DYNAMICS OF NATIONAL INCOME, INVESTMENT, AND CONSUMPTION IN THE SOCIALIST ECONOMY

By GEORGE R. FEIWEL*

During the celebrated interwar debate on the economic merit of socialism, a number of fundamental issues were raised: Apart from the provocative question of workability and viability of a centrally planned socialist economy, the fundamental question was – and still is – one of relative economic efficiency of economies working under various institutional arrangements for resource allocation. The debate vastly contributed to elucidating the necessary and sufficient conditions for solving the allocative problem (static efficiency) in any society that faces choices between alternatives. A crucial issue that emerged from the debate, without having been elaborated at the time, was that of dynamic or intertemporal efficiency.

During this debate, Oskar Lange (1938, p. 85), among the other defenders of the socialist economic system, considered the determination of the rate of investment as an anavoidably political and arbitrary decision. The fixing of the aggregate investment volume was not to be determined by market considerations, but was to be establised by the planner to eliminate fluctuations and to promote faster growth.

Probably under the influence of the realities of the socialist planning as it was shaping up in practice, about two decades later, Lange (1956, p. 22) restated his position by arguing that not only the share of accumulation in national income but also the structure of investment, is within the bounds of political decision-making.

Thus, contrary to the capitalist mode of production, the engine of economic growth of the socialist economy is propelled by two simultaneous political decisions undertaken by the central planner for the planned period, affecting the pace and structural pattern of economic expansion: 1) determining the share of investment in national income, and 2) determining the composition of investment. The market mechanism (equalization of the rate of profit) does not perform any function in this task, but the planning arran-

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gements (including direct allocation of resources and setting of relative levels of prices and wages) are of significance for implementing the state's decisions.

One can conceive of a varient of the socialist economy where planners decide roughly on capital formation and the consumers on the product mix of consumer goods (with the size of the consumption fund determined by the planner), although, admittedly, such a divison may encounter considerable difficulties in practice. The more orthodox version of the Soviet system resembles more an arrangement for resource allocation where not only the total consumption fund is predetermined by the planner, but where the rather minute allocation of resources within the consumer sector, instead of being guided by consumers' preferences, is directed by the objectives and scale of values of the powerful bureaucracy in charge of the administration and allocation of scarce resources among alternative uses.

The guidance of production by consumers' demand is largely absent, with a lack of a mechanism or rules that elicit a response of the producer to consumers' prefences. The distribution of the national product between personal and collective consumption, size and composition of capital formation, and defense, are determined entirely as a political decision upon which the individual income earner has almost no influence. The volume of investment is virtually independent of the willingness of the income recipients to save. The investment plan is expected to be implemented as a sheer result of the allocation of physical resources. In principle, the dominant criteria of planning of production are the political objectives which the economy is supposed to serve. The basic design of the system is to ensure that no preferences of consumers are to be allowed to interfere in the implementation of the system's objectives.

The Nestor of Soviet economists, Academician S. Strumilin (1962, p. 1078), wrote that the Soviet planning practice hos been shaped mainly by empirical groping in solving the problem of optimal proportions of the structure of production and distribiton of national product between investment and comsumption. Concrete solutions to such problems are not yet known in Soviet planning practice. There is some truth in Professor J. Tinbergen's (1956, p. 603) observation that in the USSR, "the first country to make deliberate choice" of the rate of savings, "it seems that no theoretical concepts have been at the basis of the choice" of the rates actually adopted.

In all fairness, one cannot overemphasize the point that the very existence of the optimal solution (especially as it pertains to resolving the intertemporal choice conflict) is a bone of contention among some eminent economists, both East and West – and not without good reasons. Stressing the strategic practical importance in deciding about the rate of production to be chosen, Professors J. Tinbergen and H. C. Bos called attention to the

failure to determine quantitatively an "optimum rate of development." "The well-known fact" that in Communist countries the growth rates of national product, and, consequently, "the rates of saving cappliedare almost double those of non-communist countries illustrates the wide differences in these decisions taken. *The question may, therefore, be asked whether economic science can give a clue to a numerical choice. Attempts made by the present authors seem to justify a negative answer*" (Tinbergen and Bos 1962, p. 24).

