De Communismi Legibus

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If we begin to construct an economic model observing and following strictly the Marx' ideas described in the three volumes of Capital. Critique of Political Economy, step by step we can arrive to a structure that has its fundaments in the Smithian model, and where the State is the major organiser, the only natural monopolist in the system.

Succeeding in this can bring us to the technical overtake of the capitalism by triggering a second industrial revolution, this time to replace the human workforce by machines everywhere in the industrial and agricultural sectors, with passing from homo oeconomicus to homo socialis.

THE PRINCIPLES

Economics is a social science; therefore, its laws depends much on our premises, prearranged axioms; it is not like mathematics where one plus one equals two. The current theory, the Smithian-Keynesian, is one that can be applied to capitalism, even if we can find some of its limitations easily, which sometimes are quite evident.

Communism – where the means of production are common; work skills are measured not in absolute terms that can be described with a sum of money, but in relation to physical and mental conditions of the worker; where currency does not exist – can hardly be adapted to the economic laws of our times. Thus, it would be too easy and presumptuous to say that this social-economic order would never work.

The golden axiom of capitalism, from which derive the equilibriums and all the functions of modern economics, is that all avents can be described by and starting from the relation of price and quantity, supply and demand. The market is characterised by the following observations:

- The higher the price is, the less the consumer is willing to buy the product, however producers want to sell the product more;
- The more a company produces, the less it costs per unit (up to a certain amount);
- If the offer is greater than the demand, the price to have all of the products sold drops, and vice versa, it increases because it induces consumers to a race for the goods.

There is not a first-degree link between the employed workforce and the price of the asset (as in earlier times), and apart from the constant cost of other inputs, the dead time of the work is paid, too (the machine, even if not used, is still there and has a purchase cost, so it should be exploited efficiently round-the-clock to make the most of its value).

The fluctuation of prices, as supply and demand change over time, as well as production methods, means that the work of one person, even if he works the same amount of hours, is not equivalent,

economically speaking, to that of another who carries out less fatiguing work. This fact creates the social inequalities. One who works eight hours as a bricklayer and earns 800 Euros per month, of course becomes more tired than the banker who sits all day behind a desk and earns several times the salary of the mason.

The difference of the various production factors can create inequality even in the same economic sector. In this phenomenon has an important role in most of the cases also the game of currency exchange. If a country is not a developed one, then not only the workforce is cheaper, but also the national currency has a lower value in relation to that of other countries. Therefore, it happens that these countries remain economically less developed countries: for multinational corporations investing there is less worthwhile because of lower revenue possibilities, calculating the purchasing power and the unfavourable exchange rate for the repatriation of profits. If they apply the price used in their home country, lower wages do not allow them to sell large amounts of goods, but if they adjust them to match the purchasing power, they sell more but at lower price, not considering the fact that the lower price of the goods encourages local people to sell it abroad, creating profits for themselves and hurting the profits of companies in other markets. Therefore, to them it is convenient to move only the production in these countries, making only the bare minimum of investments to ensure uninterrupted production.

The goods market is no longer a place for which the operator produces to meet the needs of consumers; this place is only a mean to realise profits, the real purpose of the production. The producer himself creates new needs and tries to suppress the other producers to have a higher profit margin.

If, instead of these operators, it is the community to control the means of production and consequently the performance of the market, then the price of the goods is constant and corresponds directly to the price of workforce (i.e. the wage). To understand the concept more easily we will suppose that there are still prices and wages, and then later we will show that they are unnecessary. It is the society that manages development and also machinery, the entire production process, so that they produce only when necessary: to satisfy needs. Production takes place on communal land, in factories, offices, municipalities, so the effect on the costs of the concept of "rent", which largely rappresents a kind of surplus value, fails, as well as the dead time of machinery. They are only used when demand requires it, they get lessen not by time (that has by the way only an accounting meaning), but by the units produced - so become extinct the so-called fixed costs. Apart from the concept of the fictitious land and building values, id est in their market value, beyond the costs of land reclamation and building constructions, there is determined also an unexplicable gain of value, fixed costs are due to the fact that machinery, patents, trademarks, buildings, etc, they are not exploited to the maximum, both for legislative reasons (to avoid modern slavery) and for fragmentation of the production process. Since there are many capitalists in competition with each other, there is not enough workforce available to enable uninterrupted production in all branches of the economy. From the elimination of fixed costs comes the fact that the price of the goods is constant and independent from the produced quantity. From here, it is equal to the only cost of production, characterised by the cost of the raw materials, the means employed in the production and the living workforce necessary to obtain the final product. This way the surplus value disappears, the ratio of values between various goods explicitly demonstrate the ease of their production. Research, development of the production and of the infrastructure facilities are carried out on collective level, their cost is social, and so are their effects. So are divided the two productive branches of the economy: the consumistic (production of goods and services) and the mental-support (investment in research, infrastructure, and production capacities).

Affirmed this, if the production cost of the individual goods is constant, then producing one more unit does not have a higher average cost, so resource allocation depends only on the actual demand of the asset. Within the economic boundary limited by the available resources, therefore, the society produces at the point where the production provides the highest utility for citizens.

In communism, socially organised labour also buffers the phenomena caused by changes in supply or demand. To say one example, in a capitalist market, if demand grows and to satisfy these new needs manufacturers have to install new production capacities, each of these does it individually, with the result that none of these new capabilities will be exploited to the maximum, which just becomes an ulterior cost

in the production that causes higher prices. This is entirely preventable if the production management is organised, monitored on a collective level: as long as social welfare is greater than the social cost of the possible options, they are implemented.

So far, we have introduced some basic concepts of a communist-style economic system, now we will get into the details, starting from zero. To underline that it is difficult to define precisely the boundaries between socialism and communism; the theory presents an economic model not based on capitalism and the classic setting of supply and demand, but on collective production and wealth redistribution, and thus the contrast between the two economic systems lies in this.

The value of an asset is equal to its production value. If we assume that the timber has a value of 1 and a closet, which is produced from it, 10, it means that the work value employed in the transformation of timber to closet is equal to 9. This ratio between goods can be relative if we compare only two of them (creating a closet is 9 times more difficult than cutting a tree and turning it into wood), or even absolute if you choose wood as unit of measure and its value becomes fixed – and then it becomes currency of account, a base used for statistical purposes, and it is compared to all goods to define their value. The value of an asset is given by the total amount of labour used in its production, starting with how difficult it is to extract the raw materials (in our case the wood), through machinery, tools, that wear out in the production process, to the latest finishing touches of the final product (when it becomes closet). From this, it follows that the universal unit of measure of goods is the time required for the activity of their production.

That's why the coin, as such, becomes unnecessary in this system: giving an exact value to an asset, expressed not in the time required for its production is subjective, arbitrary. Moreover, from individual to individual values of use of the assets are different, based on personal preferences, do not reflect official exchange values between them (this is easily translatable into the prices of luxury goods, they have a heavily subjective value). From this comes the fact that defining the wages at the same level for all workers, in a monetary way, is against nature, it does not consider the personal needs that can be also relevant, for example, if one, for example, needs expensive medical cares or has three children to maintain. On the other hand, however, with the advent of access to goods as a right, the currency loses also its exchange and reserve functions, since the worker simply goes to the market and takes the goods he needs, both now and in the future. The speculative market, as it will be shown later, cannot exist, so for currency there remains only its measurement function for statistical purposes.

Collectivisation leads to the death of the competitive market and to the emergence of the collective natural monopoly. The individual, no longer limited by a monetary constraint, earlier called salary, can choose at his discretion the products to consume. If these choices are connected not to tastes, but are expressed in qualitative terms, it causes the rapid emergence of monopolies: the goods of poor quality lose consumers' interest, who take these preferences for quality ones.

The production value of an asset may not increase, because the difficulty to produce it, apart from catastrophes in the production chain, does not increase, in the worst case remains at the same level, but with the development of the technology, producing it becomes even easier, so it will cost less to the society.

The demand of a commodity is no longer dependent of a variable called "price", as the society will produce it in sufficient quantity to met all needs, except the case when the cost of its production exceeds the wellbeing caused by it (for example in the case in which the society should move resources from the production of another asset that has a higher utility).

To calculate the optimal resource allocation in the production, we have determine the utility function of the society, identifiable as

$$U_s = c_1^{\alpha} \times c_2^{\beta} \times c_3^{\gamma} \times \ldots \times c_n^{\omega} \quad (1)$$

where each c corresponds to a consumed asset and we have as constraint the available workforce to produce the goods, expressed with

$$N \times h = a \times c_1 + b \times c_2 + c \times c_3 + \cdots + z \times c_n \quad (2)$$

where N is the available workforce, h is the hours of a working day, a, b, c ... z represent the difficulty to produce a certain commodity. If we rewrite the first equation in logarithmic form

$$\ln U_s = \alpha \times \ln c_1 + \beta \times \ln c_2 + \gamma \times \ln c_3 + \cdots + \omega \times \ln c_n \quad (3)$$

then it comes out clearly that the collectivity should produce the goods whose marginal social welfare (i.e., the well-being increased by one more produced unit of the goods, which corresponds to the $\alpha/a\,, \beta/b\,, \gamma/c\,, \ldots, \omega/z$ rapports), is higher than that of the others; which is typical of the essential goods (bread, house, etc). Affirmed this, we must also consider the fact that extremism is not acceptable for the consumer, no one eats spaghetti without tomato sauce, or tomato sauce without spaghetti, and we have to put even basil, onion in it.

The assets are divided into:

- *essential goods*, such as bread, water, house, etc, of which demand is always satisfied. The shortage in these markets would result in a higher social malaise compared to the cost it would take to meet the need completely. This discomfort expresses its effect not only on the individual who suffers it, but also on the whole society: one who is hungry cannot make it to work as before, and his precarious situation instigates him to crime.
- *accessory goods*, which are not strictly necessary for the survival of the individual, of which demand depends on the tastes of each consumer and becomes always more satisfied through technological developments.
- *luxury goods*, which do not have a reasonable value that matches their production value, their demand depends only on the individual operators, who does not act as *homines oeconomici* in this market. Examples are, in general terms, the collectors. These goods acquire a surplus value attributed them by some consumers. Given the low availability for most of these goods (it is possible to produce Ferrari cars for everyone, but paintings of Van Gogh unlikely), they are and will be available only to those who work more, better than the others, as a sort of prize.

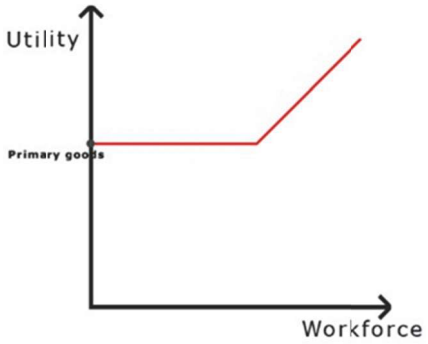
What happens if an invention makes it 10% easier to produce a commodity? Its production value, let us say, falls from 10 to 9. The workers could no longer work 40 hours a week, but only 36 to produce the same amount of it but remember that they are paid not for the number of units they produce, but in base of their fatigue expressed in relation to their ability. Not having their needs changed, they will continue to work full-time and the produced quantity increases by 10% if the market is not sated; if it is, with their production they manage to increase the overall social utility producing less than in another sector. So, they are moved.

The production value is not an exact value, there are workers who work more quickly than the others, expressing the same effort, or even less. However, big differences towards the negative sense there may not be, otherwise it would be more convenient to use these human resources elsewhere, where they are more productive – to note that the parasitism, as a phenomenon, is to be fought in this way, with the relocation of the "idlers ". The time needed to produce an asset is to be understood by implementing the most efficient production methods. If one goes to plow with a scythe and in a working day produces a quintal of wheat, as much as another farmer can do in only one hour using the tractor, then the production value of the grain of the first farmer, although he fatigued in producing it, is always equal to that of the grain of the second farmer. To consider that if both workers gave their best, then they are eligible for the same basket, regardless of the exact amount of their production. Once they're done, they go both to the market where they take the goods to which they are entitled: there is no need to rush and there is no need of any kind of exchange value, since production is organised according to demand.

Luxury goods are the reward of those who work better or more, which surplus labour is realised in more working hours spent in workplaces and in more values producted by the worker than the others.

