



Munich Personal RePEc Archive

Socialist Calculation and Market Socialism

Jael, Paul

May 2015

Online at <https://mpra.ub.uni-muenchen.de/64255/>
MPRA Paper No. 64255, posted 10 May 2015 13:18 UTC

Socialist Calculation and Market Socialism

Paul Jael

May 2015

Abstract

This paper focuses on the debate held in the twenties and thirties of the last century between libertarian economists and socialist economists, following the denial by the first ones of the feasibility of a socialist economy. This controversy is well known to specialists and has been widely commented. It seemed to me useful to initiate non-specialists in an original way: by having the controversy speaking by itself. We review the main contributions and summarise their arguments with, initially, the bare minimum of personal comments.

Walrasian general equilibrium serves as a reference for the defenders of market socialism in the controversy. But the concept of competition behind this theory is very incomplete; it is purely passive. It follows that the market socialism which emanates from it is not really a MARKET socialism. It is lacking the competition which innovates. Markets for capital goods are also lacking in these models.

Our paper then turns to a new generation of socialist models involving this real competition. We review two models proposed by Bardhan and Roemer and then exhibit a personal model. This type of model is facing a modern criticism whose central concept is the "soft budget constraint".

Keywords: planning, market socialism, socialist calculation, soft budget constraint, Barone, von Mises, Hayek, Lange, Roemer

JEL Classification: P20, P21, P27

IN TEMPORE NON SUSPECTO

In the chapter of the Manual (1906) devoted to equilibrium, **Pareto** inserts a section entitled "Equilibrium in the collectivist society". The collectivist state has to solve two problems: firstly, how to distribute goods produced between citizens and secondly, how to produce those goods so as to maximise the individual opheimities. The optimisation rules to be applied by the collectivist state turn out to be the same ones that work in perfect competition. Pareto even thinks that the collectivist state will achieve equilibrium more easily than the competitive system. However, its officials may prove to be less effective than entrepreneurs. Hence a reserved conclusion: "... pure economics does not give us a really decisive criterion to choose between an organisation of society based on private property and a socialist organisation" (Pareto 1927 p.364).

So much indulgence towards socialism may surprise on the part of an economist deemed anti-socialist. In fact, Pareto wants to show that his general equilibrium theory transcends politico-economic systems. Pure theory is at a higher level than human actions.

Two years later, Enrico **Barone**, a disciple of Walras and Pareto, takes the same idea over. Here, it's a forty five pages article which is dedicated to this issue, as indicated by its title: "The Ministry of Production in the Collectivist State". From the outset, the author, though not more inclined to sympathy towards socialism than Pareto clarifies: "... I do not write for or against collectivism" and he keeps his word. The article consists of two fairly symmetrical sections devoted, the first to the individualist regime, and the second to the collectivist regime. In both cases, it proves the existence of equilibrium and the coincidence between this equilibrium and the maximum of welfare. Equilibrium is shown by the equality between the number of equations and the number of unknowns. The equations are rather casselian. As Cassel, Barone rejects any notion of utility or preference in his equations; dependence of supply and demand on the full price system suffices. He is also among the firsts to introduce variables technical coefficients in the general equilibrium: these are determined so as to minimise cost. Developing his system of equations, Barone particularly emphasises those which minimise the cost and those which equalise price and cost, two fundamental characteristics of perfect competition.

Without utility function, Barone defines welfare as the sum of the products of quantities sold (R_i) of the n goods by their price (p_i). For equilibrium values, this function is called ϕ . We have:

$$\phi = \sum_{i=1}^n R_i \cdot p_i \quad i = (1...n) \quad (1)$$

Barone proves that:

$$\frac{\partial \phi}{\partial R_i} = 0 \quad \forall i \quad (2)$$

Departing from equilibrium, any change that disturbs equality of price with cost of production or takes the cost away from its minimum has a negative $\Delta\phi$.

To the collective ϕ correspond θ 's for the m individuals. We have:

$$\phi = \sum_{j=1}^m \theta_j \quad j = (1\dots m) \quad (3)$$

The θ 's are additive. A negative $\Delta\phi$ caused by a deviation from the optimum does not necessarily imply a decrease of all θ 's; some may increase while others decrease, but the weight of cuts must prevail. The collective optimum does not imply optimum for all agents.

Finally, Barone concludes that "...the system of equations of the collectivist equilibrium is no other than that of the free competition. Which only means that with equal resources, the economic quantities of the collectivist equilibrium will be the same as those in the individualist equilibrium" (2009 p.274).

How does the collectivist state achieve this optimum? The equilibrium equations would be soluble a priori if there were not the extremely complex problem of determining production coefficients. Faced with this difficulty, the Ministry of Production has no other way to find equilibrium than the trial and error process.

Regarding the structure of socialist economy, Barone inaugurates the model that will serve as reference during the debate which will be analysed below: There are real markets for primary factors of production as well as for consumer goods. In-between, the production of capital goods is managed by the Ministry of Production. Households therefore choose freely their occupation and their consumption bundle.

The socialist state should also provide an answer to some questions, about which Barone delivers his opinion:

- 1- Some primary factors of the category *land* are held by the community. Income of these factors must be shared between citizens; two methods are available :
 - INDIRECT distribution: the citizen benefits from lower prices for the goods he consumes because the use of these factors is not counted in price calculation.
 - DIRECT distribution: the citizen is rewarded with an allowance for that share, in addition to his salary.
 Barone defends direct distribution because the other method generates a waste of those resources.
- 2- Exactly the same question arises for the firm's profit¹. Indirect distribution would have the advantage of raising production, at least in industries which do not work under increasing cost. Finally, Barone advocates direct distribution because it raises the freedom of choice of the citizen as a consumer.
- 3- Citizens' saving is needed to finance investments. Only the state collects savings. A certain level of savings is generated by the sole precautionary motive. If this spontaneous saving is not enough to fund all planned investments, the state may supplement it in two ways: either to deduct a part from the collective income (for

¹ As price must equal production cost, profit is earned by the firms that have higher efficiency than the rest of their industry.

- example, the one of remark 1) or to provide an interest aiming at increasing savings to the desired level, solution that is preferred by Barone. Barone thinks that the interest rate could be higher under socialism than under capitalism, with the disappearance of the quasi-automatic saving coming from the owners of large fortunes.
- 4- One of the criticisms against capitalism is the waste of resources constituted by continual destruction of capital, due to competition on technological innovation. Barone does not believe that socialism will prevent such destruction if it is to realise all the innovations made possible by the technical knowledge¹.

The conclusion of Barone is this: "If the Ministry of Production proposes to obtain the collective maximum- which it obviously must, whatever law of distribution may be adopted- all the economic categories of the old regime must reappear, though maybe with other names..." (2009 p.289).

Although it is rather poorly written², Barone's article still remains one of the best economic analyses of socialism.

A similar concept is found in **Cassel**, notwithstanding not more socialist than the two Italians. He explicitly affirms the transcendence of the theory of price formation on social systems. He defines the socialist society as "a closed exchange economy where the entire production is only provided by the society and on its behalf by a competent higher authority and where all material means of production are owned by society, but where freedoms of work and consumption still exist in the essential measure for the exchange economy (...) There is no reason that the socialist society gives a wider scope to the principle of free, since it belongs to communism, not socialism" (1929 p.178). He further states that the socialist economy is a monetary economy. Wage labour is there practiced. As for the price system, it must be guided by the scarcity principle.

Cassel argues for maintaining interest in socialist society. Under capitalism, the interest is closely linked to bourgeois property and to the activity of this class which will no more exist in socialism. One would be tempted to believe that interest will disappear with it. But behind these bourgeois mechanisms, "there are the essential features of human life that exist, although in varying forms in any exchange economy" (1929 p.367). To induce rational allocation of capital between industries, it is essential that the price of consumer products includes "a supplement proportional to the availability of capital, over labour cost and other costs." The interest rate is necessary to limit the demand for capital, which hampers consumption. "The capital demands, which arise when the interest rate is zero, are absolutely insatiable" (1929 p.369). In the capitalist society, the volume of saving and therefore the sacrifice imposed on consumers is regulated by the global working of the economic system. By contrast, in socialism, it is

¹ I think this remark is only partly correct. Destruction of capital caused by competition is excessive, because of an externality problem. Before deciding the introduction of technical progress, the firm weighs the advantages and disadvantages, including destruction of capital. When confronted with technical progress introduced by a competitor, it supports the loss but sees the decision maker take the benefit.

² Bradley writes: "Although Barone's Ministry article may be considered a classic in the history of the economics of central planning in the twentieth century, it is not a stylistic masterpiece. The analysis is seldom clear and Barone's often chaotic notation and organization makes his analysis difficult to follow" (p.9).

a decision to be taken by the government. Not more than Barone, Cassel does expect a lowering of the interest rate from its capitalist level.

VON MISES AND THE LAUNCH OF THE CONTROVERSY

In 1920, the Austrian economist, Ludwig von Mises, known for his libertarian views, publishes the article "Economic Calculation in the Socialist Commonwealth." The article is a methodical attack denouncing the lack of economic rationality in socialism.

Before attacking the rationality of socialism as a mode of production, it is a certain attitude of many socialist thinkers that he denounces, namely their inability to develop an economic analysis of the socialist society. They offer no economic theory of socialism. Socialist society is considered vaguely and only from a social, cultural or political perspective, not an economic one.

The article comes out less than three years after the October Revolution, but there seems to be no direct link. Are equally targeted the German and Austrian Social Democrats, including Karl Kautsky, Otto Bauer, Rudolf Hilferding, at a time when these parties were still calling themselves Marxist. The controversy between the Marxist favourite law of labour value and the law of subjective value was still alive. Mises attacks the law of labour value with heavy artillery. For Marx, it was a tool to prove exploitation of man by man, but some Marxists seem to want it to play the role of determining prices in collectivist regime¹. According to Mises, such a claim is absurd; there are two reasons:

- Labour is not the only primary factor of production.
- Labour is not homogeneous.

This law is so much praised by many socialists because it offers a lifeline when the disappearance of the market and private property has eliminated all computational means. Mises recognises, however, that one can be a socialist without believing in that law.