Granted the importance of the search for the "optimum solution" and the difficulties involved, one wonders whether on more "pragmatic" grounds it is not sufficient to know that a certain measure leads to an improvement in the sense of a better realization of the aim (or reduction of the cost of achieving the aim). And, although it is preferable to know both the direction and the magnitude of a change in the economic situation, it is still better to know the direction of the movement and to form some notion of the empirically relevant range of magnitudes than to simply react, say, a posteriori, to some intolerable overheating of the economy due to overinvestment.

Soviet literature analyzing Soviet growth strategy – postulating a preferential rate of growth of heavy industry over industry in general and over the rate of increase of consumption – has customarily, with good reasons, invoked in support the famous Marxian two-sectoral reproduction schema, expounded in the second volume of *Capital*.[1] The development strategy adopted stressed the strategic role of growth pace of "growth-promoting" sectors (Cf. Hirschman 1958) – the leading links in the "super-industrialization drive" oriented primarily to build heavy industry and defense potential, coupled with the social and political transformation by means of a rapid expansion of the working class as a political base and support for the system. The actual degree of priority accorded to heavy industry (or to this or that branch within it) has been shifting with the winds of change in policy and changing economic environment, such as the recent detectable shifts toward the narrowing of the gap between the growth rates of producer and consumer goods sectors. The rapidity and structural pattern of the transformation were constrained, inter alia, by the limits imposed on maneuvering the distributive share of national product and by the extent to which extraction of "surplus value" (or "surplus product," in new parlance), through nonequivalent exchange required to finance the accumulation, limited the ability to maneuver – or the maneuverable range – of the rate of savings (intertemporal choice) and endangered the fulfillment of the grandiose tasks through the "intolerable" effects on productivity.

With some oversimplification it may be said that the Soviet regime's leaders, at least since the early 1930's, were obsessed by the imperative

1. See Lange 1965, Chapters 1 and 2; Robinson 1966; and Erlich 1967 *b*, pp. 599-615, and references therein.

of super-rapid rate of industrialization, with a forced rate of growth of investment outpacing that of national income, and with the maximization of physical output at almost any cost. Consumers' welfare was subordinated to this consideration and consumption was considered as a constraint. In achieving the virtually unprecedented accelerated pace of industrialization, the Soviets forced the preferential rate of growth of capital goods output to the limit of the population's endurance. In the process, the leaders sacrificed development of agriculture, neglected consumers' industries, slighted housing (with all the adverse effects on productivity and welfare), induced a strikingly unbalanced growth of the economy in general and of the various branches of industry, disregarded economic efficiency, and ignored the flexibility of adjustment of production to the needs of users and final consumers. By investing predominantly in the growth of selected branches of heavy industry, the Soviet leaders shifted a huge proportion of material and human resources to high priority areas, causing strains and disproportions through overinvestment in the chosen branches, without concomitant investments in complementary industries and sectors of the economy. As the crash and turbulent industrialization program unfolded, the high rate of growth performance was mainly being achieved through extensive development and exploitation of manpower and natural resources – with maximization of output the paramount task and economy of resources considered a subordinate constraint. The economy enjoyed ralatively abundant natural and manpower resources which could be freely exploited. The advantage of backwardness enabled it to borrow technology extensively from the more developed countries (Feiwel 1966, especially Chapters 1 and 2. Cf. Dobb 1968; Erlich 1967 *a*, p. 233 ff.).