If we represent the availability of workers to work in correspondence of their needs met (that would be pretty much their wage in the capitalist world), then we have the following graph:

FIGURE 1
LABOUR MARKET – SUPPLY



The point in which the curve begins to grow indicates the appearance of workers who are willing to produce more than the others to have access to non-primary goods.
Perceived goods depend not on exogenous factors such as salary set by the employer, but on the effort expressed by the worker, therefore, if he works like the others, he is able to meet all his essential and accessory needs, regardless of whether he is less or more productive than these other. Obviously, nobody is willing to work below this threshold, not seeing met even his basic needs, and above he also enjoys accessory needs.

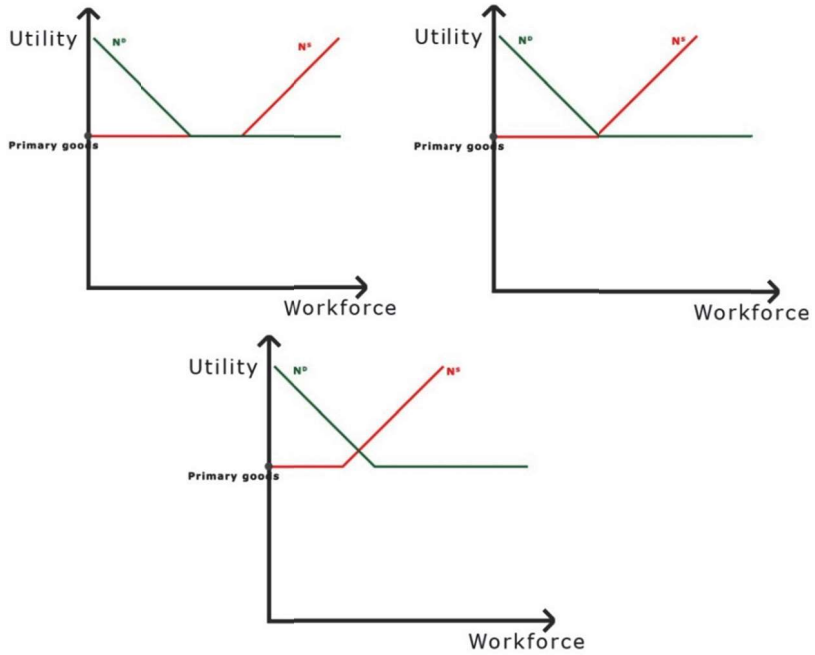
In contrast, the demand for labour is decreasing with the growing of the obtained satisfaction level of goods: the system can provide a luxurious life only for few people, but the first necessities for all, so:

FIGURE 2
LABOUR MARKET – DEMAND

The point at which the curve becomes horizontal indicates the attainment of optimum production. Remember that an additional worker is as productive as others, as the use of his workforce does not imply an increase in average production costs for lack of fixed costs, on average. Therefore, if it is not possible to maintain the previous utility, it means we reached the level of production beyond which, given the available resources, it is no longer possible to produce so efficiently as before.

By superimposing the two curves, there are three options:

FIGURE 3
LABOUR MARKET



In the first case, the system cannot guarantee full access even to essential goods, so pro capite portions have to be rationed to avoid rush for these goods in shortage and their storage. Considering that it is impossible to meet these needs with full employment, surely, the implemented technologies are inefficient, or people's expectations are too high in relation to the country's possibilities. These expectations change not only in time but also from country to country, today, in addition to those really necessary for survival, in many countries even cars, telephone, internet access, education, employment, health, and so on are considered essential.

The second is the case when with the available resources and the production methods it is possible to meet all basic needs.

Finally, the third describes the state when also the demand for luxury goods begins to be fulfilled. With the progress of technology development, more and more goods will have their market in equilibrium, in which demand is fully met by offer. Therefore, the axis of asset allocation moves towards the category of essential goods. If everybody has a car, except me, then I feel excluded from the use of a property, therefore, it has a negative effect on me: it is necessary that I also have one, namely not having it becomes a social cost, which is typical of essential goods.

The labour market is necessarily in equilibrium: as it is about needs and not salaries in absolute terms, id est we can say that each of the workforce units has the ability to meet his own needs; it depends only on the individual himself to do it or not. If he does not, he gives up at least one part of his consumption, and thus the aggregate demand for goods decreases, and resources to produce his non-consumed goods can be used in other production processes.

THE ECONOMIC THEORY OF COMMUNISM

As we have just established, the labour market is in balance and is established in the state of full employment. Each worker produces his added value; these, added together, make up the national income Y. The income, from a part goes to meet the needs, the other part to stimulate the economy through investments:

$$Y = I + G \tag{4}$$

To facilitate understanding, most of the time we will use the symbols generally accepted in economics. Being the collectivity the holder of the monopoly of the means of production, all production costs are public spendings for consumption; for this reason, they are indicated by the symbol G.

What does the firmness, or rather, the relative reduction in production costs imply? Firstly, postponing a part of the consumption (as if they were savings) to the future does not involve long-term sacrifices. Indeed, considering the technological progression, we will obtain the goods and services not consumed before relatively lower cost, as the workforces no longer employed in production due to the reduced consumption, can in part be moved to work on investments, in part to increase the production of other goods. Quantitatively:

$$S = \Delta I + \Delta G = I_S + G_S \tag{5}$$

Therefore, the total income becomes:

$$Y = I_F + G_F + S = I_F + I_S + G_F + G_S \tag{6}$$

If technological progress is indicated by α, in other words, is the production of goods becomes less tiring with a value equal to α, then the aggregate output grows in the following way: in order to compare the two gross products in time, it is necessary to use constant production values, recalculated on the basis of their variation, and not in current terms. With an example:

TABLE 1
NATIONAL INCOME

	Quantity	Production value	National income
Year 1	100	11	1100
Year 2	95	12	1140

In nominal terms, in the second year, yield has increased, but if we compare them at constant production values, then we must divide the national income of the second year (1140) by changes in production values (12/11): the result is 1045, the yield has decreased. In general form:

$$Y_r = Y_n/(\frac{P'}{P}) \tag{7}$$

Thus, the national income with α as technological development occurs in the form:

$$Y' = \frac{1}{1-\alpha}Y \tag{8}$$

This equation considers the decreasing production values, caused by the technological progress, to notice that ceteris paribus, aggregated production grows more than proportionally respect to the achieved technological progress.

The formula makes it clear that due to the increase in production efficiency, a part of the resources is released to be reused, and to further increase production. Since the value of α depends mainly on the employed investments, we can better clarify its value by making it dependent on investments. So, development can be written like this:

$$Y' = \frac{1}{1-\varepsilon I}Y = \frac{1}{1-\varepsilon(I_F+I_S)}Y \tag{9}$$

where ε is the investment efficiency, I_F are the investments already planned by the community and I_S come from consumer savings.

The magnitude of savings made by each consumer depends on personal decisions but are based on the same reasoning: giving up today's consumption for a larger future one. For each saving, research efficiency increases by the value $\frac{I_F+\Delta I_S}{I_F}$; the consumer, who earlier had expected an increase of its future availability of only $\frac{1}{1-\varepsilon I_F}Y$, has the possibility of slightly increased consumption. If subjectively his propensity to save is less than the increase of his future consumption, then he earned more than proportionally respect to his original investment; therefore, he will tend to further increase savings, with a view of further increase of his own future consumption. If his gain is less than proportional, then he will tend to reduce it, not to have losses: so, sooner or later, expectations will come to the point of equilibrium.

When theoretically all possible needs will be satisfied, growth will be due only to investments, while production costs, as become more economic at constant production values, are reduced. This procedure is predictable from the fact that sooner or later at least one resource will delimit the satisfaction of new needs (such as raw materials available on Earth, the available workforce, the citizens' time to meet their own needs). So:

$$\frac{1}{1-\alpha}Y = G + \beta I$$

Multiplying both sides by 1-α, we have:

$$Y = (1-\alpha)G + (1-\alpha)\beta I \tag{10}$$

Remember that 1-α is smaller than 1, therefore, having G constant and as time passes, as long as I is smaller than G, investments have a development effect more than proportional. When investments become higher than aggregated expenditure for consumption, the technological growing becomes less than proportional, which entails the slowing down of growth and its approaching to zero. In other words, technology becomes more and more expensive and its marginal effect decreases: economic growth is not unlimited – despite the technological progress it is.

These investments are determined by the community and addressed to the markets in which their efficiency, compared to the other options, is more congruent, and therefore, greater than or equal to α. Efficiency means always increase in utility, social welfare. As we have seen before, the performance of essential goods is always higher than that of the non-essential ones. Having a house to live in is more than desirable; its lack is a high cost to society, because it easily leads to increase crime. After making investments with highest yield, the value of α decreases, making fruitable also investments previously considered less desirable.

Let us determine, at this point, how much an individual will consume today and how much tomorrow, first in general form, then in the specific form for a communist-style social-economic order. In order to compare them, as it has been seen previously, values must be discounted with an interest rate (r). We have, as data, the respective consumptions (c_1, c_2) and incomes (y_1, y_2), the inflation π). We can write in this way the equation:

$$c_1 + \frac{1+\pi}{1+r} \times c_2 = y_1 + \frac{1}{1+r} \times y_2 \tag{11}$$

His utility function is decreasing, concave, reflecting satiety (after three hectograms of pasta, the fourth unlikely goes down), so we can write $U = c_1^{\beta} + \frac{c_2^{\beta}}{1+\rho}$, where $1+\rho$ is the individual's subjuctive discount rate. One prefers today's consumption to the delayed one, though he could consume much more in the future. β is a positive number less than one.

Maximising the utility under the constraint of the first equation, we get:

$$\frac{(1+\rho)\times c_2^{1-\beta}}{c_1^{1-\beta}} = \frac{1+r}{1+\pi}$$

Now we replace the values with those of our system. As we said, the change in production costs is equal to -α, the interest rate is $\frac{1}{1-\alpha}$, so:

$$c_2 = \frac{1}{(1-\alpha)^{\frac{2}{1-\beta}} \times (1+\rho)^{\frac{1}{1-\beta}}} \times c_1$$

Returning the expression c2 in the budget constraint, we have:

$$c_1 + \frac{1-\alpha}{\frac{1}{1-\alpha}} \times \frac{1}{(1-\alpha)^{\frac{2}{1-\beta}} \times (1+\rho)^{\frac{1}{1-\beta}}} \times c_1 = 2y_1 + \frac{1}{\frac{1}{1-\alpha}} \times y_2$$

The available income in the future is $y_2 = \frac{1}{1-\alpha} y_1$, so:

$$c_1 + \frac{(1-\alpha)^{\frac{2\beta}{\beta-1}}}{(1+\rho)^{\frac{1}{1-\beta}}} \times c_1 = 2y_1$$

After fixing the equation to determine c_1:

$$c_1 = 2y_1 \times \left[\frac{(1+\rho)^{\frac{1}{1-\beta}}}{(1+\rho)^{\frac{1}{1-\beta}} + (1-\alpha)^{\frac{2\beta}{\beta-1}}}\right] \quad (12)$$

Let us analyse the function's behaviour as we change the value of the variables. If growth slows down, tends to zero, it becomes indifferent to consume today or tomorrow, because utility is equivalent. Therefore, the individual will consume only a little more than his available income, and with high immediate consumption preferences he will exceed it only by two thirds. If, on the contrary, the economy is in expansion, the consumer will postpone the fulfillment of his needs into the future.

Note that consuming more than the available income results in a slowed down development: the increased consumption means movement of workforces to the real production, and therefore less resources are available for investments.

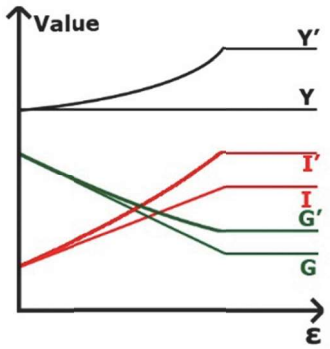
His choices of course also depend on his utility function. For low β, namely for steep utility function, he will always have, as a result of his subjective discount rate, a slightly higher level of consumption respect to his availabilities, which in any case does not exceed them by one third. In the case where his utility function was almost linear (i.e. β tended to one), with a development rate that exceeds the half of the subjective discount rate, the consumer will decide to postpone at least one part of his consumption to the future. In the contrary case, he will perform it instead in the first period; this comes from the fact that the individual gives higher preferences to today's consumption than to that, albeit increased, future one.