But the main object of the article is the lack of economic rationality of the socialist system. Various criticisms are directed against this system, but the most fundamental is the impossibility of economic calculation. At this point, Mises is ignorant of the article in which Barone specifically addressed this question and whose nuanced view is not consistent with his own. Barone's article will be unearthed no sooner than in the mid-thirties and will then be used as an argument in the debate. Note that the institutional socialist system envisaged by Mises is the same as that of Barone: markets for consumer goods and labour, planned economy for the rest.

Many socialists imagine that the planning office is able to direct the economy by managing only flows in KIND. It is an illusion. Only calculation in VALUE is compatible with rationality and it involves two prerequisites:

- The production goods are involved in the sphere of exchange.
- There exists a universal medium in the exchange.

These conditions are not met under socialism. Mises concludes: "Without economic calculation, there can be no economy. Hence, in a socialist state, wherein the pursuit of economic calculation is impossible, there can be - in our sense of the term- no economy whatsoever" (2009 p.105). Without the realisation of the above two conditions, how can

¹ As an example, Mises quotes Engels' Anti-Dühring.

the planning office determine which method of production is the most economical, how can it detect excessively long production process¹ ⁶, wastage of materials and labour? Without prices for production goods, it is impossible to calculate the cost of consumer goods, which are to be sold on a market. To aggregate disparate inputs, the only solution is the addition of monetary prices. A market for production goods implies private ownership of the means of production in these industries: how could the coal industry and that of steel agree on a price without private ownership of the steel mills and mines? Mises is a little vague on this point, but he probably means that without profit maximization, there is no basis to justify a price system and that this maximisation is unthinkable if it is not motivated by increase in personal property.

This brings us to the second body of converging criticisms sent by Mises. Nothing will urge managers to act as to maximise economic welfare. “It is now universally agreed that the exclusion of free initiative and individual responsibility, on which the successes of private enterprise depend, constitute the most serious menace to socialist economic organisation” (2009 p.116).

Some socialist authors draw a parallel between the leaders of socialist production units and those of modern private enterprises deriving from the managerial revolution that supplanted the capitalist owners of the first generation. The comparison does not hold. All private companies are run by people interested in profit. The effectiveness of these managers is not transposable. The weaknesses of socialist enterprises are however transposable to public enterprises in the capitalist countries. To be sure, effective management and dynamism are not always absent, but then they owe these qualities to their environment. Notably, they benefit from the innovations induced by their private suppliers.

The managers of private companies are not cleverer or more resolute than those of public enterprises. It is the function that makes the man and not the opposite. It happens that former managers of private companies are hired in the public sector. They become then bureaucrats like others.

Without profit-sharing, there lacks incentive for dedication to business. Socialists base their hope on ethical grounds. It is contrary to human nature. A simple adjustment of the remuneration system is not enough to match capitalist incentive, which is made powerful by the status of owner or the hope to achieve it, or by the prospect of leaving the enterprise as a legacy...

Mises advances two opposing weaknesses that threaten the direction of socialist enterprises:

- The lack of initiative due to power dilution.
- Excessive risk-taking because leaders do not personally bear losses.

This bleak picture presented with a touch of aggressive irony is the starting point of a controversy that will last a quarter century. Firstly, the debate was mostly held between German economists and few new ideas were issued. Some socialist economists such as Otto Neurath argued in favour of in-kind flow accounting.

¹ According to the Austrian school, time is capital.

TAYLOR AND DICKINSON: THE POSSIBILITY OF A SOCIALIST CALCULATION

Historians of the controversy consider that it takes a fresh start with the interventions of the American economist Fred Taylor and the English economist H.D. Dickinson, both defending socialism. These strive to show how from two markets at the extremities (primary factors and consumer goods), a price system can be established, which equilibrates the economy as a whole. In fact, it is what Barone stated, but his article went out of anonymity only a bit later. Moreover, it cannot be said that the analysis of the two Anglo-Saxon authors surpasses that of Barone.

Taylor's article "The Guidance of Production in a Socialist State", published in 1929, rather summarily outlines a socialist model. The state distributes monetary income to the members of the community, following a rule left open. The state computes such as to equalise the expense of the total income of the whole population with the sum of prices of consumer goods put on the market. Thus, by freely selecting the products he consumes, the citizen requires the industry to focus on production of the goods he prefers.

The equilibrium condition on which Taylor most insists is the equality between the price of products and their production cost. He assimilates this cost to the total value of productive resources that their production uses up. By "productive resources" Taylor means what economists generally call "primary factors". Cost calculation implies that primary factors are valued rationally. Taylor contents himself with a vague term: according to their "actual importance." Is it their marginal productivity? The author does not clearly explain if every unit actually receives a remuneration equivalent to this actual importance or if it is an accounting artifice to fix prices rationally.

Taylor does not weight the cost of primary factors for the duration of their presence in the production process following Böhm Bawerk's idea. Probably he also underestimates the difficulty of determining the amount of primary factors crystallised in a product, since products of other firms enter as inputs, all the more so as firms provide each other with goods. Sticking to a high level of generality, Taylor ignores these problems.

Because of equality between price and cost, if a consumer buys, for example, a good \$ 2,000, he exactly compensates society for the resources it has let it sacrifice. Following Taylor, this proves that his model is balanced.

Taylor then considers again the value of the primary factors, which he calls the "imputation problem". To determine the value of each use of the primary factors in the economy seems an impossible task because of its extent. But Taylor offers his solution: "...the so-called method of trial-and-error, that is the method which consists in trying out a series of hypothetical solutions till one is found which proves a success" (1929 p.6). The planning office gives to each primary factor a provisional valuation based on a careful analysis as well as on experience; it lets the economy operate with these values. It is then necessary to detect and correct imbalances. Shortage of a factor means that it has been undervalued; Underemployment, that it was overvalued.

Taylor's article is much too short to embrace so broad a topic. Rather summary, its renown comes from its proposal of trial-and-error that will emerge as one of the key ideas of the controversy. **Dickinson's** article, published in 1933, is much meticulous. It aims explicitly to refute Mises's thesis on the impossibility of socialist calculation;

Dickinson does not hesitate to concede to the market, the functions he deems necessary to convince its proponents.

The socialist framework is the same as in Barone and Mises. Dickinson adds, however, this clarification: firms are autonomous but integrated into an arborescent trusts structure: all cooperate and are fully informed about each other. Unlike their capitalist counterparts, enterprises are "glass houses". Cleverly, Dickinson draws attention on an important distinction: economy being nationalised, only the state provides social activities. However, the social and political state and the nationalised sector of economy are two distinct areas operating with their own rules¹.

Prices of consumption goods can find their equilibrium through a management letting them fluctuate in such a way to maintain stocks at a stable level.

Equilibrium is a little more complicated for higher order goods². Given the prices of consumer goods, enterprises are able to bid purchase prices for them, which allows building demand curves, going back to the primary factors. The available quantities of these factors being known, their market price is determined at the level that ensures full employment. The prices of primary factors being fixed, we can calculate the cost of producing every goods. On this basis, the supply of production goods can be defined as follows: slow down or stop producing those whose demand price does not cover the cost and increase the production of those whose demand price is higher than the cost³. A readjustment of production methods and of factor prices could ensue.

Regarding wages, collectivist society faces a choice. Either pay each worker at the market value of his work, or consider it as an accounting device covering payments made according to other criteria. Dickinson does not recommend the second option, because the free choice of employment could then disequilibrate the labour market.

Having detailed the procedures that should lead the economy to equilibrium, Dickinson suggests that they could be replaced by the solving of a system of simultaneous equations⁴. Unlike Barone, he does neither lists nor count equations and unknowns of the system. Barone did not consider equations as a tool to discover equilibrium, but as an argument to demonstrate its existence and the coincidence with competitive equilibrium.

"Two more things are necessary to a complete costing system. These are an allowance for time spent in production⁵ (interest or discount) and an allowance for risk (in the form of a surcharge above the normal rate of interest)" (Dickinson 1933 p.243). The role of interest is essential; it allows the economy to balance investments that rapidly pay compared to those which pay slowly. Investments that quickly pay are those for which few years of revenue suffice to recover the initial capital expenditure.

¹ It is so in capitalism where actors from both sectors are distinct. The fact that the state oversees both sectors in socialism does not imply their merger.

² This term covers *capital goods* and *primary factors of production*. Dickinson uses the Menger's terminology. To charm the proponents of the Austrian School?

³ Dickinson believes that the external costs (externalities) should be added to the cost of production.

⁴ In a subsequent writing, he will go into reverse about the system of equations

⁵ After having used Menger's terminology, Dickinson borrows ideas from Böhm Bawerk. The Austrian School seems spoiled.

Global investment planning first requires that there be a demand curve for capital, which the planning office will get by aggregating the individual demand curves of firms. To this end, these will be asked to draw up an investment plan with options for various values of the interest rate. At this stage, “two procedures can now be followed, according to whether interest-rate or quantity of accumulation is to be taken as the independent variable” (Dickinson 1933 p.244). Capital demand combined with the interest rate allows determining the need for accumulation. Demand for capital and available accumulation together determine the interest rate. If the planning office chooses the interest rate as the independent variable, it will have to consider the pace of technological change and other economic changes (consumer tastes). If it prefers controlling the amount of accumulation, Dickinson advocates the application of Ramsey formula¹.

This interest rate will be augmented with a risk premium, variable from enterprise to enterprise and which can be calculated on the basis of frequency distributions extracted from the economic statistics. Under socialism, risk will be lessened because the glass houses will hold few surprises, but it will remain, due to the freedom of players on the markets of factors and of consumption goods.

Interest, remuneration of factor land and profits due to unexpected changes in demand (net of losses) feed what Dickinson calls the "Social Fund". This one may be used to finance investments as well as the production of social goods by the political and social arm of the state.

The conclusion of Dickinson is almost lyrical: “The beautiful systems of economic equilibrium described by Böhm-Bawerk, Wieser, Marshall and Cassel are not descriptions of society as it is but prophetic visions of a socialist economy of the future” (1933 p.247).

TWO SOCIALIST VIEWS

A controversy in the controversy opposed two visions of socialism from 1933 to 1935. This debate begins with an article of English Marxist economist Maurice Dobb who criticises the emphasis put on market in the socialist model of Dickinson. Abba Lerner addresses this criticism, causing a reaction from Dobb.