Referring to a period from 1929 to 1940, the conservative Polish economist Bronislaw Minc states that on the basis of the Soviet experience of industrialization it may be concluded that the program actually implemented was maximization of the country's productive forces (chiefly industrial potential). Those measures favored the maximization of output of heavy industry, including the production of armaments. The Soviet development was largely based on what Minc calls an expansive (growth for growth's sake) model, in contrast to a consumption-biased growth. The expansive model features a rising share of investment in national income, with an increasing proportion of investments channelled to the sectors producing means of production, mainly industry, with long gestation periods. The rapid expansive economic

2. The distinguished historian, Professor A. Gerschenkron (1959), observed that since the inception of the five-year plans, Soviet economic policy has been essentially directed to »investment for investment's sake«. It is largely by increasing the share of investment in national income that the Soviets have been able, until recent years, to arrest considerable deceleration in growth of industrial output (cf. Feiwel 1966).

growth is achieved at the cost of a freeze, decline, or meager growth of real wages (Minc 1967).[2] There were marked similarities in the industrialization experience of the other countries that adopted the Soviet mode of development after World War II.[3]

Stalin uttered the "law of balanced [proportionate] development of the national economy." The latter has been given various interpretations which can probably be reduced to the simple statement that, as a result of nationalization of the means of production, the planners are at liberty to predetermine the proportions which should be maintained. However, what the correct proportions are, the degree of determinateness, and, above all, the criteria to be used for determining and assessing them, are not spelled out. According to circumstances, the "law" was used either to emphasize that the planners have a wide leeway in manipulating the investment-consumption ratio and allocation of investments, or that they rely too much or too little on "automatic forces" and objective constraints without a thorough study of the "law." However, no criteria provided for evaluating whether the "law" was violated or not. What was lacking was a specification of proportions; i.e., in what proportion to each other should the various sectors of the economy develop. No guidelines were offered to reduce these proportions to quantitative relationships.

According to the Nestor of Soviet economists, Academician Strumilin, "the law can be reduced to the role that in conditions of expanded reproduction the growth rate of production of means of production must necessarily, according to the plan, outpace the increase in the production of consumer goods." (Strumilin 1959, p. 243, translated from the Russian). The precept can also be restated as a condition to ensure steady (accelerated) growth of the economic system as a whole; that the growth of gross capital formation must always outpace that of gross national product, i.e., the relative share of investment goods in total output must continuously increase, or that capital formation must increase more rapidly than

3. For example, referring to the transplantation of the Soviet pattern to Poland, Professor Erlich wrote:

> The natural proclivities of Polish Stalinists were no different from those of their Soviet mentors. They showed similar inclination to combine a romanticized view of potentialities of modern technology with abiding faith in their own ability to manipulate the rate of saving-investment within wide limits and to shorten the gestation period of new projects by stern command and fiery exhortation [Erlich 1959, p. 100].

In this regard, cf. also Feiwel 1965, Chapter 1; J. M. Montias 1962; and A. Zauberman 1964. I have dealt with the Czechoslovak experience – the case of the inverse economic miracle – in Feiwel 1968, and references therein. On the Rumanian experience, see Montias 1967.

consumption. The precept seems to imply that a continuously growing share of gross investments in gross national product would eventually lead to a point where, ceteris paribus, investment would constitute a lion's share of total production.[4]

"The categorical imperative" of the Soviet mode of development and the canon of strategy have been restated on various occasions (with shifting emphasis mainly due to expediency or to justify policies pursued).[5] This is not to say that one cannot find in Soviet literature some variations on the theme of the law of preferential growth. Interestingly enough, *Voprosy ekonomiki* has published criticisms of "heretic" articles challenging the law of preferential growth which were submitted to, but never published by, the journal. On the whole, some intrusion of "revisionism" can be detected even in this citadel of orthodoxy. The eminent Soviet mathematical economist A. Vainshtein (1967) argued that the ceteris paribus clause implied in the formulation of the precept does not hold, inter alia, because of the adverse effects of declining consumption standards on productivity. Strumilin admitted that, on the question of forming the proportions between the two sectors, the Soviet theory offers only one concrete prescription formulating the economic law of predominance; i.e., a more rapid growth of output of means of production, but it gives no guidance by how much the sector producing means of production should outpace the consumer goods sector in order to ensure optimal proportions at each phase of economic development.[6]