By aggregating all the intertemporal choices of all individuals, the sum of individual consumptions will be nothing else but the collective spending on goods and services, while the sum of individual incomes will be the total income of the economy. The expression of the economic progress can be written explicitly, by doing the $\alpha = \varepsilon I$ replacement, and then also the $\varepsilon I = \varepsilon Y - \varepsilon G$ one:

$$G = 2Y \times \left[\frac{(1+\rho)^{\frac{1}{1-\beta}}}{(1+\rho)^{\frac{1}{1-\beta}} + (1-\varepsilon Y+\varepsilon G)^{\frac{2\beta}{\beta-1}}} \right] \quad (13)$$

Therefore, producing in this point, we obtained the maximum consumption utility. It has to be precise that this is true for two periods; if the calculation is made for long periods, today's consumption should be contained, as the investments' benefit will be more than proportionately fruitful:

FIGURE 4
EFFECTS OF THE INVESTMENTS ON THE NATIONAL YIELD



We have seen that with the increase of the technological coefficient, more people are willing to postpone their consumption to benefit from higher availabilities in the following period. Obviously, the postponement is not unlimited, as there are essential goods that pose a lower limit to it, to which the individual is unable or unwilling to renounce. The national income remains at the same level: remember that the value added depends only on the amount of workforce transmitted in the creation of the commodity, its shift from one production to another has no quantitative effects on it.

The yield of the second period is equal to $\frac{1}{1-\alpha}$ times the initial one, and remember that α depends on the investments, and ε: $\alpha = \varepsilon I$. Therefore, the higher is the investment level, the higher will be also the future production. That's why it is convenient, from the collective point of view, limiting down consumption and making investments flourish, that drag up consumptions, although with some delay. In this way we get a faster technological-economic development, which in turn also increases the standard of living. Note that if the economy was underdeveloped, so a high level of α was realisable, it is possible to achieve the initial consumption ceiling ($G_F + G_S$) as minimum consumption within a short time: it is in fact the concept of *forced industrialisation*, already applied in the five-year plans of the Soviet Union.

Another method to procure goods is the exchange with foreign countries if there are advantages in the production of certain goods compared to another country, and disadvantages regarding other assets. These may be due both to natural causes (for example the availability of some resources) and economic ones (as the applied technology).

Let us suppose that there are two countries, P_1 and P_2, and two goods are produced in each of these countries, B_1 and B_2, with production costs as reported in the table:

TABLE 2
PRODUCTION COSTS

	P_A	P_B
B_1	2	1
B_2	7	8

In a first moment, both countries have a production constraint of 9 and have a utility function that induces them to produce one unit of both goods.

The first country has an advantage over the second one in the production of goods 2, and a disadvantage if it has to produce goods 1. Therefore, if it can sell the asset 2 to the second country at a price higher than 7 and lower than 8 (above which obviously it would not buy it) and to buy the goods 1 at a price less than 2, then both sides have gained with the deal. In the optimum point, cooperating, they will consume 15/14 units of each of the two goods respect to the previous one unit per asset:

TABLE 3
PRODUCTION COSTS WITH COOPERATION

Employed resources	P_1	P_2
B_1	0	15/7
B_2	9	48/7

Producted oods	P_1	P_2
B_1	0	15/7 units
B_2	9/7 units	6/7 units

The second country will provide all the consumption of goods 1 by the first country, i.e. 15/14 units, in exchange for 2/7 units of the second asset.

The total income of the economy expands with the net foreign trade (exports minus imports), so it becomes:

$$Y = I + G + (X - Q) \tag{14}$$

Exports increase income, as goods are produced within the country, with its own resources, then traded abroad; imports are subtracted instead because their values have actually left the country. In our case country 2 gave, in exchange for imported goods, $\frac{15}{14}$, and received, as equivalent for exported goods, $\frac{2}{7} \times 8$, the national income is therefore:

$$Y = I + G + \left(\frac{2}{7} \times 8 - \frac{15}{14}\right) q = I + G + \frac{17}{14} q \tag{14a}$$

where q is the amount of traded goods.

Country A paid $\frac{2}{7} \times 7$ for goods 1, and it earned $\frac{15}{14} \times 2$ from the export, so its budget is:

$$Y = I + G + \left(\frac{15}{14} \times 2 \ - \frac{2}{7} \times 7\right) q = I + G + \frac{1}{14} q \tag{14b}$$

for each pair of goods exchanged. Therefore, if cities aim on increasing the production efficiency of the goods that they export to the other city, the second term inside the brackets tends to decrease; therefore, they will reach a higher overall utility.

To consider that when different production values are due to technological differences in production, their sharing leads to an even more optimal production. Having always available 9 units of resources at disposal for the production, it is possible to arrive to the production of 9/8 of each of the two goods in both countries. The result is higher than the previous scheme of collaboration:

TABLE 4
PRODUCTION COSTS WITH COLLABORATION

	P_A	P_B
B_1	1	1
B_2	7	7

Given the absence of currency, or at least in communist set of rules, exchanges take place on the basis of exchange values, which in turn reflect the production values. To facilitate these operations, the introduction of a currency of account for compensation purposes may be necessary, as it was the USSR convertible ruble, used for trade in the countries of the Communist bloc. Keeping this currency entitles its holder to exchange it for goods, if he were not interested in immediate bartering or there were not available goods that he was looking for. In this way, he finances investments in the country, similar to the intertemporal choices. He supplies goods that move the original equilibrium of workforce division between the production of goods (*G*) and investments (*I*), by increasing the availability of resources at the time, but reducing them in the future. Since the debt is to be paid off, the holder can at any time collect its value.

As we have seen, the increase in investment leads to more efficient, less expensive production, and therefore the lender in a second time can cash in the promissory note for an amount equal to $\frac{1}{1-\alpha}$ times the original.

So, he gets the return of his investment, and the "interest" rate is always α. The exchange value of the legal tender is given not by international agreements based on the economic and commercial interests, but on the effective value of the assets, expressed in labour and raw materials used in its manufacturing (by they way, also the value of the latters, in turn, is due to the use of human resources needed to create them). Thus, we have arrived to the absolute convertibility of the promissory note for goods which constitute its value, as how the gold standard system worked. Precisely for this reason, an expansionist economic policy beyond the possibilities of the country leads to the exchange these promissory notes at the expense of domestic consumption stocks, forcing it to reduce expenses and investing more inside. As demonstrated above, the equation $Y = I + G + (X - Q)$ the portion Q takes the value of the flow of goods, as a counter, to foreign countries, so the credit obligations reduce the total income available to the community.

Note that the financial market is always subject to real economy and cannot take on abstract values because behind every title there are real goods: by the failure of this abstraction, the speculative market disappears.

Let us identify the amount of promissory notes issued to the merchanting state. Foreign trade is carried out based on the ratio of value between exchanged goods. Suppose that we have the respective production values, at first, of the wood, that the communist country A exports, and the closet they import from the capitalist country B. So, we have the following matrix:

TABLE 5
CURRENCY EXCHANGE VALUES

	P_A	P_B
B_1	1 hour of work	2 sestertius
B_2	10 hours of work	18 sestertius

The communist country will give a bill of exchange of value between 9 (country B has no gain) and 10 (country A has no gain) hours of work. It is easy to imagine that the presence of several countries and thousands and thousands of goods creates a much more complex situation. The ratio between the value of

the exchange bill and the value of the foreign currency is established in the ratio of the averages of the various production costs of the goods in each country. With an example:

TABLE 6
PRODUCTION VALUES IN DIFFERENT COUNTRIES

	P_A	P_B
B_1	1	1
B_2	1	1
B_3	1	1
B_4	1	1
B_5	1	6

Country A has an average of 1, country B, due to the higher cost of B_5, of 2. Therefore, the exchange rate is equal to 2. If we suppose that both countries have 10 workforce at their disposal, the first country will produce 2 units of each asset, while the second one, one unit of each.

TABLE 6A
PRODUCTION VALUES IN DIFFERENT COUNTRIES

	P_A	P_B
B_1	2	1
B_2	2	1
B_3	2	1
B_4	2	1
B_5	2	1

We see that the first country has an advantage in the production of the last good, so it is convenient to it to specialise in its production. Not knowing the utility functions of the two countries, for simplicity, we assume that country A uses all its workforces in the creation of the last commodity. As a result, receiving this good from country A, country B can shift its production resources to the creation of other assets:

TABLE 7
PRODUCTION VALUES WITH COOPERATION

	P_A	P_B
B_1	0,5 (0,5 product)	2,5 (2,5 products)
B_2	0,5 (0,5 product)	2,5 (2,5 products)
B_3	0,5 (0,5 product)	2,5 (2,5 products)
B_4	0,5 (0,5 product)	2,5 (2,5 products)
B_5	8 (8 products)	0

The P_B, selling 1.5 units of each of the goods and thus gaining a bond of 3 (because of the ratio between the two currencies is 2 to 1), receives 3 units of the fifth well, thus changing its consumption:

TABLE 7A
PRODUCTION BENEFITS WITH COOPERATION

	P_A at start	P_B at start	P_A after exchange	P_B after exchange
B_1	2	1	2	1
B_2	2	1	2	1
B_3	2	1	2	1
B_4	2	1	2	1
B_5	2	1	5	3

This is definitely a better situation than the starting point. To notice that if country B, the capitalist one, sold one of its assets above its production value, the other country would have an advantage in its own markets, therefore it would begin to produce it, forcing the capitalist, who sells his own goods, to reduce the price because, otherwise it would lose a part of his market.

It follows that the games with the currency devaluation are reduced in its effects: in the case of a system of three or more countries, the attempt to devalue its own currency to promote exports and reduce imports fails, because the production values of the goods do not change. These constitute the only value that goes countermeasured during commerce with Communist countries, and so third countries, through communist countries, can exchange goods at their real value, and not at that distorted and disadvantaged one, caused by the devaluation.

For exchanges perceived directly by consumers and not by their States, the method is a bit more complicated. A foreign tourist visiting a socialist country finds that there is no currency and therefore the State can hardly make him accounting of the goods and services consumed and enjoyed by him. That's why the average expenditure made by other tourists will be charged also to him, of tourists, who possess his own characteristics, both physical and social-economic ones, etc. In case it was a socialist citizen to go abroad, it will be the State to pay for trip deserved by him for his productivity, and it will be calculated based on the socialist tourist's characteristics. Note that for the socialist State the difference in living costs between countries and cities is inexplicable, so the money handed over to the citizen could not be enough to sustain a journey considered more luxurious because of the capitalist-style economy. If this effect is represented in mass, it will have reducing effects on the foreign country's and city's cost level, otherwise they would risk to lose on tourism.

Externalities appear either as parasitism or improved social welfare. An individual who has limited access to some goods leads another individual, who is eligible for it, but does not want to benefit from it, to assert his until that moment unpresented claim. Then he eventually returns the favour, giving rise to a sort of barter trade. It is obvious that the utility of these individuals increases, and this happens to detriment of other citizens who have, because of the reallocation of resources to satisfy these new needs, reduced consumption possibilities. If this phenomenon is a large-scale one, then changes in the production workforce subdivision are more pronounced, and also citizens until then not interested in the participation of this barter trade, enter this secondary market to claim goods to which their access is limited. This phenomenon causes further shifts in the production: in this case we can talk about an already different social utility function: at the end of the process a new production equilibrium is established.

Externalities can also be caused by international trade. In the case if the country had every kind of advantages in the production of an asset, for foreign traders it would be convenient to exploit it. Therefore, in the society appears a group of products that citizens do not need, and at the same time the available resources for the production for domestic consumption are reduced. The branches of production from which these resources are to be removed, to obtain the greatest compensation, and thus, possible utility, are the most technologically disadvantaged one. For details, see the previous tables on the cooperation.

The issuance of the currency of account has to be controlled by a collective body to avoid that their exchange for goods cause drastic reductions in the available income for citizens. Any speculation on

possessory notes in the secondary market puts at risk only third parties, but any issue that goes beyond the possibilities of the country and disappoints over growth expectations, and hence over its performance, can lead to a drastic bill conversation into assets, causing the fall of domestic consumption.