Dobb, doctrinaire Marxist, regrets the invasion of socialism by the market which distorts it. He believes that market categories must give way to the prominent role recognised to the planner. Following Dobb, the planner may even be involved in determining the range of products supplied to consumers, thereby reducing their choice.

Lerner, socialist and Paretian, draws an analogy with Marxist dialectic: Mises is thesis, Dobb is antithesis and Dickinson is synthesis. He also criticises Dobb of playing in the hands of Mises : “While starting out with the argument that pricing is not necessary, Mr Dobb soon finds himself in the company of ‘Mises’ in dogmatic assertions of its impossibility” (1934 p.55).

¹ Cf. “A Mathematical Theory of Saving” (1928)

The loss of the consumer's freedom of choice would be, he says, a regression. And it does not help anyway to simplify the planning office's task if this one wants to make rational use of resources. Planner's directives should be based on an economic price system as well as the free choice of consumers. Dobb's idea is both dangerous and unnecessary.

According to Lerner, what motivates the denunciation of the price mechanism as "bourgeois" is that it would escape the power of bureaucrats. Lerner also cites several excerpts of Trotsky where he defends the inclusion of market mechanisms in the planned system.

Lerner reproaches Dobb for wanting to substitute a "transcendental" optimum for the one which would have emerged from the market. Dobb replies that neoclassical economists, group to which Lerner belongs, also grant their maximum (resulting from the equalisation of marginal utilities per unit of money and the one of marginal productivities per unit of money) a transcendental value that has no objective basis. This maximum cannot be a physical quantity since production is heterogeneous; so it is a value; now, value depends on the price system. With another pricing system, the optimum would have been another bundle and there is no reason to consider this second optimum as less valid. Dobb seems not to have understood the theory of optimum. The important thing in the price system is not the price itself, but the fact that the quantities supplied are guided by the quantities demanded. With equalisation of marginal productivities, the supply optimally fitted to the needs would be maximal in the sense that one could not produce more of one good without reducing the production of another. In this restricted sense, it is indeed physical quantities which are maximised.

Dobb also denies that in socialism, saving and investment are two separate decisions as in capitalism. When the planner decides to create a plant, in a single decision, he withdraws the resources and he assigns them. In fact, Dobb does not discern the saving decision, because it is implicit. One must previously determine the extent to which resources may be taken. An independent saving decision is therefore inescapable.

HAYEK TAKES STOCK

Hayek, Austrian economist and Böhm Bawerk's heir, takes of course the side of his friend and colleague Mises. In 1935, he publishes a book entitled "Collectivist Economic Planning", which reports on the debate. It compiles:

- Mises's article (1920);
- two articles cast in the same mould written by lesser-known authors;
- a translation of Barone's article (1908) meanwhile rediscovered by Schumpeter;
- a bibliographical list of contributions to the debate from both sides;
- an introduction ("Nature and History of the Problem") and a conclusion ("The Present state of the Debate") from his own hand.

In "Nature and History of the Problem", Hayek observes that many, especially among socialists, believe that economic theories apply only to capitalism and that we can be content to approach socialism from the social point of view. He denounces this concept. It seems to be rooted in Marx, he who practiced "historicism" considering that every period of history has problems of its own. Regarding Marx, Hayek writes: "One may search his writings in vain for any definitive statement of the general principles on

which the economic activity in the socialist community would be directed” (2009a p.13)¹.

Planning can be seen as a *means* to achieve the *end* that is *socialism*. Science cannot judge an end, in the present case an ethic of egalitarianism, which is a matter of personal adherence. By contrast, critical analysis of means lies in its scope.

To what extent socialism can ally with market economy, Hayek considers it a matter of debate, although this possibility seems to inspire him with scepticism. Conversely, a planned capitalism seems to him "unthinkable".

Regarding Mises's article, Hayek is not sparing with praise: "The distinction of having first formulated the central problem of socialist economics in such a form as to make it impossible that it should ever again disappear from the discussion belongs to the Austrian economist Professor Ludwig von Mises" (2009a p.32).

"The Present state of the Debate" examines how the position of the socialist thinkers has evolved as a result of the attack of Mises: "But the great majority of the more recent schemes try to get around the difficulties by the construction of alternative socialist systems which differ more or less fundamentally from the traditional types against which the criticism was directed in the first instance and which are supposed to be immune against the objections to which the latter are subject" (Hayek 2009b p.202).

Hayek is not at all convinced by the mathematical solution proposed by Taylor, Dickinson and others. He recognises that their argument leads to correct the criticism by Mises as it was stated; but the fundamentals of this criticism remain valid. Speaking of the socialist calculation: "Now it must be admitted that it is not an impossibility in the sense that it is logically contradictory. But to argue that a determination of prices by such a procedure being logically conceivable in any way invalidates the contention that it is not a possible solution, only proves that the real nature of the problem has not been perceived" (2009b p.207).

The implementation of these systems would be monstrously complex. If the planner is really to take over the responsibilities of managers of private corporations, he will have to take care of countless details. The examples given by Hayek are not all conclusive, since he ignores (deliberately?) the cooperation that the planner can get from factory managers.

But another problem is even more important: technology is not simply a data; it is gradually constructed. When several different technologies can make a good, competition will let the most effective triumph. How can the planner make this selection? In addition, in the field, the engineers regularly find small improvements. According to Hayek, the planner should also discover them.

Consumer tastes are constantly changing. The planner will pain to estimate the needs for the various consumer goods, according to Hayek. We saw that Taylor and Co. kept

¹ Hayek is certainly right. Marx was particularly discreet on socialism in comparison with his favourite themes: philosophical explanation of society and history, functioning of capitalism and the struggle against it.

the market for consumer goods. Thus, the validity of this criticism depends on the way this market functions in their models; their account remains rather vague.

The gathering of data and the solving of the equations constitute a superhuman task. "The number of these unknowns will be equal to the number of commodities which are to be produced" (Hayek 2009b p.212); but the same product at two different locations or different times or with different packaging are different goods. Hayek understates the truth here: in Barone's system, for example, there are many more unknowns than goods, as the primary factors and coefficients of production, as well as saving are also unknowns.

Admittedly, Taylor and co. did not count on the solving of these equations but on a process of "trial and error". Hayek does not find it more convincing. Given general interdependence, disequilibrium in a market will require changing hundreds of prices, and each change will have to take account of demand elasticity, of substitution and complementarity relationships...

Hayek therefore concludes: "No one would want to exclude every possibility that a solution may yet be found. But in our present state of knowledge, serious doubt must remain whether such a solution can be found" (2009b p.242). And, he adds, if ever the solution was to be found, socialists would be indebted to their opponents.

LANGE: GENERAL EQUILIBRIUM

The socialist answer comes from the Polish economist Oskar Lange, Paretian as Lerner, with a two-part article named "On the Economic Theory of Socialism", published in 1936 and 1937. The beginning of this article echoes the conclusion of Hayek: "Both as an expression of recognition of the great service rendered by him and as a memento of the prime importance of sound economic accounting, a statue of Professor Mises ought to occupy an honourable place in the great hall of the ministry of Socialisation or of the Central Planning Board of the socialist state" (1936 p.53)¹.

Mises deplored that the lack of a price system in socialism prevents to rationalise choice between alternatives. Lange calls on Wicksteed who distinguished two concepts of *price*:

1. narrow sense: money to offer to acquire the good sold;
2. broad sense : "terms on which alternatives are offered"².

To solve the problem of resource allocation, a price system in the broad sense suffices. This requires:

1. a preference scale which guides the activity of choice;
2. knowledge of the " terms on which alternatives are offered";
3. knowledge of the amount of resources available.

There is no reason to think that the factors one and three are less present in the socialist system. The presence of the factor two is disputed, but the variable to express the alternative is the marginal rate of transformation dependent on the production functions.

¹ The tone is humorous, but gratefulness is sincere.

² This distinction was already to be found in Barone's article, written two years before Wicksteed's "Common Sense". To deal with price in the socialist system, he used the term "equivalent".

“The administrators of a socialist economy will have exactly the same knowledge of production functions, or lack of knowledge, as capitalist entrepreneurs have” (Lange 1936 p.55). Mises's sentence comes from his confusion between the two meanings of *prices*.

To contextualise the subject, Lange revisits competitive equilibrium. Two conditions are to be satisfied:

- a SUBJECTIVE condition: each market participant optimises his situation (who his utility, who his profit). It is expressed by equalisation of marginal utility per money unit of consumption and equalisation of marginal productivity per money unit of factor purchasing.
- An OBJECTIVE condition: supply and demand are balanced on all good and factor markets.

How does the subjective condition become reality under socialism?

1- Consumers are still trying to maximise their utility for a given budget.

By contrast, firm managers do not pursue profit maximisation. Instead, they are required to apply this double rule:

- Firms choose the combination of factors and the scale of output which minimise the average cost¹.
- Each industry produces exactly what can be sold at a price equalling cost of production.

Together, both rules implicitly determine the number of firms in an industry. The prices of primary factors result from demand and supply, those of products are fixed by the Ministry; so, we are in the presence of parametric prices²; the two rules are sufficient to determine product supply and factor demand.

2- Workers choose their jobs in order to optimise the relationship between wage and disutility.

3- Productive resources belong to the state, which determines their price; they are directed only to corporations able to pay the price.

Parametric prices being set by the ministry, do they not have an arbitrary character depriving the economy of an optimum? Recalling Walrasian price theory, Lange emphasises the quasi-uniqueness of the price system that ensures the simultaneous equilibrium in all markets. When the economy finds its equilibrium price system, it will be as objective as under capitalism. Shortages and partial overproduction inevitably result from calculation errors, but they will draw the planner's attention on the need for

¹ In the "Foundations of Economic Analysis," Samuelson explains that cost minimisation has two components. First, it is necessary to optimise the combination of factors; only if the firm has achieved this optimisation is it on its cost curve; otherwise it would be above. After that, the production volume must be chosen for which the curve is lowest.

Many empirical studies have questioned the prevalence of the famous U-shaped cost curves (average and marginal). If the curve is horizontal, only the first process can be optimised and there are a multitude of optimal production volumes.