The dogmatic proposition that the dynamics of technical advancement lead to a rising organic composition of capital (higher capital intensity of production processes) and inevitably always entail a more rapid growth of the capital-goods-producing sector was refuted by the penetrating analysis of Professor Michal Kalecki (1963; 1966). Here, as in many other fields, Kalecki provided the intellectual guiding light. Technical progress could be of the capital-saving, or of the capital-using, or of the neutral

4. Also, in such a case, the growth rate of national product tends to approach the inverse value of the capital coefficient.
5. Cf. Feiwel 1966, pp. 320-321 and passim. The various approaches and interpretations of measurement are discussed in Igor Timofjejuk 1968. On the differences between Department II and Group B, and on the problems of measurement, see Piotr Karpiut 1964, pp. 35-50. For a brief account of the A-B (I and II) relationships and the implications of various measurements, see A. Nove 1968, pp. 274-276.
6. According to the data released by the Soviet Statistical Office, the share of the consumer goods (Sector B) in aggregate industrial output declined from 60.5 per cent in 1928 to 42 per cent in 1938, to 32.5 per cent in 1948, and to 28.4 per cent in 1958. During the period 1928-1958, the share of consumer goods in overall industrial output declined about 32 per cent. If, during the next thirty years a decline of the same order of magnitude should take place, the output of consumer goods would disappear (negative 4.1) – indeed a paradoxical situation. (See Strumilin 1962, p. 1088).

variety. It is the type property of technical progress that is decisive for determining the relative growth tempo of producers' and consumers' goods sectors. For example, growth of investment at the same rate as that of national product ensures a steady rate of growth of national product. Expanded reproduction at a steady rate does not necessarily require a more rapid of growth of investment than that af national product.

The Soviet growth strategy rested predominantly on extensive use of investment, manpower, and natural resources. This growth strategy was based on the firm conviction that high growth rates could be achieved, maintained, and accelerated largely by an additional commitment of resources to chosen branches. In order to maintain a high pace of growth, with a rising capital output ratio, the growth strategy would call for a more than proportionate increase of investment, as Professor Kalecki has shown. The selection of an inordinately high rate of growth would create overheating and hypertensions in the economy resulting primarily from the incessant increase of investments, and would result in various perturbations in equilibrating the balance of payments. The chain reaction is likely to be aggravated by the shortage of labor and other limiting factors and growth barriers (including organizational ceilings which will prolong the period of gestation, thus reducing the efficiency of investment).

The policy of an ever-increasing growth rate cannot be pursued ad infinitum by relying on a growth strategy where investment is the main propeller of growth, because it would require, ceteris paribus, an ever-decreasing share of national product channelled to private and collective consumption.

Among the core questions of the dynamics of growth processes are the functional relationships between the dynamics of investment, non-investment growth determinants and consumption in relation to the movements of gross national product; whether, and under what conditions, the rate of growth of capital formation should or could outpace, be equal to or lower than the growth pace of national product; and what the probable effects of alternate strategies are to be under alternate configurations of determinants invironmental factors, and states of the economy.

Can the planners, or the system's directors – to borrow Professor Bergson's term – deliberately ("voluntaristically") fix (maximize) the growth rate of national product by fixing the share of capital formation in national product? In the centrally planned economies, it is increasingly recognized that fixing the accumulation is not a purely political decision outside the sphere of economic analysis. The objective of the highest immediate (short-run) attainable rate of growth ceases to be equated with the maximal sustainable rate of capital formation, as if the higher rate of growth would always result from a higher rate of investment and the investment-output

ratio would remain unaltered by the variable share and composition of capital formation in national product.