Returning once again to economic growth, equal always to $\frac{1}{1-\alpha}$, the term by definition corrects a contradiction of capitalist measurement. For example, when there is a natural disaster, let us suppose, an earthquake, and some means of production are destroyed, production efficiency decreases, and a part of the workforce is shifted to recover the status quo, subtracting thus resources from the general production. Therefore, we have a lower value of α, and the phenomenon is shown with all its effects in the total income. In the case of a "traditional" economy, the reconstruction does nothing else but increase the overall economy, as if it was due to a healthy, endogenous growth.

The gross domestic product, in communism, has only a mere statistical value, it represents the available economic resources, on what basis the redistribution of national workforce to achieve optimal production point is done. In capitalism it is the purpose itself, however, it does not consider the fact that aggregate dates cannot represent the general level of wealth distribution, as neither social welfare. Purchasing power can be concentrated in the hands of a few, providing nevertheless a high national income level, or the increase of the hours of the working day causes a quantitative economic growth, reducing on the other hand the free time available to workers and consequently, the social happiness. Like this, also the construction of a factory instead of a park: private interest comes into conflict with public interest, diminishing the enjoyment of the environment, but improving economic data. In communism, it cannot come forth, considering that it is the collectivity to be responsible for the decisions, so the society would not accept a reduction of social welfare.

The transaction from capitalism to communism, once started, takes place in a spontaneous and irreversible manner, through the *denaturalisation of capitalism*. That system has as advantage the innovation effort to bring down production costs, while in socialism there is present also a kind of opportunity cost due to the redistribution of wealth, disadvantaging the latter state order. However, the defeat of capitalism will take place precisely due to the economic laws so praised by the capitalists themselves. The disappearance of fixed costs in the production, until there is still competition between capitalist producers and the collectivity, causes average costs to be higher for the first ones, which results in an economic advantage for the seconds. This fact forces capitalists or to leave the market or to invest more and more in research, looking for more efficient production technologies that can give a temporary advantage on the collectivity. With an example, while the capitalist needs to rent a land to cultivate or a building to conduct his business, or he has to buy it, the price includes always the value added of the land; for the collecitivity this additional cost does not exist, and thus it has lower costs than capitalists. So the strategic behaviour of capitalism, usually due to entry barriers, becomes the natural monopoly of socialism and once rooted in the system, it inevitably spreads.

Society, having more available resources compared to the capitalist, can afford investments on a larger scale, and of course, these will be implemented in the sectors with the highest value of α: in other words, in sectors where the community has the highest production disadvantage compared to the more efficient implemented technology. Between capitalist and society there is equilibrium in the point in which the average production costs are equivalent:

$$CMe_S = CMe_C \tag{15}$$

Knowing that in socialist economy there are no fixed costs, and indicating the disadvantage in efficiency with σ, the equation becomes:

$$CV + \sigma CV = CV + \frac{CF}{q} \tag{16}$$

Where CV are the variable cost of the production with most efficient technology, CF the fixed costs and q the quantity produced by the capitalist. In the case if the community was able to go under the

average production cost of the capitalist, the latter would have more choices: either leaving the market or trying to reduce his costs. Reduction of variable costs is possible through new researches, which, although at long-term give advantages, at short-term they raise fixed costs, so it is not said that the capitalist's company in competition with the society will survive until the success of the researches. It can also increase the produced quantity to divide fixed costs over a greater quantity of produced goods, but in case of an already high amount of good producted by him, its result is not much visible. The component on which has greater possibility of playing are fixed costs.

By opting for this choice, he comes into conflict with other capitalists: to have these costs cut, the cost of debts, real estates, etc has to be reduced. The capitalist starts from a strong position, as if quit from production, for the other capitalists it would be difficult to replace these revenues (given the advantage of the community over the capitalists), or he could terminate his existing relationships and choose to get into dept by other capitalists without end customers, with which he could have lower costs.

This process leads to a general lowering of the extra profits that will tend, in long term, to zero. Slowly they fade away, working conditions at a company capitalist, if before were better, are lowered to the level of cooperatives. The gap between the salary of a worker and that of a leader tends to decrease, as the latter is no longer financed, and it is impossible to apply further cuts to the first ones, otherwise workers would leave the company. When in fact the working conditions offered by the capitalist reach or go under the terms offered by the community, the worker decides to abandon the capitalist labour market, as he is considered only a commodity, a means of production. Conversely, working in a cooperative his features will be considered, he will be inserted in a more tolerant and flexible environment. Seniorities for those who perform the same job, will be automatic and no longer applied in the context of some project contracts: with the gradual learning of the profession, the worker's productivity grows, therefore he will be entitled to a richer basket.

The internal production system of the country works similarly to the trade with foreign countries. As a demonstration, just copying the example above, but this time applying it to two cities:

Let us suppose that there are two cities, C_1 and C_2, and two goods are produced in each of these cities, B_1 and B_2, with production costs as reported in the table:

TABLE 8
PRODUCTION COSTS

	C_1	C_2
B_1	2	1
B_2	7	8

In a first moment, both cities have a production constraint of 9 and have a utility function that induces them to produce one unit of both goods.

The first city has an advantage over the second one in the production of goods 2, and a disadvantage if it has to produce goods 1. Therefore, if it can sell the asset 2 to the second city at a price higher than 7 and lower than 8 (above which obviously it would not buy it) and to buy the goods 1 at a price less than 2, then both sides have gained with the deal. In the optimum point, cooperating, they will consume 15/14 units of each of the two goods respect to the previous one unit per asset:

TABLE 9
PRODUCTION COSTS WITH COOPERATION

Employed resources	C_1	C_2
B_1	0	15/7
B_2	9	48/7

Producted goods	C_1	C_2
B_1	0	15/7 units
B_2	9/7 units	6/7 units

The second city will provide all the consumption of goods 1 by the first city, i.e. 15/14 units, in exchange for 2/7 units of the second asset.

The total income of the local economy expands with the net not-local trade (local exports minus local imports), so it becomes:

$$Y = I + G + (X - Q) \tag{17}$$

Exports towards other communes increase income, as goods are produced within the city, with its own resources, then traded in another community; imports are subtracted instead, because their values have actually left the city. In our case city 2 gave, in exchange for imported goods, $\frac{15}{14}$, and received, as equivalent for exported goods, $\frac{2}{7} \times 8$, the local income is therefore:

$$Y = I + G + \left(\frac{2}{7} \times 8 - \frac{15}{14}\right) q = I + G + \frac{17}{14} q \tag{17a}$$

where q is the amount of traded goods.

City A paid $\frac{2}{7} \times 7$ for goods 1, and it earned $\frac{15}{14} \times 2$ from the export, so its budget is:

$$Y = I + G + \left(\frac{15}{14} \times 2 \ - \frac{2}{7} \times 7\right) q = I + G + \frac{1}{14} q \tag{17b}$$

for each pair of goods exchanged. Therefore, if cities aim on increasing the production efficiency of the goods that they export to the other city, the second term inside the brackets tends to decrease; therefore, they will reach a higher overall utility.

To consider that when different production values are due to technological differences in production, their sharing leads to an even more optimal production. Having always available 9 units of resources at disposal for the production, it is possible to arrive to the production of 9/8 of each of the two goods in both cities. The result is higher than the previous scheme of collaboration:

TABLE 10
PRODUCTION COSTS WITH COLLABORATION

	C_1	C_2
B_1	1	1
B_2	7	7

For which, local economy is equal to the sum of the quantity of goods produced, multiplied by the respective local production values for each asset, and if necessary, the product is corrected with the margin of tolerance. The local income is then spent on essential goods for everybody, while as for the assets of second necessity, the system works with reservations made by citizens. Everything happens at a national stock exchange, where sellers of an asset are the cities that produce it, exchanges take place mainly at an exchange value that corresponds to the average production values, corrected by the national tolerance margin. So, if a city has an offer or demand in this range, it is prescribed in the queue for the asset, and the various demands are met in chronological order, which are forward contracts, to not to damage the production system with light swings over time. Where demands remain steadily under offers, production units are dismantled and then these released workforces can be used in the production of something else. In the opposite case, where there are queues, production is automatically increased or by the cities that have earnings on the asset, or through government incentives if the asset's utility is considered important. If there were offers outside the mandatory exchange band, the respective City that produces the asset at a higher production value (i.e. it takes more time to produce it) may decide to lose

on the sales, just to sell the good (and so the standard of living decreases for them), or another city, or directly the interested individual, may submit a purchase offer at a higher production value, losing on the affair, actually considering that asset as a luxury item.

The exchange value, set at the production value and down compared to it (as it has been said, if the first one is less than the second one, the producer unit loses out), ensures that the market remains competitive and instigates to the improvement of the production process. By definition, exchange value cannot exceed production value: it would mean a less efficient production, with more resources spent on it, so if the fact is not justified by a higher resource usage, i.e. by moving workers to the production of that asset, even if they do not produce actually, to raise the production value, and so the exchange value, these values can remain at the most constant, but anyway they tend to go down at long term. Whereas a community tries to maximise its utility, this relocation cannot be done from a production in which the city has a disadvantage, otherwise it would have been already implemented, for which it comes from areas where production efficiency is high at least as much in the destination sector: it follows that what has been gained with the raising of the production value, it is also lost because of the reductions occurred in other production branches, the net local economic gain is therefore equal to zero. As for the national one, there is a negative externality, because the aggregate goods supply has been reduced, so there is a lower social utility than in the previous situation. However, if the city does not have a natural monopoly, an exclusive advantage in the production, other cities, considering the competitive market with no entry barriers that could prevent the launch of production in its most efficient way, they will begin to produce that asset, too, forcing the first city to lower its production value if it does not want to see its sales turn down, or even cease at all. Obviously stepping from a production value to a higher one, unless disturbances in the production system, is not justifiable, and so it is impeded, therefore, the phenomenon may occur in the opposite case, i.e. when a more efficient technology is reached and then applied in the production, there are workers no longer necessary in that activity, that, until they are transfered to another branch of the economy, by working little or nothing, lower average productivity.

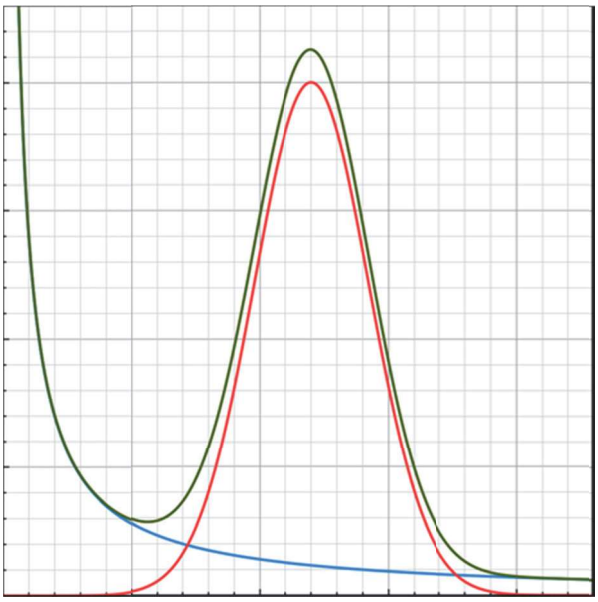
It is important, as for durable goods and not those effectively consumed ones to meet everyday needs, the decomposition of the capitalistic setting, namely of the theory that the programmed expected average life of a certain asset allows the capitalist himself to maximise his profits by producing goods that over time breaks, forcing the consumer to buy a new one; and in addition of the consumerism that pushes consumers to change the product they use with ones with better characteristics, although the old one is still fully functioning.