² "Parametric prices" is a term widely used in the Walrasian and Paretian economics, to mean that enterprises are price takers, not price makers. Prices are used as parameters to determine the quantities purchased and produced.

corrective measures. The realisation of the objective condition relies on the parametric function of prices. The collectivist ministry of production must therefore impose the exclusive use of the prices he prescribes, on the corporate executives.

Ultimately, “the central planning board performs the functions of the market” (Lange 1936 p.64). No functionality of capitalism is therefore lost.

Since Hayek acknowledges the theoretical possibility of socialist calculation but doubts its feasibility, the iterative correcting process advocated by Barone, Taylor and Dickinson becomes the node of the issue. Lange considers the presentation made by Taylor as perfectly edifying. Lange especially emphasises the similarity with capitalism. In the context of the Lausanne school, capitalism also has its trial and error process: the Walrasian tâtonnement: what works on one side will also work on the other side.

The planning office satisfactorily solves the economic problem without having to know all the demand curves of all products or to solve hundreds of thousands of equations, as Hayek had suggested. The only equations to solve are those that households and producers unconsciously solve in their daily lives.

Lange also raises the question of *capital* accumulation (he uses well this term). It is appropriate to distinguish between short term and long term. In the short term, the available volume of capital is fixed. The interest rate will settle at the level that ensures equilibrium between supply of capital by state banks and demand from enterprises. In the long term, the volume of capital can grow by accumulation. Lange seems to believe that the optimum amount of capital implies that its net marginal productivity falls to zero, a goal never achieved because this volume is always pushed further by all the elements that make the economy unsteady. The decision therefore is about establishing the rate of accumulation rather than about the volume of capital to achieve.

In a system where the supply of capital originates in citizens' saving, market equilibrium reflects the intertemporal preferences. This result is optimal from the economist's point of view, but Lange judges its realisation incompatible with socialism. He calls for the alternative option: accumulation is performed in the corporate world before distribution of the social dividend to citizens. As a result, the rate of accumulation is arbitrary since it depends on a decision of the Ministry. According to Lange, this is a disadvantage of socialism he says he can live with. However, in the second part of the article (1937), he advances a counter-argument showing that to this non-rational element of socialism corresponds an even irrational element of capitalism: “Besides, saving is also in the present economic order determined only partly by purely utility considerations, and the rate of savings is affected much more by the distribution of incomes, which is irrational from the economist's point of view” (1937 p.127). Lange also charges capitalist saving of the evil diagnosed by Keynes that the willingness to save may metamorphose into a fall of national income when aggregate demand is weak.

Lange, in his comparison of the relative merits of both systems, mentions two potential weaknesses of socialism:

- Will the effectiveness of managers of the economy be satisfactory?
- Risk of bureaucratisation of economic life.

The advantages of socialism he gives are:

- higher welfare when income differences are smaller (because of decreasing marginal utility of income)¹;
- externalities easier to take into account;
- reduction of imperfect competition and monopoly power.
- “Whatever the theoretical explanation of the business cycle, that cumulative shrinkage of demand and output caused by a cumulative reduction of purchasing power could be stopped in a socialist economy” (1937 p.126). Faced with the thesis of the *creative destruction*, Lange conceives economic crises in an original and ingenious perspective. Their starting point is a real imbalance which should be corrected, but the fall of whole sectors of the economy in the doldrums is an externality of this correction it is appropriate to remove.

LERNER: EQUALISATION OF PRICE WITH MARGINAL COST

Lerner pursues the same purpose as Dickinson and Lange, but he believes they and a lot of other authors take the problem from the wrong end of the stick. His article "Statics and dynamics in socialist economics" (1937) begins so: “This article is in the main a protest against the developing tradition, in approaching the problems of socialist economics, of starting from the consideration of general equilibrium, instead of going direct to the more fundamental principle of marginal opportunity cost” (1937 p.253).

Socialist calculation can be considered successful if the following criterion is met: “If we so order the economic activity that no commodity is produced unless its importance is greater than that of the alternative that is sacrificed”. It is needed that if the consumer changes its consumption in a way that leaves his utility unchanged, the sacrifice of resources by society remains constant. The sacrifice of the individual and the one of society must not diverge; otherwise the individual is encouraged to make suboptimal decisions. But how to achieve this result? Lerner found in the literature on the subject, a lot of formulas that look like the correct rule and involving variables such as average cost, normal profit etc., formulas which are themselves correct in certain situations (perfect competition for example), but become erroneous as soon as circumstances deviate. The correct rule is very simple and can be stated in two versions:

1. Engage such and such a factor of production, as long as its price is less than its physical marginal productivity multiplied by the price of the product.

¹ This argument implies the possibility to compare utilities of different people. Such a comparison is condemned by many economists. In his "Economics of Control", Lerner devotes an entire chapter to give it some legitimacy.

This procedure requires two specific hypotheses:

- 1- “The satisfactions experienced by different people are similar in the sense that they are the same kind of thing” (1946 p.25)
- 2- For each individual, marginal utility of income is decreasing. This hypothesis can be derived from the fact that to maximise the satisfaction they draw from a given income, consumers demand uppermost the most desired goods.

From these two assumptions, it follows that an income transfer from a rich to a poor increases the utility of the second more than it reduces the utility of the first. Accordingly, the optimum distribution of income is the one which equalises the marginal utilities of all members of the community. Impossibility to measure these individual utilities does not prevent positive results. If differences of sensitivity in a large group of individuals are randomly distributed, probability theory allows to state that the *probable social welfare* is maximised when income differences are minimised.

2. Increase production as long as the price of the product is higher than its marginal cost¹

Such is the rule to impose on leaders of socialist enterprises. It is valid, even in situation of non-parametric prices. In this last case, it requires from managers a behaviour which is not the one they would have adopted spontaneously and which would lead economy to a suboptimal position; they would indeed stop to engage as soon as the marginal productivity multiplied by the price would be higher than the factors' marginal cost, which is higher than its price when supply is not horizontal.

The optimal rule does not preclude that the firm earns profit in excess of normal profit, because the latter is a characteristic of long-term equilibrium, a situation normally never reached and even if it were available, profit would exist in the short term in the absence of perfect expectations.

Is a plant to be replaced as soon as its technology is outdated? According to Lerner, the answer is simple: yes, if the present value of expected income is greater than the initial investment. Never mind that the previous investment be amortised or not. The rule above, which could be called *fisherienne*, is sufficient in any case². The cost of an already built plant ceases to be a relevant parameter.

Not without some confusion, Lerner brings in this debate the issue of *marginal cost pricing*, a Paretian theme best known for its treatment by Hotelling (1938) which was already anticipated by Pigou (1920). By equating it with marginal cost, firms prevent the price to cover the fixed costs. Capitalist enterprises cannot afford it. According to Lerner, socialist enterprises can³ and this is an advantage of socialism over capitalism because it allows approaching the optimum more closely. Lerner does not address in detail the financial organisation to be set up to support marginal cost pricing.

HAYEK: BEYOND CALCULATION

In 1940, Hayek publishes "The Competitive Solution" which is a direct response to Lange and Dickinson.

Let us first examine a series of criticisms against the Ministry's ability to adjust the price system to economic changes, with the needed flexibility:

- On the principle itself: how could the ministry respond as quickly and effectively as people directly involved on the field of operations?
- Lange and Dickinson base their argument on the pure theory of stationary equilibrium; the proposed system is affected: it might work in a stationary economy,

¹ Compare this statement with the minimisation of the average cost imposed by Lange. In fact, the "Review of Economic Studies" issue of October 1936 lets Lange's article be followed by a critical review by Lerner and by Lange's response. Lerner criticises Lange for aiming towards perfect competition equilibrium rather than towards true optimum while both do not match, outside conditions of perfect competition. If few enterprises supply the market, it is unlikely that they all operate at minimum of average cost. Lange admits the validity of this criticism.

² Lerner focuses on the *profitability* aspect but ignores the *solvency* aspect. The capitalist firm which would behave like this could have trouble supporting the capital loss. Socialist operating modes can be conceived, which circumvent this problem.

³ He writes: "In the socialist state it is much simpler, because there is no need for any particular firm or industry to cover its costs" (1937 p.269).

- but its reaction speed is insufficient to follow the changing course of economy. A price change will require a whole procedure to ensure that the decision be relevant and be taken by the competent authority.
- Preliminary setting of prices by the Ministry is possible for standardised products, but many products are not. Number of contracts define a specific product that will be produced only once (construction, tenders ...)
 - Exceptional conditions in a given location or in a given time may justify a particular price, deviating from the normal price.
 - Entrepreneurs are not interested only in present prices; they form expectations. How to integrate them in the parametric prices imposed?

Lange and Dickinson show themselves unclear about the contour and size of socialist enterprises. What share do they represent in an industry?

Hayek shows himself sceptic regarding the instruction given to firm executives to produce at lower cost. First, the main incentive for cost minimisation, competition, will be absent. Second, we are here facing a lacuna of economics: it considers the cost curves as "given facts". But one must DISCOVER the cheapest method. And it may be a newcomer who will discover it; this outsider has then the burden of convincing the Ministry that the price should be lowered because his method is less expensive.

Hayek wonders about the criteria guiding the allocation of accumulated capital between socialist enterprises. How to select investments; how to take account of the risk of projects designed by these managers who handle funds they do not own. This regards not only the distribution of new capital; existing capital must also be redistributed where necessary.

Evaluation of the managers' success will prove very complex. These will have to convince the Ministry of the validity of their technological and commercial choices. It is the way towards bureaucratisation.

The writings of Lange and Dickinson give the impression that the Ministry will have to redo all the firm managers' calculations to control them. Both authors have not completely abandoned the belief in an omniscient Ministry. In the market economy, it is competition that aggregates the knowledge dispersed among many individuals. Without competition, the aggregation of this knowledge is impossible.

In his conclusion, Hayek admits that Lange and Dickinson have some merit: "As courageous attempts to face some of the real difficulties and completely to remold socialist doctrines in order to meet them they deserve our gratitude and respect" (1948 p.208).

The attitude of Hayek in the socialist calculation controversy showed moderation and open-mindedness, which contrasts with Mises's ardour. I think his intervention in the debate was motivated less by the desire to discredit socialism than to magnify the market indirectly¹.

