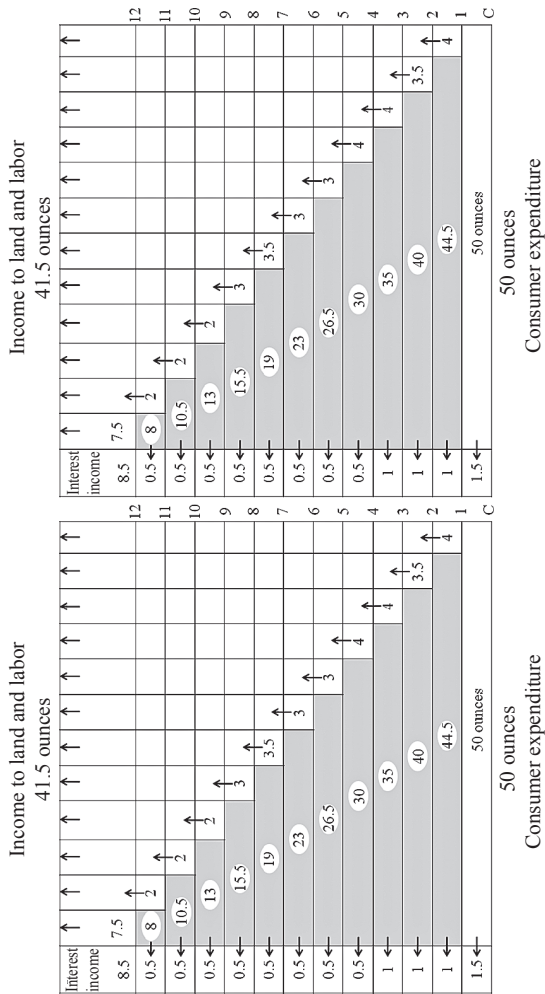


Figure 3: The structure of production adapted to the stage length of half a year

in such a case. Nevertheless, as everything else remains equal – especially time preferences and the interest rate – it seems permissible to assume that all prices fall by the same proportion (see even Rothbard [1962] 2004, 527, n. 12). The result of a doubling of the number of stages would be that instead of 100 ounces, now only, say, 60 ounces would be spent on consumption goods. Accordingly, all other money figures would decrease. However, *the proportions would remain the same as the ones depicted in Figure 2*. As long as time preferences remain equal, there is no reason to suppose that the relationship between gross investment and consumer spending should change in the case that the value of money has increased and the amount of consumer spending has fallen from 100 to 60.

For simplicity reasons, and in order to maintain comparability, the following discussion continues to employ the old magnitudes, i.e., 100 ounces of consumer spending. We will keep in mind, however, that henceforth, the *relative*, not the *absolute* figures, have to be considered, as the absolute figures vary with the demand for money.

3.4 The illogicality of gross investment

In Figures 2 and 3, the share of gross investment – as defined by Rothbard – in the composition of gross income has grown by a considerable amount due to the additional stages. This can best be seen in the structure of payments depicted in Table 2.

Table 2: The structure of payments for 12 stages

Stages	1	2	3	4	5	6	7	8	9	10	11	12	
Gross income of capitalists	100	89	80	70	60	53	46	38	31	26	21	16	$\Sigma = 630$
Income of other factor owners	8	7	8	8	6	6	7	6	4	4	4	15	$\Sigma = 83$
Interest income	3	2	2	2	1	1	1	1	1	1	1	1	$\Sigma = 17$
Payment for intermediate goods	89	80	70	60	53	46	38	31	26	21	16	0	$\Sigma = 530$

To be precise, of the two components of gross investment, only the money passed on from the capitalists of the lower stages to those of the higher stages for intermediate goods has increased (from 235 to 530 ounces). Total payments for the other factor owners have remained the same as in the case with six stages. In short, there is one element in gross investment, namely the payments between the stages, that actually is sensitive to the number and the time length of the stages. Although it is true, as Rothbard claims, that the time length of the stages does not affect the net figures, it has a rather large effect on gross figures.

As a consequence of the additional intermediate payments, the gross income of the capitalists has increased from 335 to 630 ounces. Total gross income now results as the sum of gross income of the capitalists (630 ounces) and the income of the other factor owners (83 ounces), amounting to 713 ounces in total. *Gross investment*, the money spent on future-good factors, has increased from 318 to 613 ounces. That is, in the present scenario, the importance of gross investment has even increased as compared to the scenario dealt with by Rothbard himself. In the latter, gross investment – the 318 ounces – was roughly *three times* the amount spent on consumption, or three quarters of gross income. In our scenario, gross investment amounts to more than *six times* the amount spent on consumption, or more than six sevenths of gross income. In short, by increasing the number of stages, the relative importance of gross investment increases as well.

Ceteris paribus, the halving of the said time length brings along nearly a doubling of the relative size of both gross expenditures and gross investment – as defined by Rothbard himself – as compared to consumer spending. By now, it should be clear that a further dissection of the stages, say, to stages with a time length of 3 months, would further increase the relative importance of gross investment.

Ultimately, the amount of gross investment, as it contains the intermediate payments between the stages, is basically a reflection of the number of stages of the production structure. The amount of gross investment depends on the manner in which production is organized legally. If many legally separate capitalists share in the production of the final output – if there are many stages owned by different capitalists – the intermediate goods will repeatedly change hands. In this case, there will be a large number of payments between capitalists which increase gross investment. If, on the other hand, only a few different capitalists participate in production, intermediate goods will change hands only rarely and, therefore, the relative amount of gross investment will be low. In an extreme case, only one capitalist might own the whole structure of production. Consequently, there would be no expenditure between different stages of production and gross investment would only consist of the income payment of 83 ounces to the originary factor owners.