The curve can be defined by the following function:

$$f(x) = \frac{\varepsilon \times c}{x} + c \times e^{-\rho(x-x_0)^2} \tag{18}$$

Represented (with green) on the graph:

FIGURE 5
REPLACEMENT COSTS

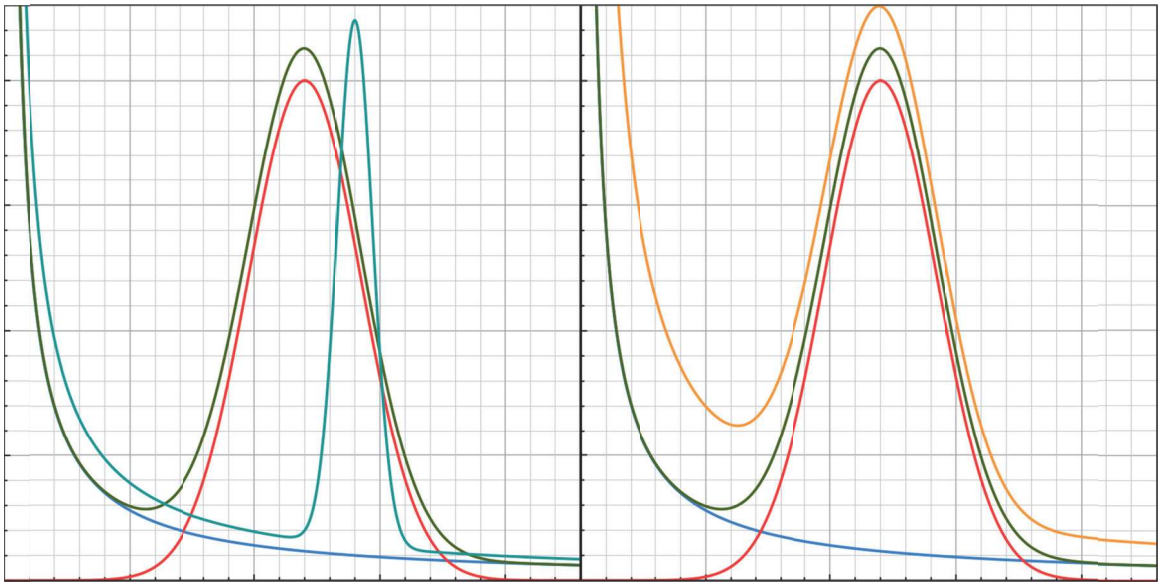


The left side (with blue) depends on time in an inverse way: the higher the replacement rate is – i.e. the smaller the difference is between the intervals after which the asset is replaced with an equal or more useful one – the higher the social cost is. The second part (with red) refers to the useful life of the product, it is a Gaussian function. Over time goods are worn out, one after the other, because of the usage. The time after which it must be replaced depends on both the method of use (if it occurs in normal or extreme climatic conditions, if it is handled with care or crudely, if required maintenances are performed or not, etc), both the features acquired during its production. In details, x indicates the time, c the production cost. The latter also includes investments made to enhance the processing process, in other words, in macroeconomics the two branches are distinct $(I + G)$ for accounting purposes and to make the model easier, in microeconomics also investments are to be considered as costs, as we have to compare features of several products, without which additional characteristics we could get misleading conclusions about what we should produce and how much it would cost. ε is the production process efficiency and corresponds to $\varepsilon = 1 - e_l \times e_p$, where the two values e are between zero and one, both extremes excluded, the first indicates how much of his working hours actually a worker spends to produce. If there are two workers who assists the whole production process that consists of two phases, then after ending the first one, they must lay the tools hitherto used, move the semi-product, and pick up other tools and work. If the two workers divide between themselves the two phases, each of them makes one, then the first one will not have to place the tools before moving the semi-product, therefore he regains a part of the dead time of the work, the efficiency increases. The second value indicates the ratio between the time in which the semi-finished product is stationary between two processing stages, and the time required to produce it. To reduce the time during which the product is not processed, the entire process must be atomised to create more or less equal steps. If the characteristics of the process do not allow the division in same temporal parts, the community can have advantages where the ratio between them tend to one, but do not reach it. Consider the processing process that leads the raw iron to become a car. There are hundreds of stages, and in the case where there were delicate ratios, for example, the first step is done in 499 seconds, the next one in 500, therefore after the 500th produced asset the first worker has a product in more compared to the second one, the private company might not have enough available workforce to

allow an assembly without bottlenecks, while the collectivity can afford to employ 499 workers to produce in the first terminal and 500 workers in the second one. The closer ε is to zero, the more efficient the production is, and the community can thus save on resources. Continuing with the analysis of the function, x_0 is the expected value (when the product should break) and ρ indicates how these events are close to x_0. If the expected value is high, it means that the good is durable, if also the other variable is high, then the good falls apart close to the expected value. The society's purpose is to reduce ε, while x_0 and ρ increase.

The reorganisation of the production process is without cost, so the first variable can be reduced wherever possible. As for the last two ones, if investments are made, then the two values increase, but c grows, too, production cost and both components of the curve will shift to the right. The important thing is that the social gain (savings in production resources thanks to the stronger product) has to be greater than the social cost (cost of implemented investments). Note that the component of the curve related to replacement costs moves to the right, because constant c has a higher value, and hence also the tip of the Gaussian function will have a higher value, as it follows in the first graph:

FIGURE 6-7
EFFECTS OF THE SOCIAL ORGANISATION ON THE REPLACEMENT COSTS



In the graph to the right, it is clear that decrease in the production process efficiency has the same effect, but only on the first part of the function, ergo if the State collectivises without having experience in the field, by placing officials to study the branch and so creating disturbances in the production process, the relatively higher cost shifts the equilibrium to the right, which results in the fact that the society wastes resources in that market, the replacement of worn goods happens later, when they begin to fall apart more, i.e. overally the asset's utility reduces, with a higher damage risk due to malfunction while using the product.

Let us suppose that those who handle with care their assets, are rewarded for this attitude: considering the absence of currency, the only way to do that is allowing them to replace the property in question before the others. If you think of cars, with an example, one who does not cause accidents and maintain his car, can change it after 7 years, the average is 10, and the worst driver can do it after 13 years (the dispersion of the drivers is always describable with a Gaussian function). But one who cares about it, does not want to change it after 7 years, since the property is still in good shape: with his non-purchase he does nothing else but postpone his consumption to the future, knowing that the available resources that were to be used in the production of the asset that he should have taken, will be transferred to the research

department, allowing the individual to gain a better asset in the future. In this case, the consumer becomes backer of the producer, as if he bought its bonds. In the case that his expectations exceed real technological progress, he will tend to take the asset, trying not to lose out on the intertemporal consumption, otherwise he will tend to postpone his purchase. If many citizens decide to do so, research undergoes a net increase, and they will avail themselves of asking for it after 10 years, after which the product begins to become defective. If the new asset, thanks to the researches, is more developed, it means that it breaks later, and also its imperfections because of human usage tend to decrease (of which a few paragraphs before). This means that the next time, let us say, the asset begins to fall apart seriously after 12 years, and the Gaussian function, which represents the dispersion of the driver's skill, narrows, and ranges from 10 to 14 years. The shrinkage means that the postponement of the asset's replacement, relatively to replacement time, decreases, i.e. its effect on research decreases. On the other hand, the product's increased reliability allows a lower replacement rate in general, therefore it allows transfers of workforce from production units to the research department.

Let us see in details how to obtain these goods. If a citizen has the right to a car of production value of 600, and he can get it after every 6 years passed, then it is as if he received 100 in a fund each year, and when it reaches the value of 600, the production of the car automatically starts and he receives it: $\frac{t \times TR}{p} = 1$, where t is the time passed, TR transfers from the community, p the production value. Obviously, as we've already seen, he can put aside his savings (postponing the consumption of another asset of the same characteristics of accessory or luxury good), so he becomes a shareholder of the company, and at expiry he receives the good wanted in return: $\frac{t \times TR + t \times O}{p} = 1$. If he put aside each year 50, it means that he funds from his own pocket the production facility with this amount, and after only four years passed he can receive the car. The labour-force that has substained and used in the production, if no other investor takes over his share, becomes superfluous, and will be moved to another branch of the economy, in order to satisfy other needs of that citizen. Note, therefore, that you cannot gain control of these production units via bonds, as much amount people, other companies, municipalities or States as they want, can invest in them, their participation reaches its end as soon as they get the desired goods.

This, however, is not the only way to affect the reception time because even the production value of the asset is subject to changes. So, we can rewrite the equation in the following form, using what demonstrated previously:

$$\frac{t(TR+O_p)}{p(1-\varepsilon\frac{I_F+O_r}{I_F})^t} = 1 \tag{19}$$

under the constraint $S = O_p + O_r$, where S corresponds to the available savings of the consumer, O_p the part invested in production, O_r to that in investments, ε to the technological factor, I_F to investments made by others. Express t to get the optimal solution for the consumer.

First, we can say that in general $(1-a)^x \approx 1 - ax$ for relatively small a and x: considering a development of 3%, and 10 years of time (which are many considering the length of human life), the difference still remains minimal, with 0.7374 on the left 0.7 and on the right. For which the formula can be rewritten in

$$\frac{t(TR+O_p)}{p(1-\varepsilon \times t\frac{I_F+O_r}{I_F})} = 1 \tag{19a}$$

From which, by doing the replacement $O_r = S - O_p$:

$$t = \frac{I_F \times p}{O_p(I_F - \varepsilon \times p) + TR \times I_F + \varepsilon \times p(S+I_F)} \tag{20}$$

Or

$$t = \frac{p}{O_p(1-\varepsilon\times p)+TR+\varepsilon\times p\times S} \quad (20a)$$

without other investments. To note that if the technological progress was slow, his savings will be directed to the productive units, otherwise, towards investments - as well as also in the case in which the approximation $(1-a)^x \approx 1-ax$ was no longer true because of the high values of ε and t. As for I_F, they are the investments made by consumers or other entities, or general investments of consumers who simply postponed their consumptions by making a intertemporal choice without specifying, however, what they would like to consume in the future, and then directed there by the State based on the return value of the investment due to the high value of ε coefficient.

Remember that these bonds are aimed at obtaining and enjoyment of the goods selected by the consumer, ergo they are long-term investments leaving no space to harmful speculations (the citizen can, at maximum, not continue, when it expires, the flow of his savings towards the company). To consider that with the gradual extinction of the State (social utility always more conforms to the needs), the TR values will tend to fade, for this reason, it is the consumer interest not to loose on his savings, buying goods via bonds only partially - a half-built car can be hardly used. From this point of view, TR and IF are public bonds aimed at subsidizing an economic activity considered strategic, flatten the consumption function otherwise oscillating, or allow all citizens access to a certain asset.

We arrived to the moment to redefine the concept of essential, accessory and luxury goods. Knowing the average production efficiency, we can subdivide assets into four categories. The goods whose production efficiency is above the average, are the essential ones: the simple fact that that value is so high, already presupposes the many investments made in efficiency increase, this shows the social interest towards the asset, and on the other hand their creation requires fewer resources, allowing anyone to obtain it: it is typical of essential goods. In the average production efficiency band (which corresponds to the margin of tolerance) there are collocated the first two types of goods. Below this threshold, collectivity does not encourage anymore the production, ergo there are only goods which are of rather individual interest than of social one: accessory and luxury goods. In this case it is no longer the society to organise the production process, but the individuals, and producers are backed by citizens interested in their products. If it were not like this, the community should grant producers, as equivalent to their production, the average efficiency, i.e. it would take a loss, and all this for the interest of few people. By doing so, it does not happen, it is up to potential consumers to decide whether what these operators produce is of value or not, and so to support them with donations. That's why the category, in its turn, is divided into three parts: luxury goods, accessory goods and obsoleted goods. The first one is the case of goods for which donations exceed the value of employed workforce: citizens acknowledge them an abstract surplus value that cannot be represented with economic terms. In the second case, the value given by citizens is actually its real production value. They need that asset, but it does not induce them to recognise imaginary values for it. Obsolete goods are those whose recognised exchange value does not reach production value. Individuals do not need the asset at all costs, they consider it of little value, so if they had to renounce to goods of higher utility for that price, they easily renounce to obtain the obsolete one. On the other hand, if producers do not see the profitability of the production, in order to not to lose out, they stop producing the asset, consigning the market in the hands of those who are more productive (the asset thus become an accessory or luxury good), or where this step is not possible, the market shrinks (obsoleted goods for technological, economic, cultural, etc reasons). The second phenomenon – economical reason – is due to market failures known in capitalism.

To make some examples, if there is a production capacity shortage after the failure of other producers, which will lead the good to become a luxury item if there is still demand for it, and if there are no demands or their fulfillment was hindered, the market disappears at all. The latter event is easily represented with local monopolies. If some citizens go to church, but donations are not enough to maintain the priest, the church gets closed – which is highly desirable in a socialist society –, then if those

people are not willing to increase their donations, thus recognizing the luxury being of religion, or they have to cross the entire city to find an opened church, or they give up to practice religion collectively.