¹ It should be noted the fair play of all the participants in this debate held while Stalinist oppression was at its peak in Soviet Union. Outside anecdotal allusions, the socialism which was debated was the theoretical socialism. Protagonists all agreed that the issue relates to the potential of a mode of production remaining to be built.

Aggregation of knowledge by the market, above-mentioned, is a favourite theme of Hayek and he devotes at roughly the same time two articles that shed light on his views: "Economics and Knowledge" (1937) and "The Use of Knowledge" (1945). They don't mention socialism, but its presence is noticeable beneath the surface. Here are the key ideas.

Pareto optimisation is not the real problem society is facing. The data needed to solve economic calculation are not concentrated in a single brain but split in a multitude of incomplete even contradictory knowledges. The very problem is to take advantage of this fragmented knowledge.

There is no economic activity without planning; this one is called DECENTRALISED when each agent establishes its own plan and adapts it to external circumstances; it is called CENTRALISED if all individuals apply a comprehensive plan enacted by an authority. Which of the two modes of planning is most effective depends on the type of knowledge required. For example, it is conceivable that for scientific research, centralised management is more appropriate.

Beside scientific knowledge, there is a non-organised knowledge, more practical than theoretical, which can also be more profitable to its possessor than theoretical knowledge, "a knowledge of particular circumstances of time and place" (Hayek 1948 p.80), which obtains in the field. This knowledge cannot be aggregated in statistics, but at the cost of significant loss of content.

The man in the field knows field information, but this one does not suffice; it must be supplemented by more general type of information, very concise, stripped of the multitude of details that characterise economic knowledge. The vector of this knowledge exists: it is the price system. Hayek gives this example: tin is made more expensive, either because a new industrial use increases the demand or because a source of supply has dried up. The tin producers must know the exact cause of this phenomenon and will certainly find the information. Others are just to know that in the future they will have to use tin more sparingly and this information is communicated by the rise in its price.

The price system must therefore be understood as a vector of information. This system provides a saving of information. Each actor can content himself with partial knowledge. The presence of an omniscient actor would even be unnecessary¹.

Each market actor unconsciously participates in a global system that goes beyond him. Although not intentionally, he contributes to it. Conscience could not have set a so wonderful system.

¹ In my view, this insistence on quasi-sufficiency of the price system weakens the previous argument that it contradicts. The field knowledge, not reducible to preformatted figures, remains absolutely necessary because, as Hayek himself explained, estimating future prices is essential; it is obvious that in this viewpoint, present prices are always an insufficient knowledge.

FIRST CONCLUSIONS

After this intervention of Hayek, the controversy, as such, came to an end. Admittedly, participants broach the same theme in the decades that follow, but these writings cease to respond to one another.

Socialist contributors are satisfied with their performance; they have proved that economic calculation was possible in the context of socialism, what Mises had denied. But they are far from having answered all the criticisms. In particular, they have neglected the difficulty, expressed by both Mises and Hayek, for executives of the socialist economy to equal the level of efficiency of private firm managers.

As followers of Walras and Pareto, Lange and Lerner tend to overestimate the importance of static equilibrium in the functioning and the understanding of economy. Their General Equilibrium is underpinned by a purely passive concept of competition, which boils down to absence of price manipulation, far away from the competition that drives the real economy. Schumpeter writes about this:

“Neither Marshall and Wicksell nor the classics saw that perfect competition is the exception and that even if it were the rule there would be much less reason for congratulation than one might think” (1976 p.78)¹

“But in capitalist reality as distinguished from its textbook picture, it is not that kind of competition that counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organisation (...) This kind of competition is as much more effective than the other as a bombardment is in comparison with forcing a door and so much more important that it becomes a matter of indifference whether competition in the ordinary sense functions more or less promptly” (1976 p.84).

The writings of Lange, Lerner, Taylor and Dickinson leave no room for innovation.

Like their socialist opponents, the Libertarians are also glad about the turn of the debate. Hayek writes:

“It seems then that, on this point, the criticisms of the earlier socialist schemes have been so successful that the defenders, with few exceptions, have felt compelled to appropriate the arguments of their critics and have been forced to construct entirely new schemes of which nobody thought before” (1948 p.183).

Further, Hayek wonders to what extent Lange’s and Dickinson’s models are still socialist. This question is symptomatic of the intellectual context in which the controversy took place and which bathed the whole twentieth century: hegemony of Marxism in the socialist camp. One has come to call *socialist*, concepts that are simply *Marxist*.

Marx has consistently pointed the anarchy caused by the market, of which he prophesied aggravation, which ultimately should carry the entire system off. Mises and Hayek have been ironical about it. For example, speaking of Lange’s socialism: “We

¹ In addition to Marshall and Wicksell, Schumpeter could have mentioned most of the great economists.

shall ask, first, how far this kind of socialist system still conforms to the hopes that were placed on the substitution of a planned socialist system for the CHAOS of competition” (Hayek 1948 p.186)¹. Condemnation of chaotic market and recommendation of planning as a solution are characteristic of Marxism. A priori, these elements are not consubstantial to socialism.

Among Marx’s criticisms addressed to capitalism, those which concern its tendency to chaos and which could be used as justification for planning are twofold:

1. frictional unemployment and technological unemployment resulting from bankruptcies caused by competition;
2. economic fluctuations with overproduction crises and cyclical unemployment.

These are unquestionably evils. To what extent they are inevitable in a society aiming at technological progress and economic growth is a topic that has set off an extensive literature. The present article does not allow us entering into so broad a debate. Note, however, that the solution of these problems does not necessarily require planning. For example, Keynes showed that adequate macroeconomic policy could soften the cyclical fluctuations.

Participants in the debate gave few new ideas after the controversy. However, it should be mentioned Lange’s article "The Computer and the Market" (1967). Meanwhile, computers have been invented and began to spread out. Lange thinks he can deduce from this advent a correction of its previous interventions: “Were I to rewrite my essay today my task would be much simpler. My answer to Hayek and Robbins would be: so what’s the trouble? Let us put the simultaneous equations on an electronic computer and we shall obtain the solution in less than a second. The market process with its cumbersome tâtonnement appears old-fashioned” (1967 p.158). That computers dismiss the objection of the excessive number of equations was a widely believed opinion in the sixties. For example, Ernest Mandel commented: "Today, in the age of electronic calculating machines that perform thousands of operations per minute, this objection gives rise to smiles" (1962 p.126).

In fact, the biggest problem is not to solve the system of equations but to build it up. Consider Cassel’s system. There are four groups of equations, one of which indicates that quantity demanded of good i is a function of all prices:

$$D_i = F_i (p_1, p_2, \dots, p_n) \text{ for } i = 1 \dots n \quad (4)$$

For this sole group of equations, its development is an insurmountable task. Firstly, due to the number of equations. Modern neo-Walrasian economics considers that the number of markets equals the number of different kinds of goods multiplied by the number of places multiplied by the number of future dates multiplied by the number of possible states of the world. Let's eliminate the problem of future dates by considering, not a full intertemporal equilibrium but a Hicksian temporary equilibrium, which is more realistic. One can optimistically assume that there will be few regional variations and that the distinction by location complicates the problem only slightly. However, the effect of random circumstances must not be neutralised. For instance, for given prices, demand of fans will be different depending on whether there is heatwave or not. The number of potential factors tends to infinity. To simply take stock of the states of the

¹ The emphasis on the word *chaos* is mine.

world is beyond the possibilities, even considering the influence of insurance and securities that reduce the number, according to Arrow's theory.

Which is the form of F_i ? Always linear? How will the coefficients affecting the p_i 's be determined? A way of simplifying would be to retain in each equation only three or four prices at maximum. But the task remains complex. The coefficients can be determined on the basis of regressions between empirically observed prices and quantities; true, computers can be helpful. But generally, the number of observed price-quantity combinations will be insufficient to sustain these regressions, because many prices show some stability and only recent data are enough representative. Human intervention, inevitably subjective, will then be required.

CAPITALISM, SOCIALISM AND DEMOCRACY

This is the title of a great work written by Joseph Schumpeter, conservative Austrian economist as Hayek and Mises. This book has the paradoxical and amazing feature that it was written by an author attached to capitalism but expecting that socialism would supplant it sooner or later. It is more or less contemporary of the controversy (1942) and covers the same subject and, as such, deserves our attention.

Schumpeter bases his projection of a regime change on both a foreseeable decline of capitalism and the rationality he acknowledges to socialism. The decline of capitalism is mainly of political and cultural nature, but originates ultimately in a mutation of the capitalist class due to capital concentration. Keep in mind that few economists have so much emphasised the role of individual entrepreneur. The chapter "Crumbling Walls" portrays a bourgeoisie unable to manage its political domination; "Growing Hostility" depicts a rejection of capitalism in the intellectual circles. Prospective sociology rarely resists the ravages of time; Schumpeter's is no exception.

I below summarise Schumpeter's main observations on the rationality of socialism because they are related to the topic of the article.

Mises's critique did absolutely not convince him. To the question as to whether socialism's equations are solvable, he replies: "The answer is the affirmative. There is nothing wrong with the pure logic of socialism. And this is so obvious that it would not have occurred to me to insist on it, were it not for the fact that it has been denied". He adds: "The economist who settled the question in a manner that left little to do except elaboration and the clearing of points of secondary importance, was Enrico Barone to whose argument I refer readers who want a rigorous demonstration" (1976 p.173)¹.

To be rational, socialism must make its own, many concepts used in capitalist society. This does not mean that socialism is rational only by copying capitalism but that two rational systems employ higher rational concepts. Schumpeter believes that, on paper, socialism is even more rational than capitalism; the key question is whether it will be able to realise its potential.

¹ In "The Use of Knowledge", Hayek criticises Schumpeter for this statement he considers as a myth. According to him, this error is representative of the shortcomings of an analysis which does not take into account the division of knowledge.

Rational management of socialist economy is possible. It certainly requires a large bureaucracy in the planning bodies, but nothing indicates that it will not be up to the task. The job of bureaucrats is simpler than that of entrepreneur because these are subject to significant uncertainty owing to competition: at any time, they may have to react to an innovation of a competitor or to the entry of a new competitor. On the contrary, bureaucrats work in an environment of cooperation and consultation.