In this production structure, depicted in Figure 4, intermediate goods do not change hands until the final goods are sold to the consumers. Zero payments between the different stages of production take place as all these stages are owned by one capitalist only. In this structure, total gross income results as the gross income of the one capitalist – the 100 ounces – plus the income of the owners of land and labor – the 83 ounces. Together, they amount to 183 ounces. Gross investment, the payment for future-good factors, amounts to the 83 ounces paid to the originary factors.

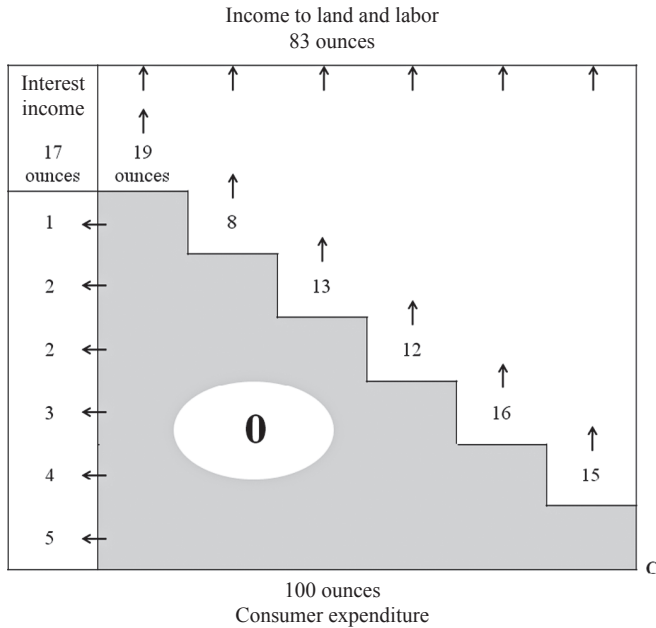


Figure 4: The vertically integrated structure of production

As should be clear from the two scenarios depicted in Figures 2, 3, and 4, the concept of gross investment as defined by Rothbard is arbitrary. It varies according to the organization of production (see Table 3). The more stages an otherwise equal structure of production contains, the more important the payments for intermediate goods become. As can be clearly seen, the amounts of gross investment and gross income vary according to the size of these intermediate payments. However, not only do the absolute amounts change but also the relative size of gross investment increases with the number of stages. Therefore, the concept does not provide any significant information concerning

Table 3: Different structures of production compared

	1 stage	6 stages	12 stages
Consumer expenditure	100	100	100
Net income	100	100	100
Payments for intermediate goods	0	235	530
Gross investment	83	318	613
Gross income	183	418	713
Share of gross investment in gross income	45%	76%	86%

the question as to how important the expenditures of capitalists are in order to maintain the capital structure.

According to the *organization* of production, gross investment can be large or small. The amount of gross investment does not tell us anything significant about whether a society falls back to barbarism or not. A society with small gross investment can still be very rich and on a sustainable growth path. It might just happen to have some very large capitalists who own large parts of the production structure. As the concept of gross investment, as defined by Rothbard, does not provide for this possibility but assumes an equal length of 1 year for all stages, it should be abandoned.

4 Concluding remarks

It is important, indeed, to point out that consumer expenditures alone do not suffice to prevent us from “barbarism”; the presence of individuals who save their income, accumulate capital, and pay income to the owners of land and labor, is necessary. Yet, if one wants to stress this function of the so-called capitalists, Rothbard’s concept of gross investment is of no use as its magnitude is arbitrary and depends on the number of production stages. We have seen that, in an extreme case where one capitalist owns all stages, gross investment can become very small. This does not imply, however, that in this case society is poorer. The amount of gross investment is just a reflection of the respective ownership structure.

Even if one leaves Rothbard’s gross investment out of the argument, it can still be demonstrated that the opinion according to which the really important element maintaining the production structure is consumers’ spending stands on unsettling grounds. A short look at Figures 1–4 shows that, in any case, the 83 ounces of income of the originary factors of production are advanced by the capitalists, no matter how many of them own the whole structure. Not one ounce of these payments stems from consumer expenditures. In this sense, it is a bit misleading when Rothbard writes that “[m]oney moves from consumers’ goods back through the various stages of production” (p. 390). In reality, the money moves to the factor owners long before the consumers pay and even before the consumption goods exist. In other words, *the capitalists anticipate that they will be paid by consumers*. Therefore, they pay for the production factors from their *capital* which must have been saved previously.

In order to explain the role of capitalists in preventing us from barbarism, it is enough to point out the fact that it is they who advance the net income of

nearly everyone in society. Only the net income of the capitalists of the stage nearest to consumption feeds on consumer expenditures. Everybody else receives his net income before the final consumer product is sold to the consumers. Rothbard has introduced the concept of gross investment in order to demonstrate a similar point. Yet, it has been shown that this concept collapses as soon as one removes the unrealistic assumptions concerning the length of time of the production stages.

Acknowledgements: The author thanks professors Jörg Guido Hülsmann and David Howden for helpful comments on an earlier draft of this paper.

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