In the last category there are the harmful goods, of which production efficiency is less also than the half of the average efficiency, in this case social cost is higher than social utility, so the State must discourage their production to move human resources to more efficient productions. Of course, it does not mean that these goods are all really harmful, they do not have their utility, they can be still created in the free time of citizens, but the collectivity, constrainted by the available means, favours the highest possible social utility, so they are discouraged. Interested citizens can take them directly from those who produce these assets on their own.

To consider that the division, although valid in most cases, cannot be not influenced by the characteristics of each of the three types of goods, so there can be found easily luxury goods in the first category, but their being " luxury "means that only a small part of the society is interested in it, therefore its production does not increase in spite of the favorable production efficiency. And vice versa, essential goods can find place in the last category, of which production is incentivated d by the community, for the reason that the State has no other source from which to obtain the asset, therefore it must support an inefficient production in order to meet the demand of the citizens. Over time the various production efficiencies will approach one to the other: as it is the case of large-scale production, generally low efficiency means a backward production process, so for the same capital to invest, the growth of social wellfare here is higher, in other words it has a higher technological progress, α. It may happen that demand for a commodity undergoes a sharp decline that makes necessary to reconsider the production system of the asset. The phenomenon transforms into decline in production efficiency: the reorganisation of the production involves frictions, redundant or not perfectly insertable units into the new distribution network, relatively increasing also distribution costs. On the other hand, the communes, as long as the direction of the disturbances is not clear, are careful not to invest too much in a sector that could also fail, so researches on the product are reduced, getting even farther from the average efficiency. If remaining consumers are unwilling to bear the higher cost of the asset, it becomes obsolete and disappears. In the case they did, and that price was equivalent to the new cost of production, the asset becomes an accessory one; if consumers evaluated it above its new value, this surplus-value remains entirely in the production system, enabling once again researches to increase efficiency, and therefore the sector becomes a niche market, surviving the depression.

To underline that a commune does not want to give up an activity in which it invested before. Therefore, they are in eternal struggle between them, trying to discover and implement new manufacturing technologies, attracting the attention of researchers. This struggle, no more of classes but of interclasses, which sees the subclasses fight against each other in the only existing class, that of the workers, is the engine of economic development, so the administrative State must enforce it by investing in schools and universities, and we can clearly see that the bureaucratic State begins to disappear: its only duty is to define the average efficiency with the tolerance value, effective researches take place through the commune, and therefore it becomes the interest of all the communes to invest in schools, it becomes interest of its each individual citizen to press the city for this investment, and therefore it becomes the interest of every single citizen to do his best while at work, because if he does not work efficiently, he can immediately feel the lack of social enhancements in his city. The self-management developed and praised by Lenin in his thesis State and Revolution takes place not because of education, but because of its direct effects on those who perform the infringements of good manners of communism. Even simple incivilities, like throwing rubbish on the ground, take their revenge: in that case the community has to invest more in road cleaning, and therefore it has to remove resources from the production of an asset considered more useful by the community.

The supply of goods is arranged, set by the capitalists who create what they think they will be able to sell, thus also the demand of goods is manipulated by them. It can happen that consumers, in the absence of goods capable of meet the needs of the acquirents, buy replacement products or abandon at all the fulfilling of that need. Imagine the car market. We can choose between Fiat cars, which are considered often just "pieces of iron", Volkswagen ones that have rigged emissions. The consumer wants a Ferrari,

but his economic possibilities do not allow it to him. Therefore, or he renounces the wanted asset, leaving unmet that need, but better not to do it: considering that the service offered by ATAC (the Roma public transport company) is not the best, so he necessarily has to buy a car. He, therefore, is forced to choose between the assets available to him, so he chooses a substitute one. The third alternative would be waiting for a producer that offers him a car with all the features of a Ferrari at affordable price. Capitalists, however, having in front of themselves the risk of the third option chosen by the consumer, tend to meet at least a part of the market needs, improving the characteristics of its assets, which will naturally result in a higher market price. According to consumers' economic needs and possibilities, they prepare a wide selection of goods so that none of their consumers leave them; this is the evil treaty of the capitalists to maintain the power, similar to the political class that makes social reforms not for the wellness of the country, but to keep their chair. The variety of goods is the freedom of the slaves of the new world. No longer slaves of the lord, nor serfs of the nester, but servants of the money. For the possibility of choice, social security has been taken from them, while in previous times, in a way or another, serfs managed to carry on: they had a house, a land to cultivate, in this new world they own nothing, only themselves to sell on the labour market: the house comes together with the installments to be paid of the loan taken to acquire it, and their work is used as long as its cost does not threaten the extra profits of the owners of the means of production. Therefore, workers are employed up to a certain number to avoid full employment, which would make for capitalists the production increasingly expensive, and these latters always want to choose the best workers, to achieve higher efficiency and therefore higher profit margin. The society supports economically and morally this structure: the second, because people by now have lost their freedom to live for the beauty of life, they have become robots, whose only thing that interests the society is their working capacity. The first, because unemployment and the mutation, with the consequent freezing, of the distribution of wealth – i.e. that the 90% of the population owns just the 10% of the wealth –, cause massive damages, even health ones. In addition, the society must also bear the cost of the failed researches: capitalists try to improve their own products not to meet the needs, but to have more money, and therefore eventual researches – that are not targeted, but are originated in the board of directors' decisions –, also failed ones, are incurred by consumers of their products. Researches aimed to the real needs would ensure that this cost would be less high, furthermore they would also allow everyone to have a Ferrari. Other brands, if do not adapt themselves to these requests, fail.

THE GENERAL EQUILIBRIUM

We have come to a good point to define the equilibrium of the markets that characterise the general appearance of the communist economy (labour market, that one of goods and investments, aggregate supply and aggregate demand of goods). Considering that the national income, at nominal level, net of the change of the available labour force, is always constant (as we affirmed, different production values reflect only the time spent on the creation of goods, so if you work 4 hours a day, its nominal product will be always 4 per day), also the available "money" is auto determined at this level. Money in the sense of exchange value of production, which exists only if there is production, and does not exist outside the production – subtracting the currency from it or increasing its amount the above the aggregated production value is not possible, since it would create something of abstract value, behind which there are no goods, services or tangible investments (the amount not immediately consumed is automatically transferred to the latter), which is used for statistical purposes (efficiency and composition of output, standard of living) and to delimit the excessive consumption of goods, using it as a constraint to determine the highest possible social utility. From this comes:

- That monetary instabilities, turmoils, so typical of capitalism, such as credit inflation, are suppressed - if the cost of a luxury item increased too much, there would be less money available to buy other goods, reducing the total utility perceived by consumers, so it works as a brake.
- You cannot keep the money, since any leakage in reserve assets (gold, silver) is allowed – thus keeping the currency in circulation as exchange value of the gold, which, however, is a

producted good –, though their reconversion is permitted only if on the buyer side appears a seller for such goods; the State is not willing to accept them if they do not at their nominal value or below, and only in exceptional cases, as they are not recognised means of payment and reserves.

- The yield on savings is as follows: their nominal value does not change, but taking into account the technological progress, with the same amount you can get more goods, because production values decrease.
- The higher the social utility is, the more it reflects the desired consumption of citizens, so less we resort to money as constraint to consumption, this involves the gradual extinction of the State, allowing everyone to meet their own needs freely.

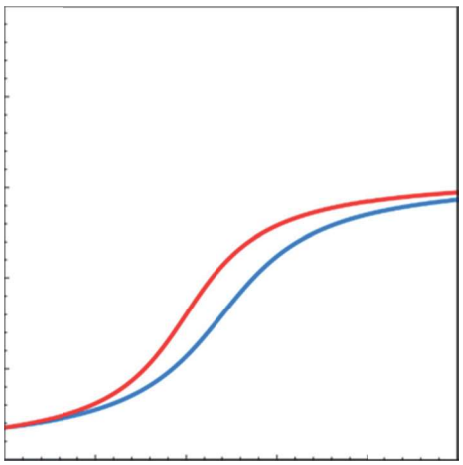
From here, that the available currency (the supply) corresponds to $M^S = N \times L + B$, id est the total value of goods plus any eventually bonds issued abroad or losses on international commerce due to unfavorable trade agreements, which corresponds to the total value of consumption, investments, at net of the cost of bonds: $M^D = C + I - (1 + b)B$. It is clear that increases in debt in the next period are not followed by a fall in consumption and investments only if the increase in production is higher, the balance of foreign trade is at least in parity:

$$BC: \Delta(N \times L) - \Delta[(1 + b)B] = \left[N \times L - \frac{N \times L}{1 - \alpha_{t_1}}\right] - \left[\left(1 + b_{t_1}\right)B_{t_1} - \left(1 + b_{t_0}\right)B_{t_0}\right] \geq 0 \quad (21)$$

otherwise the State has to issue new bond or reduce consumption (reduction of investments would worsen the situation, reducing the value of α).

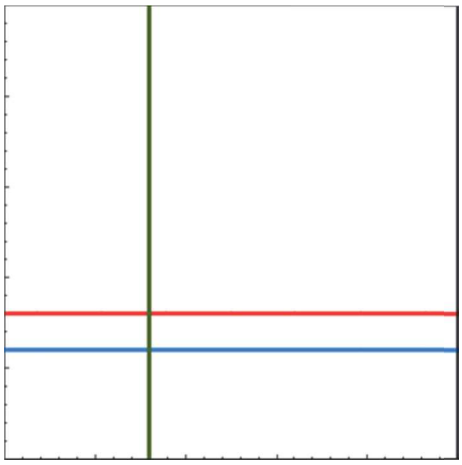
The amount of investments, apart from a fixed initial value intended to cover replacements, attrition and maintenance costs, depends on their (presumed) yield. If it is low, people hardly give up their consumption, but as it grows, in an always higher proportion, until the consumption of tomorrow does not begin to require too many sacrifices in the present, so the function flattens again. If consumers expect a higher growth, they more easily renounce to their consumption:

FIGURE 8
EXPECTATIONS AND INVESTMENTS



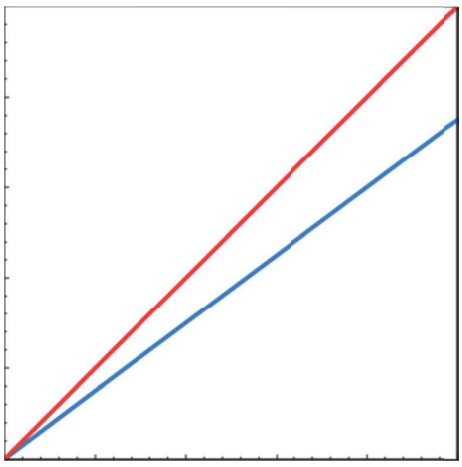
The labour market is characterised by the observations that 1) all people, notobstructed by mental or physical conditions, have to work according to their abilities and 2) in return they enjoy goods according to their needs based on their utility function. In other words, the labour supply is represented by a straight (almost) vertical line, the demandby an (almost) horizontal one:

FIGURE 9
AGGREGATED LABOUR MARKET



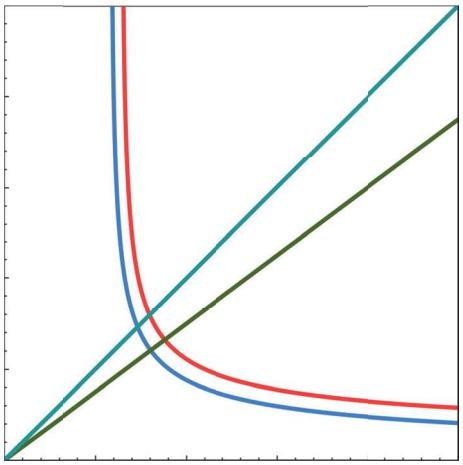
The labour-power available determines in turn, according to the applied production technology and the duration of the working day, the total system production. If we consider that addition of a single worker does not cost anything more (infinitely elastic production), the result will be a straight line that crossed the origo, the steeper it is, the higher is the contribution of machinery to the employed labour-force.

FIGURE 10
AGGREGATED SUPPLY



Where more advanced production methods or longer workdays result in a larger production. The aggregate supply, in equilibrium, is equal to the aggregate demand, and according to the latter, dividing by the number of workers, we get the utility perceived by the workers.