One of the most advantages of socialism is the disappearance of the economic cycle. Cyclical unemployment and excess capacity represent waste. Schumpeter makes its own Lange's argument that income decrease contracts not only demand for and production of obsolete goods but also of necessary goods. The economic cycle illustrates this reality that aggregation of rational actions from an individual perspective can result in collective irrationality.

Another form of irrationality destined to disappear is the opposition between the state and the private sector. An example is the ongoing struggle between tax authorities and firms' tax specialists, a waste of energy. Socialism does not need taxes and the state will work in synergy with the productive sector.

Schumpeter disputes the criticism often levelled against socialism that it can only work in a society of demigods and archangels, which means it is expected to fail in our human society. Socialism is easier to manage than capitalism, because more routine. The required level of competence is far from inaccessible. Socialism does not require a major overhaul of human soul. The working classes will adapt easily to socialism especially as their role changes little. The main problem is the loss of the highly effective system of penalty and reward, to which the bourgeoisie is subject under capitalism¹. Since selection depends only on success, Schumpeter seems to consider that this class consists of superior individuals. Then follows a rather nebulous passage. The socialist government would be better off putting the individuals of this class to positions of responsibility in the new society. We could expect to find this idea in the chapter on *transition to socialism*, but it has nothing to do with socialism as such. Schumpeter considers the reluctance of socialist political executives towards this integration but, surprisingly, does not care about the motivation of the bourgeois themselves. He thinks the real challenge would be not to impede their sense of initiative.

The author emphasises the economic cost of an income system that gives no material benefit to brilliant individuals. But he acknowledges that this disadvantage can be avoided with emoluments significantly lower than those of capitalist corporations' leaders.

Saving and imposition of work discipline are two other functions of the present bourgeoisie, the socialist state is to take over. Saving is pretty easy: it is enough that a part of production be affected, not to consumption goods, but to production goods. Investment automatically implies saving².

¹ According to Schumpeter, individual success requires both talent and luck. The fact that talent is not sufficient forces able men to put all their strength into action to hope to avoid failure.

² Schumpeter seems to confirm Dobb's opinion on this issue, but his remark does not preclude the need for prior reflection about the level of aggregate saving.

Regarding discipline at work, the author believes that it will at least equal the one prevailing in capitalist society. This confidence comes in part from his pessimistic view relative to the social climate in modern capitalist society¹. He may be reproached some confusion because social climate and work discipline are two separate variables.

We have only touched upon the book's diversity of themes. In particular, a chapter is devoted to the relationship between socialism and democracy. But these considerations would lead us beyond our subject.

WEAKNESSES OF MARKET SOCIALISM ACCORDING TO BERGSON

Don Lavoie distinguished himself by challenging what he calls the "standard account" of the socialist calculation debate, according to which Lange's socialism would have dodged the attacks of Mises and Hayek. He ascribes authorship to Schumpeter and Bergson, for their works published in the forties. But he notes that in his "History of Economic Analysis" (1954), Schumpeter reassesses Mises's analysis, however without returning his views. As for Bergson's article "Market Socialism Revisited" (1967), it scrutinises the Langian system that he surprisingly calls "the competitive solution" and displays some skepticism about its effectiveness.

Bergson sees as a "major deficiency" that "Lange nowhere provided any criterion for judging and rewarding managerial success" (1967 p.657). The most obvious criterion would be the firm's profit, but its adoption by the Langian system would have drawbacks. It could encourage the executives to violate the rules, including by restricting production in order to benefit from higher prices; this way is more probable if the enterprise is a monopoly or a quasi-monopoly or in case of strong demand preference (product differentiation). In addition, establishment of a remuneration system bound to profit will not be easy. Any method risks degenerating into contentious discussions. For example, how to impute profit to the different executives who participated in the corporation management.

Application of the rule equalising price with marginal cost can put the enterprise in lost when there are significant fixed costs. In this case, remuneration of managers based on profit does not make sense.

Bergson questions Lange's assertion that his system would more easily take externalities into account. The rule equalising price with marginal cost has no effect in this regard.

In the case of a multi-product firm, if the transformation curve is linear between them, it will be problematic for the planning office to influence its production towards equilibrium.

Arrow and Hurwicz showed that the research of equilibrium by trial and error may diverge in case of non-decreasing returns. About the convergence process towards equilibrium, Bergson thinks it will be much slower than assumed by Lange. The management of this system should absorb considerable work, as Hayek assumed.

¹ Reduction of social conflicts is thus one of the advantages that Schumpeter recognises to socialism.

Bergson also mentions the difficulty for the wage policy to reconcile the objective of distributive justice with that of incentive for managers. The salaries of these ones may greatly exceed the normal criterion of justice in a socialist society, which consists in just compensating the disutility of labour.

Neither must the risk be overlooked that political interventions aim at protecting a particular influential sector from price changes that would be prejudicial to it.

Referring to the historical experience that is nearest to the Langian solution, Yugoslavia contemporary to his article, Bergson observes: "Again, where, as often is so, prices are controlled by superior agencies, such agencies tend to postpone, or to limit, increases which manifestly might be called for by increases in demand" (1967 p.672).

Bergson's conclusion is this: market socialism may be more efficient than central planning, but less than its advocates suppose.

WHAT IS "MARKET SOCIALISM"?

The terms "market socialism" are commonly used to describe the socialism of Dickinson, Lange and Lerner. Rightly? Their sole markets are those for consumption goods and labour. Other markets are virtual; they only exist in the brain of the planner. Hayek wrote in this regard:

"But they both refuse to let prices determined directly in the market and propose instead a system of price fixing by a central authority, where the state of the market of a particular commodity, i.e., the relation of demand to supply, merely serves as an indication to the authority whether the prescribed prices ought to be raised or lowered" (1948 p.185).

Hayek wonders why Lange and Dickinson do not give free rein to market forces, but he immediately expresses doubt about the feasibility of such a system.

In more recent economic literature, market socialism comes back, but this time with real markets instead of virtual markets. The arguments of the opponents to the Langian system seem to have convinced the modern advocates of market socialism.

In the following sections, the term "market socialism" will be reserved for a social system characterised firstly by the preponderance of collective ownership of the means of production and on the other hand, by the decentralisation of all consumption, production and investment decisions at the level of agents driven by the profit motive.

In his article "Post-Lange Market Socialism: an Evaluation of Profit-Oriented Proposals" Yunker lists some market socialism models without aiming to be exhaustive. It seems it would be more appropriate to speak of socialisms than of THE socialism. The constructions are diverse. Despite its potential interest, I have not undertaken an inventory of models proposed in the literature. Below, I will present proposals by Bardhan and Roemer, which seem the most relevant ones among those of which I have knowledge; afterwards, I will set out a personal model.

These proposals are naturally of institutional nature, since one of the conclusions of the pre-war debate is precisely that economic laws are independent of the social context.

BARDHAN ET ROEMER: HOW TO REPLACE FINANCIAL MARKETS

No less than two models are expounded by these authors in their article "Market Socialism: A Case for Rejuvenation" (1992). Both models have in common placing an intermediate stage between the state and the firms by delegating part of its authority to the banking system.

The first is inspired by Japanese capitalism; it stages groups of related enterprises that revolve around a "main bank", which is the nerve centre of the group. Corporations are joint stock companies: stocks are held partly by their workers, by related enterprises, by workers of these and of course by the bank of the group; possibly also by external companies, pension funds, local authorities. The state owns the majority of shares in banks¹.

One of the major concerns of the authors is to submit business leaders to a permanent evaluation. The bank operates constant monitoring, especially towards firms whose shares suffer devaluation because other owners try to get rid of them. The Stock Exchange gives an alarm signal. The bank takes control of the firm in difficulty; managers are dismissed if their responsibility is involved. The bank recapitalises the company if survival prospects are favourable; otherwise it is liquidated and its assets are distributed among the other enterprises in the group.

Groups have a certain technological homogeneity, horizontal or vertical, which enables pooling of resources, economies of scale and better specialisation. The group must nevertheless be sufficiently large and diversified to limit the risk of the bank. For the same reason, the bank is to provide a part of its credits outside the group.

The second model, described with more detail in Roemer (1995), recreates a financial market, inside the framework of an ingenious arrangement which aims to prevent the emergence of large income disparities.

Publicly owned companies issue shares which represent no property title but a claim to a share of profits. These securities are intended for all adult citizens. Normal money buys commodities and factors, but not securities. For these latter's trade, Roemer lets circulate a second currency which he calls "coupons". Every citizen reaching adulthood is allocated by the state a sum of coupons, normally equal for all. He builds up freely his portfolio by buying and selling securities (new issues or on the secondary market); securities selling is permitted only against coupons, not against money. The securities see their exchange rate (being expressed in coupons) vary according to supply and demand. After his death, the state takes over the securities of the deceased and sells them on the stock market, recovering some coupons. We thus find the state at both ends of the stocks cycle. These thus escape the chain of inheritance.

Companies may exchange with the state coupons obtained from securities issues, against investment funds. These allow them to acquire fixed and circulating assets. These investment funds represent their equity. At the same time, companies can borrow from banks, which collect citizens' saving.

¹ The authors acknowledge that this direct dependence creates a risk of interference, but they count on various safeguards mentioned later to counter the negative influences. In addition, the state is the majority shareholder but not the unique one.

In attempting to optimise their portfolio, citizens influence their financial income, which affects the income spectrum. To reduce the inequality potentially induced by this system, Roemer makes it more complex. Business shares are acquired only by *mutual funds* managed by professionals; citizens buy securities that mutual funds issue to finance their acquisitions. Rate fluctuations of these mutual funds should be milder than those experienced by firm shares.

Roemer counts on the financial market to play the role of whistle-blower when a company's management leaves to be desired, a situation that provokes a corrective reaction. "If the coupon price of a firm's stock falls, or more often before that happens, the main bank would investigate how well the firm is being managed" (Roemer 1995, p.38). Banks therefore assume monitoring on enterprises.

According to Bardhan and Roemer, the first model is more appropriate for countries that did not have a financial market highly developed in the period preceding socialism.

Logically, independence of bank managers and of firm managers against political interference is a major concern of the authors throughout the article. They take care to establish safeguards:

- The fact that firms belong to a group. Complicity between government and an enterprise in the group proves to be more difficult.
- Bank managers have a reputation to uphold, which should reduce their inclination to give in to political pressure in favour of bad loans.
- The binding of the remuneration of bank managers to their performance.
- If necessary, that independence may be protected by law or by the constitution.