The question of setting the "maximal target growth rate of national product" (Kalecki 1964, pp. 49 ff.) is often reduced to the question of the "burden of investment" (Kalecki 1963). Ceteris paribus, the higher the target growth rate, the larger must be the share of investment in national income (product), and, ipso facto, the smaller the share of consumption in national income. (In the classical sense, once full employment of resources is assured, resources channelled to capital formation are withdrawn from the manufacturing of current consumption goods. Investment and consumption are considered as alternate uses of fully employed resources.) Ceteris paribus, in the immediate (short-run) future, consumption levels would be formed at relatively lower levels while for longer periods the growth of national product might overcompensate for the relatively low share of consumption in earlier periods. The longer the span of time under consideration, the more likely it is that the balance sheet of postponement of current (short-run) consumption in favor of future consumption will be favorable, but without the state's violation of consumers' time preference sovereignty, consumers may "unduly" discount future consumption (Kalecki 1962). The sacrifice of present consumption is likely to be rewarded by higher comsumption levels in the future. The crux of the matter is the extent to which the present should be sacrificed for the future and what the likely adverse effects and barriers to over-investment are.

There is an understandable tendency on the part of governments to accelerate the tempo of economic development and to fix as a target an immediate growth rate of national income at the highest possible level, or to maximize the "short-run" growth rate. There are limits imposed on the manipulation of the growth rates which must be taken into consideration so as to avoid the adverse consequences that are likely to occur as a result of adopting an excessively high growth rate. If the higher rate of growth is propelled by additional investments, given that the existing stock of capital is fully utilized, the additional investments could be secured only (in the absence of borrowing from abroad) by rechannelling resources from current consumption into investment, or by reducing the share of consumption and by increasing that of investment in national income. The increment of the growth rate (abstracting from the composition of the increase) would depend on the capital output ratio (with given technology), i.e., the quantity of capital required to produce an incremental unit of output; and on the ability to reduce, or to postpone, the rise of current consumption. The inroads into consumption must be weighted against the increment of national income. The resistance to a reduction af current consumption will probably be stronger the larger is the divergence between the postulated and

the final share of consumption in the planned period. With a higher rate of growth of national income, the share of investment in national income (productive investment plus changes in stock building) is increased and the share of consumption is reduced. This by itself indicates some of the constraints on the choice of a growth rate or the consequences that might ensue from the choice of too high a growth rate.

Even assuming that the selection of the growth rate is not constrained by the availability of labor resources and by the barriers to equilibrate the balance of payments, Kalecki has clearly shown the implications of his argument in the following passage:

> Nearly two years ago I was shown a working paper on setting the share of investment in national income with the aim of maximizing total consumption for the long-range plan period. Through mathematical analysis the method offered not too attractive results: it showed that for a twenty-year period productive investments should constitute about 80 per cent of national income. This is not even as bizarre as it might appear; a high share of productive investments in national income allows for its high rate of growth and this so raises its level in the following years of the long-range plan, that consumption not only in those years, but even for the entire period of the plan is higher than with a lower share of investment in national income. But that which is comprehensible is not always reasonable: even if one would not be concerned with the suffering of the unfortunate population in the first years of the long-range plan, one would have to tage into account that, with the assumed standard of living, this population would soon perish, and thus would be unable to fulfill the plan. [Kalecki 1962, p. 706].

The sources of additional labor are not inexhaustible and labor barriers eventually emerge. After exhausting the sources of additional manpower (increasing the labor participation rate of women and encouraging the exit from agriculture), the tempo of growth ceteris paribus, is constrained by the rate of growth of productivity, mainly a function of technological progress, and by the natural rate of growth of the labor force. Under such conditions, it would result merely, ceteris paribus, in an underutilization of productive capacity due to a shortage of labor to man the equipment. If, at the postulated growth rate, labor barriers are likely to occur, in order to overcome this obstacle it might be necessary to increase the share of investment so as to favor mechanization as a substitution for labor. This again would raise the share of investment in national income. In case of full utilization of the labor force, the increase of the growth rate may be achieved only by accelerating the rise of labor productivity by means of either/or, or combinations of, (1) the capital-output ratio; increase in capital intensity (m is the coefficient of capital intensity, or, in the more expanded version, k, including inventories) – the volume of additional investment required to produce an incremental unit of income; (2) a more intensive exploitation