FIGURE 11
AGGREGATED DEMAND



The three systems together create an overall system that stabilises itself in a global equilibrium.

THE SOCIAL-ECONOMICAL EQUILIBRIUM

Self-sufficiency of the community is a pillar of the socialist economy: what they produce then it is sold at a price set to the commun according to the average production efficiency. If a community is more productive, exceeds the average efficiency, then obviously they can benefit from more goods. It is the commune to sell the product in the domestic market (in which of course there is also the State that exports to other countries), always in base of the average. If the local authority exceeds it, it can perform more infrastructural developments and offer more services to citizens. Of course, if it has lost out on the sale of the product, having, regard to the other communes, the workers' efficiency below the average one, then it can carry out less infrastructural developments and offer fewer services to the inhabitants. Thus, it is convenient for the local collectivity to dismantle production activities that cause losses. If a city that was below the threshold, renounces to the production, the average rises again, forcing other inefficient communes to give up, in their turn, the production, creating large industrial centers in areas where workers work better. This extremisation of the production curve causes the concentration of production activities in cities where the efficiency is higher, increasing the efficiency of the entire national production chain. To add that of course the average efficiency of the administrative State has to be flexible, i.e there has to be considered also tolerance margin to allow a more protected production from vis maior events. In the case it was not like this, the polarisation of the production at the end will concentrate production in only one city, and as there would be differences also between cities, pinned to the production of a single commodity, even they would disappear, flowing themselves into just some metropolis. Repetitive dismantling of the means of production and total production flexibility would cause huge social and economical damages, not talking about the disadvantages due to few existing cities, where the individual is dissolved in the size and drabness of the municipality.

We still have to define productive how much an official of the administrative State is productive. He is the one who with the other officials determine the basic laws of the social-economic order and and take decisions on resource allocation to find the optimal production point. In other words, the result of his work is nothing else but the national wealth if he is a statal official, the provincial wealth or the municipal one if he works at these lower levels. The product of his work is equivalent to the average productivity of the institutional level that employs him. More the economy grows, the higher his salary is.

The margin of tolerance is nothing else but a social transfer from the State. It allows to activities in recession the recovery, and it principally takes place not through tangible transfers of assets, but by

investments and solicitation of the research, so that the commune can technologically catch up, not letting the already made investments go waste. A successful research or investment, even though average efficiency rises, reduces the gap, so transfers are reduced over time. Obviously if efficiency is far below the average and it is not completely remediable, the State will finance only a part of the researches, investments, pressing the commune to re-evaluate whether that production branch in the future will be useful, because it loses out on production, or if is it more convenient to dismantle the production units and invest in something more fruitful.

The competition phase between communes must be preceded by a central planning to avoid the collapse of the productive system, with a lot of bottlenecks and shortages, and as soon as reallocations in production resources to reorganise production are done, the State must carry out an in-depth analysis of the new economic system to prevent severe fluctuations and disturbances before giving the green light to the efficient production. Remember that one of the principles of this theory is the definition of the production value. In case of differences between several production units, the lowest one prevails, i.e. the one in which the least possible work to produce the asset is included, in other words, the technologically most advanced one. Obviously, there may be both positive and negative excesses, so it is better to consider the average of all production values. If for a community it takes twice as long to produce a certain asset, then its work is worth half as much as the other commune's work, therefore the first city will be discouraged from the production of that good if the production shift is possible. By calculating the average efficiency, the standard deviation of the production values of an asset in each commune, giving zero to municipalities that do not produce the good, we can examine the fabric of the economic branch. With high average absolute deviation and high standard deviation, we can affirm that production occurs in a concentrated manner in a few cities, they have an advantage on the production so high that it prevents other collectivities to enter the market, but this advantage is precisely due to the technological advantage, which allows a high-efficiency production – note that a community can make use of the technology invented by it only for a very short time, after which also the other communities can implement it, thus allowing the diffusion of the momentary most efficient production, but still rewarding the municipality that invented it. In this scenario, it is in the interest of the national community to maintain production in these places by promoting it, as they are much more productive than others. These branches are strategic for the State. In the contrary case, with low average absolute deviation and standard deviation, we can say that the production is possible at the same efficiency level everywhere, so these are not strategic branches, and it is also more difficult to obtain a much higher efficiency at short term.

At this point we arrived to the point to define the exact size of the opportunity cost in this economic order. The opportunity cost is nothing else but the subsidies with which the State maintain a balanced economy to avoid large differences in standards of living. Subsidies, in their turn, are the quantity of goods that the state transfers from the most productive communes towards the less efficient ones, i.e. a value that can be presented with the aggregate tolerance margin. Taking the weighted average tolerance margin of all economic branches, making outweigh those ones that produce more value across the entire economy, we get the aggregate one that represents the average value that the State transfers from the communes to the communes. If it is high, it means that there are serious inequalities in the production system, with cities that produce little while others produce much, so its reorganisation is urgent. If it is low, it means that there is little difference between the various production units, i.e. the economy is more balanced, but it also means greater efficiency and a fiercer competition: those who find themselves outside the already tight margin, even slightly, lose competitiveness, so they should invest in research to support the race. It can only happen in a country with advanced socialism, because if we put too severe tolerance margins at the beginning, the outlet of the economy in expansion is choked, drawing back the development. Note that beyond the application of the margin of tolerance, the State in any case has to ensure access, at an appropriate level, to social rights, such as education, health, house, family, etc.

To sum up, opportunity cost strictly depends on the aggregate tolerance margin, the higher the constant is, the farther the country is from socialism, but strangely it is more social at the same time, the greater the economic divergences are, reduced then by the transfers, the larger the gap is between the present situation and as if the country had remained a capitalist one, because in neoliberal capitalism

opportunity costs are considered brakes of the competitive market economy. If opportunity cost is low, the country is close to communism, but oddly it is less social, because by being very social before, it has almost achieved the equality of the communes, but in that moment, there is no longer need to be social because the system has already moved towards equality, as far as it was possible. And at that moment the standard of living in the by-now communist country will be higher than in capitalist countries, as the latter ones suffer the effects of all market failures, as corruption, bureaucracy, illegal work, etc, that are already extincted in communism. Therefore, technological progress represents economic development, the tolerance margin's value the society's progress towards communism, while the ratio between social gain and gain of the capitalists after restructurings and collectivisations underway in the economy, shows the velocity towards communism and how strong the bourgeois class is. The three main variables to be considered together if we analyze the economy, because otherwise we can get a wrong conclusion: the increase in opportunity cost does not necessarily mean that the production system is disintegrating, it might have pointed out a temporary high economic development in the already rich communes that grow disproportionately compared to the rest of the country. To make a simple example, it can occur with the discovery of crude oil in a region, which suddenly enriches the cities that are part of it, or after the implementation of a successful important research.

As soon as the self-control becomes the property of all, the trade-off that made the socialist system less competitive, economically speaking, disappears. The bureaucrats, except for the control of economic developments and administrative management, as well as the political class, they become useless. And not only. If we consider a supermarket with four employees, the boss who looks even surveillance cameras, the butcher/baker, the cashier and the shelf-stacker, then it is that with the advent of communism, half of them becomes superfluous: the boss/safety guard and the cashier. In fact, people go to the market and take items according to their needs. This released workforce can be used in real production: for the production of something useful for society. To add that obviously as for goods of insufficient availability, under constraints of obtaining, or of which use requires consultation, administrators will remain. With some examples, respectively: luxury goods, alcohol or cigarettes, drugs. All in all, professions that do not produce to meet needs, provide assistance or ensure the safe use of the goods, are removed. Full employment together with targeted research and the elimination of finance and of the related branches, causes a communist system to become more efficient, in social-economic terms, than capitalism, which cannot get rid of these weights: they are part of its nature, they are also contradictions of this system.

The crush of the capitalist economy propagates through the strategy of the vise. Where it is possible, we can immediately collectivise the production chain from the first to the last processing of raw materials - feasible in the sectors where abroad is not dominant or in strategic sectors where the State has the political and economic strength to counter responses from foreign countries. If in an economic branch the community has the monopoly only on the extraction of the raw materials or the production of the final product, the capitalists can still have their uncontrolled revenues. If both ends of the chain are controlled by the collectivity, they, as like a frame, regulate the capitalists, to then annihilate the gap of the extra profit and finally tighten the capitalists more and more up to suffocate their activities in the sector. Generally, it is easier to collectivise the extraction of raw materials as it requires less technology than computing processes. As soon as the two ends have been collectivised, the community, which previously kept the market prices on both sides, can begin to raise the price of the raw material and force, being a monopolist on the buying side of the near-final product, the other operators to lower the selling price of that almost-finished product. In the event that the capitalists who sell that product did not do it, the interruption of purchases by the community, as being the only operator that buys it, would cause their market to fail and they would go bankrupt. So, the capitalists on both sides must take a step back. What happens now: they see their profits cut, and they want to, at least in part, transfer their losses to other sectors that are in between. If these intrasectors resist (intra meaning that framed by the other two, still competitive, sectors), then the capitalists remain crushed, one after the other they will be forced to abandon the production. If the market is competitive, then all of them suffer, and as soon as a small imbalance occurs, it makes fail the weakest capitalist, an then a purge like lightning strike the market: if

no one buys the bankrupted company, the community takes it over, but if someone does, then the market becomes less competitive, and under the collective pressure, and because of their falling profits, at the end just one remains against the community, or after every little imbalance some companies go bankrupt and at the end only one remains, with no collectivised production yet. If the two sectors where the community wants to take over, can transfer part of their losses, then this just described disorder occurs also in these markets, giving rise to intra-sectoral monopolies. The community should begin to produce only when its production cost goes below the first-time-elaborated raw material – let us call it pre-product. The capitalist now produces with no extra profit, at a cost equal to the difference between the raw material extraction cost and the price of the pre-product, at net of its production cost, and he pays it as a kind of aid to the community, it is extra profit for this second. In the event that neither with these benefits it could go under the price of the pre-product, it is not yet convenient to produce. As soon as it reaches that point, it can begin to conquer the market, considering the fact that if the capitalist goes into bankruptcy, its subsidies received from him fall to zero, so it will find itself above the pre-product's price, sending into failure the entire market for inefficiency, or triggering an inflationary cycle. If with the subsidies it goes below, it means that the community has once again an extra profit in that economic branch that can be recycled to improve efficiency - of course, the price of this asset does not decrease in order to maximise the profit, till its production reaches, without subsidies now, the pre-product's price. At that point, by raising the subsidies to be paid by the capitalist, the collectivity sends him into bankruptcy and takes over the whole market. The extra profit disappears in that moment, but now it is the community to control this sector and it has one capitalist less: every technological advance made from now on is an advantage for the society, in any case the socialism has already strengthened itself by eliminating the capitalist. At this point the State can proceed to tighten the vise around the remained intrasectors, using always the same method, as long as the last remaining capitalist is not crushed. After the collectivisation of the entire branch, at first, the production cost of the final product is equal to the price of the asset in the competitive market, because of the still low efficiency. Watch that economic status quo has practically remained (the market is not changed, only the operators), indeed, perhaps it has worsened if the community had to make investments to take over the market. It is important to index the collectivisations to find the ones that will give a bigger thrust to the completion of socialism.