Given the risk of collusion between enterprises to manipulate prices to their advantage, the authors advocate the maintenance of an anti-trust legislation.

Their article ends with some observations on a category of alternative models. "There is a large and significant literature on market socialism in the form of worker-owned or labour-managed firms" (Bardhan and Roemer 1992 p.115). Two criticisms are generally addressed to these models:

1. Workers, when voting decisions involving the future of their firm could neglect the effects beyond a horizon corresponding to their presence in the business.
2. Projects maximising profit per worker could be preferred to those which maximise the firm's total profit, which would lead to a sub-optimal level of employment.

THE "SOFT BUDGET CONSTRAINT"

As we have seen, Bardhan and Roemer make it a point of honour to immunise business management from the influence of politics. And yet will they be blamed for their weakness on this point destined to become a major topic of debate. One of the main themes of this debate is the "Soft Budget Constraint" (SBC), a concept introduced by the Hungarian economist Janos Kornai in 1980.

He defines the SBC as:

“The “softening” of the budget constraint appears when the strict relationship between expenditure and earnings has been relaxed because excess expenditure over earnings will be paid by some other institution, typically by the state. A further condition of “softening” is that the decision-maker expects such external financial assistance with high probability and this probability is firmly built into his behaviour.” (1986 p.4).

The means are diverse: subsidies, negotiated taxation, credit on preferential terms, setting of advantageous administered prices. The opposite is the “Hard Budget Constraint” (HBC): “The budget constraint is hard, if persistent loss is a matter of life or death” (1986 p.8).

It is past experience that induces the hope of the firm to be assisted when necessary and this hope affects its behaviour in various ways:

- Its factors demand curves lose elasticity; they become less responsive to price changes, which generates a certain rigidity. Hence the appearance of excess demand for certain inputs.
- Effort maximisation is not stimulated; in particular, are blunted bursts of adaptation and of innovation in a difficult environment.
- Development of projects of questionable profitability.

The state's motivations may relate to employment protection, support to domestic enterprises against foreign competition, social justice and solidarity, search for stability and security. Modern mentality tends to transfer to the state a share of the allocative function previously recognised to the market.

Kornai presents the results of his empirical research on the importance of SBC in the economies of Hungary, Yugoslavia and China ¹, as well as in Western economies: “Socialist economies exhibit a rather extreme degree of budget constraint softness. To a lesser degree and in more restricted segments of the system similar phenomena can be observed in mixed economies as well” (1986 p.21).

In 1994 appears the article "The Politics of Market Socialism" by Schleifer and Vishny. The authors take the opposing view of Bardhan and Roemer, claiming the impossibility to immunise the economy from state pressures that undermine efficiency. Their argument asserts, first, that whatever the prevailing economic system, capitalism or socialism, it is impossible that a democratic government promotes economic progress. Relating this premise to the enhanced state control on firms in the socialist system, they conclude that the problem is more acute there than under capitalism.

So let us consider the case of a democratically elected socialist government in control of a nation's firms. Most market socialists presume that such a government will strive for efficient resource allocation. How likely is this objective to occur? (...) The futility of trying to insulate public firms from political pressures is best illustrated by the experience of public enterprises in Western Europe. The experience with public enterprises suggests grave skepticism about the possibility of insulating public firms from the objectives of the government (Shleifer and Vishny 1994 p.170).

¹ We are in 1986, before the transition of these countries towards capitalism.

The majority voting model predicts that the majority will redistribute resources from the minority to itself even at the cost of reduced efficiency (...) In light of the multiple examples of the tyranny of the majority, the claim that a majority will elect a government committed to economic efficiency is simply false (1994 p.171).

The topic is on the border between political economy and political sociology. Schleifer and Vishny refer to the "Public Choice Literature" which belongs to the second. From this literature seems to emanate a misanthropic concept of both voters and politicians. In their reply, Bardhan and Roemer judge that this political conception "displays a rather simple-minded (though popular in mainstream economics) theory of the state" (1994 p.177).

This political sociology neglects some aspects of the actual functioning of modern democracies. Most voters have a multitude of partially overlapping affiliations. Take part religious, local, political, ideological, economic, ethnic, sex, health, age, leisure criteria... Class membership and electoral preference are not the only factors and moreover, they do not necessarily coincide. In addition, voters value their standard of living and generally want a stable and consensual political situation. The consequence of this complexity is the role of **compromise** in modern democracy, compromise that raises a real social adherence even if it does not perfectly satisfy anybody¹.

Schleifer and Vishny mention the experience of Western Europe where voters have occasionally sacrificed economic progress to particular interests. To highlight their irrationality would however be a misinterpretation. The conflicting interests within society are such that it may be rational for a social category to refuse progress if it fears not to enjoy it sufficiently². It follows that if socialism shares better the fruits of growth, population will be less demanding for SBC politics. This conclusion is the exact opposite of the one of Schleifer and Vishny.

It seems logical to assume that the electorate generally ensures that the government does not sacrifice economic efficiency beyond a rationally justifiable limit and that the political party which would lead a government policy ignoring this popular concern incurs the risk of losing the next election. The rationally justifiable limit stems from that it is legitimate that economic efficiency be not the only goal pursued by the state. Kornai has the wisdom to conclude the aforementioned paper by stating that it "does not suggest that the hard budget constraint is "good" and the soft is "bad". A system based on a perfectly hard budget constraint for every decision-making unit is a terribly cruel one" (1986 p.26). He advocates a "trade-off" between the different objectives.

A PERSONAL MODEL

I did not ask myself Mises's question regarding the feasibility of planned socialism; I took the problem from the other end. Observing the high efficiency of capitalism, I searched how socialism could mimic it at best while preserving its authenticity³.

¹ Arrow's famous proof, that the social welfare function is "impossible", totally neglects this essential factor; so we can doubt its validity.

² Society tends towards a social compromise, but it is constructed through opposition.

³ This is a model I conceived before the article of Mises and the following controversy were brought to my attention. Despite its presence in my thoughts for a long time, this is the first time it is

I immediately ruled out an economy letting compete autonomous enterprises self-managed by their staff. Firstly, for reason of equity: workers income would suffer a casino effect contrary to the objective. Then, from the economic point of view, this system does not include a regulator directing investments where they are most profitable.

I have never been convinced by the argument that collective ownership of the means of production is intended to ensure social control over the economy; it is, to my eyes, a device to narrow the range of properties and therefore of incomes. However, if property becomes public, responsibility of management inevitably falls on the community. To organise this in the framework of a market economy requires an astute separation between the political world and the world of business as well as a decentralised management of firms. Our modern states are not cut out for this distinction between the *state-regulator* and the *state-entrepreneur*, because the latter does not reach a sufficient size. In the socialist system, the political constitution should be thought to let coexist both functions side by side. But total independence is impossible.

Let us assume that the production system is in the hands of the state in the context of a closed economy and disregard the historical process that led to this situation. Enterprises are "distributed" among a number of holding companies¹ exercising on them a responsibility equivalent to the one of the majority shareholder under capitalism, which does not necessarily mean that the holding companies have actual property rights on the enterprises. Holding companies control existing enterprises, but they are also in charge to create new ones. They have research departments of which the role is to identify new technological and commercial opportunities justifying these creations.

The principle is that of competition between firms and between holding companies. Businesses owned by the same holding company are diversified, but control on firms of a same industry is not excluded if competition can be preserved. Subject to compliance with relevant rules, holding companies may combine to create large-scale enterprises.

The holding company exercises control over the enterprise through directors it appoints. Firms' management is to be distinguished from the board of directors, as is the case under capitalism. The executives are employees of the company. The directors are agents mandated by the holding company. It can be either employees of the holding company or independent persons appointed by it. Most directors sit on the boards of several enterprises, taking care to avoid conflicts of interest. The board consists of several members appointed by the holding company and of the elected representatives of workers who are in the minority. The worker participation system is inspired by the one existing presently in Germany.

exposed. The fact that it ends this paper does not mean that I consider it the ultimate outcome, especially since it did not benefit of external contribution. There seems to be some common ground with the first model Bardhan and Roemer.

¹ The number of holding companies depends on the entity size: small country, large country or economic union with many countries. The closed economy is only a simplifying assumption; the system is compatible with international trade, including with capitalist enterprises.

If the number of holdings is very high, it could make sense to impose the rule that any company should be held jointly by two or three holding companies, which would create a sort of market where holdings would exchange minority shares in enterprises. This would result in a better evaluation of firms.

The firm leaders seek to maximise its value. They are assessed and rewarded or penalised by the holding according to the achievement of this objective. Reward is a bonus in addition to the fixed remuneration. These salaries and bonuses will obviously be regulated to avoid excesses. To provide accurate information on these performances to the holding companies, independent audit agencies are available to them.

An important decision of the board of directors is the allocation of profit between re-investment inside the firm and the dividend to the holding company. Out of loyalty to the holding company they represent, directors choose the option that has the best promise of profitability. Profits are reinvested internally if the expected return is higher than that of other investments open to the holding company. An unprofitable business can be dissolved. With dividends, holding companies get the financial resources to create new businesses or to increase capital of growing enterprises.

Besides its equity held by the holding company, the firm may have borrowed capital. A banking system, independent of the holding companies, provides short run loans to enterprises. Credit is financed by households' saving and enterprises' cash investments. Control over firms and credit granted to them are therefore subject to separate networks.

Dickinson, Lange as well as Bardhan and Roemer have all devised the uphold of a private sector at the margin of the collective economy. It seems that for some activities focused on the ability of a particular individual (restaurants is the most obvious example), public enterprise cannot compete with private business. Private initiative is thus free, but with a maximum size. There also remains an independent non-profit sector. It is composed of institutions providing services that are wanted to stay independent of the state, for example, opinion press, consumer associations etc.

What role is left for the Ministry of Economy? A double function:

1. The appointment of directors of holding companies. Given this power, it is necessary to establish a statute for those directors that ensures their independence. Scientific and academic institutions may be involved in these designations.
2. The setting of interest rates. Holding companies invest their funds up to a limit corresponding to the value of available projects whose profitability exceeds this rate. Resources in excess constitute the social dividend. It is paid to the state and direct taxes are reduced proportionately.

SOCIALISM AND BUREAUCRACY

For the present purpose, we define bureaucracy as a significant enlargement of the volume of useful work carried out in offices by agents who are normally competent but relatively distant from the field. It is therefore no courtelinesque bureaucracy; this one is more likely to hit the *state-regulator* than the *state-entrepreneur*. But socialism does not involve a significant expansion of the state-regulator.

To what extent are the above recent models of socialism bureaucratic? The very limited role of the Ministry of Economy should spare it from bureaucracy. Some bureaucracy could slip inside the holding companies. Remote technocratic management has already largely developed in major capitalist groups. However, the entrepreneurial function remains critical in small and medium private enterprises. The collective sector of the

economy also includes small and medium enterprises: a surplus of bureaucracy is likely in this area.

Two types of defects can be reproached to bureaucracy:

- diversion of jobs and resources that could be used more productively elsewhere;
- a lack of creativity.

The first reproach can be removed from our appraisal of market socialism. It is indeed unlikely that bureaucracy will divert more resources there than the hypertrophy of financial and commercial functions in modern capitalism. These two functions, as such, are indisputably useful and contribute to the efficiency of the system. But they are hypertrophied¹, their scale exceeds the requirements of a rational allocation of resources. Financial advisors and advertising agencies sell to their clients the illusion they will gain more from the market than the other agents, but these advantages cancel each other. If capitalism can accommodate these drags, socialism will support the weight of bureaucracy.

The lack of creativity is a more substantial risk. This is one of the reasons why the private sector should not disappear in socialism. It is hoped that competition of small private enterprises stimulates innovation in their public counterparts.

CONCLUSION

The pre-war socialist calculation debate has unfortunately focused on a pseudo- market socialism, an economy not really planned since the planner is passive, playing the role of the Walrasian auctioneer and not really “market” as it lacks true competition, the one which “bombs” according to Schumpeter. Such an economy would be deprived of dynamism, being satisfied with erasing disequilibria. However this controversy - I extend it here to all contributions from Barone to Bergson-, was not useless, because a lot of interesting ideas were issued that would keep their interest in a debate over real market socialism. If only Barone’s article already asks many questions that should interest all those who would think about socialism today.

The debate allowed relativising the link between planning and socialism, while a current preconception equates those two concepts. In fact, that economists defending socialism were not Marxists proved favourable to free the concept of socialism.

If such a debate were held today, it should focus on truly competitive socialism, like the models of Bardhan and Roemer. The big unknown is the level of income inequality these systems should integrate to be efficient. Mises believed that only an extremely high inequality could encourage innovation. Actually, we don’t know. It is even not certain that the whole inequality of capitalism is necessary for its own operation. In “The Price of Inequality”, Stiglitz states that the current extent of inequality hampers development.

¹ Greenwood and Scharfstein state that the share of the financial sector in the US GDP increased from 2.8% in 1950 to 4.9% in 1980 and 8.3% in 2006. In 1980, the average employee earned the same wage in finance as in other sectors; in 2006, 70% more. In 2008, 28% of graduates of Harvard College were recruited by the financial sector, against 6% between 1969 and 1973 (Greenwood and Scharfstein 2012).

If the required level of inequality is too high, socialism becomes useless since its main purpose is to reduce it. Unless society's ethical conception reassesses the weighting of its values *efficiency* and *equality*... But in any case, the question remains: is there a price of equality and if so, will political economy ever be able to evaluate it? One can be pessimistic when one sees the difficulty for economists to agree on the price of inequality. There is still no consensus on issues like economic crises or on externalities¹.

Being not based on market, Soviet socialism lies outside our article's subject. It seems however logical not to end this article without a remark about it. In fact, this system combined economic flaws:

1. Basically, planned economy is less efficient than market economy.
2. It was not only a planned economy, but a badly planned economy. As noted by Voslensky (1980 p.109), it is inconsistent to encourage enterprises to go beyond the objectives of the plan, because this precludes coordination of production of the various sectors of economy.
3. Beside its human cost, dictatorship has an economic cost when the means of production are managed by the state. The lack of debate and of listening to complaints necessarily leads to sub-optimal decisions and to the sacrifice of certain interests.
4. Workers exploited by it were certainly reluctant to spoil the nomenklatura; this led to passive resistance to work, especially by peasantry (but not only).

REFERENCES

- Auerbach, P. and D. Sotiropoulos (2012) "Revisiting the Socialist Calculation Debate: the Role of Markets and Finance in Hayek's Response to Lange's Challenge" *Kingston University London, Economics Discussion Paper* 2012-6.
<http://eprints.kingston.ac.uk/23463/1/Auerbach-P-23463.pdf>
- Bardhan, P. and J.E. Roemer (1992) "Market Socialism: a Case for Rejuvenation" *Journal of Economic Perspectives* 6(3), 101-116
- Bardhan, P. and J.E. Roemer (1994) "On the Workability of Market Socialism" *Journal of Economic Perspectives* 8(2), 177-181
- Barone, E. ([1908] 2009) "The Ministry of Production in the Collectivist state" in F.A. Hayek (Ed) *Collectivist Economic Planning: Critical Studies on the Possibilities of Socialism*, The Ludwig von Mises Institute Auburn Alabama
- Bergson, A. (1967) "Market Socialism Revisited" *The Journal of political Economy* 75(5), 655-673
- Bradley, M.E. and M. Mosta (2010) *Enrico Barone's "Ministry of Production": Content and Context* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1734325
- Cassel, G. (1929) *Traité d'économie politique*, Marcel Giard, Paris

¹ Mises and Hayek give sometimes the impression that inequality has no price. For instance, in a paper published during the crisis of the thirties, Mises explains the high unemployment by trade unions' action to impose high wages et by financial support allocated to the unemployed by the state (2002, p.170-171). Is he more inspired as a critic of socialism than as an analyst of capitalism?

- Dickinson, H.D. (1933) "Price Formation in a Socialist Community" *The Economic Journal* 43 (170) June 1933, 237-250
- Dobb, M. (1935) "Economic Theory and Socialist Economy: A Reply" *The Review of Economic Studies* 2(2) (Feb 1935), 144-151
- Greenwood, R. and D. Scharfstein (2012) *The Growth of Modern Finance*
www.people.hbs.edu/dscharfstein/growth_of_modern_finance.pdf
- Hayek, F.A. ([1935] 2009a) "The Nature and History of the Problem" in F.A. Hayek (Ed) *Collectivist Economic Planning: Critical Studies on the Possibilities of Socialism*, The Ludwig von Mises Institute Auburn Alabama
- Hayek, F.A. ([1935] 2009b) "The Present state of the Debate" in F.A. Hayek (Ed) *Collectivist Economic Planning: Critical Studies on the Possibilities of Socialism*, The Ludwig von Mises Institute Auburn Alabama
- Hayek, F.A. (1948) *Individualism and Economic Order*, The University of Chicago Press
- Kornai, J. (1986) "The Soft Budget Constraint" *Kyklos*, vol. 39- fasc. 1, 3-30
- Lange, O. (1936a) "On the Economic Theory of Socialism: Part One" *The Review of Economic Studies* 4(1) (Oct 1936), 53-71
- Lange, O. ([1936] 1973) "Mr Lerner's Note on Socialist Economics" in *Readings in Welfare Economics*, M.J. Farrell (Ed) Macmillan London
- Lange, O. (1937) "On the Economic Theory of Socialism: Part Two" *The Review of Economic Studies* 4(2) (Feb 1937), 123-142
- Lange, O. (1967) "The Computer and the Market" in Feinstein C. (Ed): *Socialism, Capitalism and Economic Growth: essays Presented to Maurice Dobb*, Cambridge University Press
- Lavoie, Don (1981) "A Critique of the Standard Account of the Socialist Calculation Debate" in *The Journal of Libertarian Studies* Vol. V n°1 (Winter 1981)
- Lerner, A. (1934) "Economic Theory and Socialist Economy" *The Review of Economics Studies* 2(1) (Oct 1934), 51-61
- Lerner, A. ([1936] 1973) "Some Notes on Socialist Economics" in *Readings in Welfare Economics*, M.J. Farrell (Ed) Macmillan London
- Lerner, A. (1937) "Statics and Dynamics in Socialist Economics" *The Economic Journal* 47 (186) (June 1937), 253-270
- Lerner, A. ([1944] 1946) *The Economics of Control*, Macmillan New York
- Mandel, E. (1962) *Traité d'économie marxiste*, Julliard Paris (coll. 10-18)
- Mises (von), L. (2002) *Selected Writings of Ludwig von Mises; Vol. 2*. Edited by Richard Ebeling. Liberty Fund Indianapolis. 2002. <http://oll.libertyfund.org/titles/mises-selected-writings-of-ludwig-von-mises-vol-2-between-the-two-world-wars-monetary-disorder-interventionism-socialism-and-the-great-depression>
- Mises (von), L. ([1920] 2009) "Economic Calculation in the Socialist Commonwealth" in F.A. Hayek (Ed) *Collectivist Economic Planning: Critical Studies on the Possibilities of Socialism*, The Ludwig von Mises Institute Auburn Alabama
- Pareto, V. ([1906] 1927) *Manuel d'économie politique*, Marcel Giard, Paris

- Roemer, J.E. ([1994] 1995) "A Future for Socialism" *Theoria* 85 (May 1995), 17-46
- Roemer, J.E. (1995) "Joseph Stiglitz's Whither Socialism? An anti-Hayekian manifesto," *New Left Review* 211 (May-June), 112-129
- Schumpeter, J. ([1943] 1976) *Capitalism, Socialism and Democracy*, Routledge, London and New York
- Shleifer, A. and R.W. Vishny (1994) "The Politics of Market Socialism" *Journal of Economic Perspectives* 8(2), 164-176
- Taylor, F.M. (1929) "The Guidance of Production in a Socialist state" *The American Economic Review* 19 (1) (Mar 1929) 1-8
- Voslensky, M. (1980) *La nomenklatura* Belfond Paris
- Yunker, J.A. (1995) "Post-Lange Market Socialism: an Evaluation of Profit-Oriented Proposals" From: *Journal of Economic Issues*, Sep 1995, www.wiu.edu/users/miecon/wiu/Yunker/postlang.htm