The order in which the collectivisation process of economic branches is carried out, can be easily described based on the investment and time needed to complete the collectivisation, on the size and profitability of the sector. The less time and investment it takes, and the higher the profitability and the size of the sector are, then the higher is the convenience rate, too:

$$R = \sqrt[r_{t_i} \times y_{t_i}]{\sum_{i=1}^{n} \frac{I_{t_i} \frac{t_i}{t_n} \times \frac{y_{t_i}}{Y_{t_i}} \times \left(1+r_{t_i}\right)^{t_i}}{\prod_{i=1}^{n}\left(1+\alpha_{t_n}\right)}} \tag{22}$$

Let us explain the equation. I is the investment needed each year for the collectivisation (if it is nationalisable without that operators with strong positions (like foreign countries) protest, then this value is 0), t_i and you t_n indicate, respectively, the year, and the total years necessary to carry it out; then y is the size of the sector compared to domestic production Y, r is the profitability, α the technological development for each year. A high value of R means an inconvenient collectivisation at the moment, this can be demonstrated by a simple example: consider two branches, in which all variables are the same, except for I, one requires 1 sestertius, the other one 1000. We can see that the collectivisation that requires more investments has a higher convenience rate, but actually it is less advisable. With this method collectivisations that require the same amount of time to run can be easily compared. In the case in which the two times did not coincide, to the equation of the collectivisation that requires less time, the following parts are added under the root:

$$\sum_{i=k}^{n} \frac{\frac{y_{t_i}}{Y_{t_i}} \times (1+r_{t_i})^{t_i}}{\prod_{i=k}^{n}(1+\alpha_{t_n})} \tag{23}$$

and it becomes:

$$R = \sqrt[r_{t_i} \times y_{t_i}]{\sum_{i=1}^{k} \frac{I_{t_i} \frac{t_i}{t_k} \times \frac{y_{t_i}}{Y_{t_i}} \times \left(1+r_{t_i}\right)^{t_i}}{\prod_{i=1}^{k}\left(1+\alpha_{t_k}\right)} + \sum_{i=k}^{n} \frac{\frac{y_{t_i}}{Y_{t_i}} \times \left(1+r_{t_i}\right)^{t_i}}{\prod_{i=k}^{n}(1+\alpha_{t_n})}} \tag{24}$$

See that the denominators with t_k are minor than t_n, because k is less than n, so the fraction $\frac{t_i}{t_k}$ are greater than the $\frac{t_i}{t_n}$ ones, so a collectivisation that requires less time, is more convenient than another one which has the same characteristics but higher timeframes. The addition of the root raised to the $r_{t_i} \times y_{t_i}$power is required, as between two options, one with an investment of 10 and performance of 9, the other, respectively, with 1,000 and 999, the equation would not make difference between an investment that produced little profit, and an another, which had a higher entry barrier, for which the second one would be less convenient; even though from the second year, because there are no more investments, it is much more fruitful. Therefore, the addition of a root, raised to a power that for the most bearing investments is greater (as in the same period of time these are the two variables that decide the convenience) has as result a higher value of R for less convenient collectivisation (the power is less, so the root, as we talk about values higher than 1, is higher), and a lower R for the more fruitful ones.

Immediate total collectivisation would be detrimental because of three things: the sudden replacement of the board of directors in companies, a disturbance in the production is created until the new leaders, who comes from the collectivity, learn the management of the enterprises, and with the taking in hand of the whole production system, it would result rigid to reallocations, improvements. On the other side, and as a result, the overall management that suddenly falls on the State, would need a strong bureaucracy at the beginning, leading to the emergence of a bureaucratic class that transforms the rising socialist State in a bureaucratic dictatorship, of course, controlled by the party in power: we arrive to the consolidation of the political State, as it happened in the case of the USSR. Note that to avoid the collapse of the production system, it becomes the State's – and not the communes' – duty to organise and manage the production, further reinforcing the effect that pushes the state order in the opposite direction of the communism (extinction of the political state).

To reorganise the production system, it is necessary to calculate the convenience rates for the respective timeframes. The first to be calculated is the one that has to deal with the immediate after the transition to the socialist way, which allows the reshaping of production and the launch of the planned, collectivised economy. So, it is for short term, it takes into consideration options that have effects in short term such as six months to a year. After the stabilisation of the new order, it becomes possible to plan, for more remote dates, the transformation of the economy driven by the first positive economic results. With the system's in-depth analysis, the State can control every aspect of the process; and thr long-term plans that provide not only the purpose to achieve, but they also demonstrate in a tangible way (mathematically, economically) the path to be taken, means a more predictable economic performance, that there are no surprises.

After each occurred branch collectivisation, if the social gain, i.e. the difference between exchange value and production value of the asset exceeds the gain of capitalists due to the increased demand for goods, caused by the increased purchasing power, socialism is strengthened. To consider that lowering the goods' price of from its exchange value to its production value would be detrimental to the community, although it does not seem: the extra profit of the State would be null, the demand for the good would increase as the price falls, therefore the State should reallocate production resources to satisfy it completely, taking away from other areas where struggle against capitalists is still ongoing. The

citizen's savings on the price of the goods would be spent on other goods: if they are products of capitalist markets, then the owners of the means of production will pocket an extra profit even higher. In other words, the society has gained nothing economically, capitalists, on the contrary, will have an even higher profit, and therefore they will have more means at their disposal to combat the collectivising State.

The socialist country's economic advantage on a capitalist one can induce the latter to implement reforms considerated socialist ones, exploiting the internal contradictions of capitalism, turning it against the system. If, for example, for reasons of resource shortages the socialist country decides to build factories abroad, it will do it where the construction is convenient for it. It is the socialist State to dictate the conditions, as it only needs a resource that was not available in the country of origin, so it can easily import the other ones from the country of origin if the host country does not offer them to it in a convenient manner. If it succeeds, it can affix an exchange ratio of assets based on their production value, and not on their capitalistic exchange value, causing a change in the market prices. In the case that the market could not offer them, it will import them, as we have said before, from the socialist country. The case can be demonstrated also through tourism. In communism there is no currency, so if a citizen wants to go on vacation abroad, the State grants it to him according to his needs, taking in consideration also his productivity. If it gives him 900 sestertius, and going to Berlin costs 1000, while visiting Hamburg only 800, it is obvious that he can choose only the second city, and he can even save money (expecting for example an economic growth that the next year will allow him a more luxurious trip). If he decides to spend it all, the city of Hamburg has a gain, it has not only received a sum for a holiday spent there, but the tourist have implemented more purchases than expected. On the other hand, Berlin has lost tourists, so it must reconsider its tourism sector, during which time offers with low price-quality rate (i.e. the ones with surplus value) will disappear, lowering travel costs. This process causes an equalisation process between the two cities, straining the social-economic fabric on several fronts: investments in infrastructure needed and those to be dismantled, internal migration of the population with the possible displacement of the religious, political, cultural, demographic, etc balance, that require the intervention of the German State, increase in the standard of living in Hamburg and its decrease in Berlin, etc. These phenomena press the competitive market to cage itself under the economic laws of communism. The capitalist is no longer the controller of that market because there is someone even more capitalist than him (the socialist State) that draws the production fabric under other conventions, trying to overrule, in fact, the status quo of the social-economic order in the capitalist State. It causes the cities that host the production units do everything to make them stay: otherwise they move mercilessly, sparking a war between municipalities, and this is what we want: the dismantling of the hierarchical State, promoting a federated one on the communes. And when the new system begins to stabilise, workers can do their socialist revolution to proceed, definitely and on their own, on the road to communism.

Thus, this would be a third way to communism, one with socialist characteristics forced by the deformed competitive market due to the presence of the socialist country as economic operator.

Capitalism, therefore, put under pressure on two sides, the economic one and the social one, deflates and then or it fails economically or, by anticipating this failure, it introduces the socialist set of law. This process will be contagious also for other countries, because production costs, compared in the two system types, assume a lower value in favour of the socialist system. For this, goods become more competitive, undermining the stability of the capitalist State and enriching the Marxist one: the thesis of Trotsky on *permanent revolution* gets confirmed.

To determine the development state of the country, it is necessary to resort to social usefulness. As we have seen at the beginning, national income consists in producted goods and realised investments, but it is an (almost) fixed indicator: depends on the number of employees and the working hours. On a time basis, indicators of different periods can be compared, taking as basis of comparison the various production values, to determine economic expansion, which data, however, is only a statistical index, it does not give the possibility of analysis whether that resource allocation is the optimal, closest one to citizens' needs. If we take the produced social utility, determined by the utility of each type of goods and the respective quantity at disposal, we have the following equation:

$$U_s = \left(q_1^S c_1\right)^{\alpha} \times \left(q_2^S c_2\right)^{\beta} \times \left(q_3^S c_3\right)^{\gamma} \times \ldots \times \left(q_n^S c_n\right)^{\omega} \quad (25)$$

which compared to the desired social utility, described in the form

$$U_s = \left(q_1^D c_1\right)^{\alpha} \times \left(q_2^D c_2\right)^{\beta} \times \left(q_3^D c_3\right)^{\gamma} \times \ldots \times \left(q_n^D c_n\right)^{\omega} \quad (26)$$

determines the social welfare, i.e. the proximity of the production system to the optimal point:

$$B_s = \left(\frac{q_1^S}{q_1^D}\right)^{\alpha} \times \left(\frac{q_2^S}{q_2^D}\right)^{\beta} \times \left(\frac{q_3^S}{q_3^D}\right)^{\gamma} \times \ldots \times \left(\frac{q_n^S}{q_n^D}\right)^{\omega} \quad (27)$$

Taking into account the fact that overproduction does not ensure additional utility increases (the maximum of the various $\frac{q_x^S}{q_x^D}$ ratios is therefore equal to 1) and that the powers α, β, γ, ..., ω are positive numbers less than 1 (satiation of consumption), the maximum value of B_s function is always 1, and closer the obtained ratio goes to it, the greater the social welfare is. It also includes the various social securities, like access to education, healthcare, etc, as follows.

The issue of the pension can be easily demonstrated with intertemporal consumptions, where today's consumption refers to the active working period, and future consumption to that one of the years in retirement.

With an example, if labourers start to work at the age of 20, they work till they reach 65 and then they live up to the expected 80 years. If one is more productive than the average by one third, by working hard and having a normal consumption, he can retire at the age of 50, but if he keeps on working up he gets 65 years old, he will be able to consume twice as much as the others who worked just normally. On the contrary, if one is below the expected production of one third, consuming like average people, then soon the society will have to prevent this life above his merits, because the individual would arrive at the age of65, threshold of the retirement, with consumption possibilities that are just the half of that ones of the others, or otherwise he should work until the end of his life to maintain his standard of living. So, either he changes profession to a one in which he is more efficient, or his consumption will be reduced for a responsible one in the future.

$$c_1 = 2y_1 \times \left[\frac{(1-\alpha)^{\frac{\beta}{1-\beta}} \times (1+\rho)^{\frac{1}{1-\beta}}}{(1-\alpha)^{\frac{\beta}{1-\beta}} \times (1+\rho)^{\frac{1}{1-\beta}} + (1+\alpha)^{\frac{\beta}{1-\beta}}}\right] \quad (28)$$

We know that just few people think of their retirement age, so ρ has a high value, β, if it is about an average consumer, is equal to 0.5. At this point we can reuse the equation on intertemporal consumption:

$$c_1 = 2y_1 \times \left[\frac{(1+\rho)^{\frac{1}{0,5}}}{(1+\rho)^{\frac{1}{0,5}} + (1-\alpha)^{\frac{1}{-0,5}}}\right] \quad (29)$$

For almost zero growth the equation gives approximately $c_1 = 2y_1$ as result, for high growth, an always greater part of the consumption will be postponed. This fact shows us how much an individual must work before being able to retire: if we go back to the example, so workers start to work at 20 years old and they live till the age of 80, in the first case they can retire at 60, in the second case also before. Obviously, the society has all the necessary data at its disposal (life expectancy, consumption, production, economic growth) for which at any time it can tell to any individual at what age he will be able to retire if he wants to have normal standards of living in retirement.

For an effective communication, there is need of use of a common symbolism that includes, starting from a lingua franca, through mathematical symbols, to mimetic gestures, many things. If communication is not perfect, the parts in society cannot understand each other, which causes reduction in its operational

efficiency, not talking about damages caused by workers' lack of knowledge. Therefore, it is purpose of the community to instruct its members, thus the individual's right to study becomes a *social right*. Even the slightest misunderstanding can be harmful, for example, it is known that during the first world war soldiers from various parts of the Kingdom did not understand each other, causing huge losses in life, in other words its usetily is infinite, and it is a luxury asset: respect to the employed workforce in education, its product is more than proportional. Similarly, culture that works as bridge between society and semantics, has the same value. It is in the society's interest that the individual, once instructed and inserted into the world of the labour, "repay" this investment through sustainable production, and medicine itself must ensure that this fact occurs: also the right to health becomes social.

Only when the uncivilised individual will see that his carelessness causes damage in economic terms for himself, and that the others do not do uncivilised things, thus they emarginate him, he will respect the work of others and therefore his own work. He will understand that the others give their maximum at work, hoping that the others, from their point of view, do the same. He will understand that the society is based on this trust, and if he does not work, then someone else has to do his job, and he will be eternally moved between the various production units. When he understands it, his work and its product become his own ones: the alienation of goods and labour will be extinguished and then humanity will be arrived to communism.