(shortening the retirement) of the existing stock of capital (shortening the time of exploitation of fixed assets, reflected in the rise of the coefficient [parameter] of amortization, a – amortization being an inverse process to the increments of national income propelled by investment [disinvestment]); and (3) improvement independent of investment activity (coefficient of improvement, u). The existing stock of capital may be utilized more effectively (a larger volume of output may be produced), e.g., by improvements in planning, organization, and management of the economy; by eliminating waste; and by eliminating or mitigating bottlenecks (through noninvestment measures) that arise due to failures to synchronize plans or due to the nonuniform degree of plan fulfillment (overfulfillment), etc.

Planning is one of the elements of the u coefficient. The importance of improvements in planning is circumscribed by, and its significance can be measured to the extent that, models of functioning influence the utilization of the existing stock of capital. To the extent that improvements in functioning may increase the size of u, the role of additional investments as propellers of the engine of economic growth is reduced. As the efficiency of investments determines the size of m, and since the role of investment seems to be quantitatively more important than the increase of the size of u, the crucial question is the share and composition of investment in national income. Improvements of the efficiency of investments are of paramount importance for they have considerable and immediate effects on the distribution of income between investment and consumption. This is not to say that model changes are a priori assumed to be inconsequential. Kalecki does not argue that growth should be propelled exclusively by investment. Moreover, this growth model shows clearly what are the likely effects on u from fixing excessive growth rates. One could also argue that Kalecki's growth model shows the conditions under which u may assume higher values. It is understandable that for purposes of exposition and to stress other factors, Kalecki assumes u as constant. If an excessive growth rate were adopted (for whatever reason), the productive capacity would be bound to be underutilized (to a varied degree). Under such circumstances, model changes (economic reforms) are not likely to produce palpable results. A condition for such an improvement would be a selection of an appropriate rate of growth of national income in a long-range plan.

In Kalecki's model, the most likely alteration to achieve higher productivity would entail (a) the increase of capital intensity of investments, reflected in the rise of the coefficient m; and (b) shortening of the time of exploitation of fixed assets, reflected in the rise of the coefficient a.

The assumption of constancy of m is inconsistent with the basic consequences of technical progress, reflected in the rise of productivity, associated with the increase of capital inputs relative to employment. There is the

possibility of capital-saving innovations. Pending on the type of technical progress, additional doses of investment (of the same magnitude) may produce varied (nonuniform) savings of labor. Even if a given value of m is accompanied by a specific fall in the rate of labor required to produce a given quantity (rise in productivity), it does not follow that the rate of fall of the labor requirement is uniform for all values of the coefficient m. It is possible that with larger investment, varied rates of saving (reduction) of labor inputs may be required.

For example, let us consider alternate variants of producing new investments. Each productive variant may be accomplished with an alternate quantity of investments and labor, considered as substitutes. Technical progress is reflected in the saving af inputs to produce some quantity of output. There may be equiproportionate reduction of all inputs (labor and investment, or a parallel displacement of isoquants to the points of origin).

Technological progress does not necessarily have to be of the capital intensive variety. The existence of different types of technical progress does not prejudge the type of economic development. The fact that technological progress is the type conducive to capital intensity does not necessitate that m must constantly increase. Even should m be maintained on the same level, some steady increase in productivity will be maintained in newly commenced establishments.

Another constraint limiting the acceleration of the growth rate can be found in the difficulties of equilibrating the balance of payments. Those barriers are higher the higher the rate of growth.

During the process of economic growth, import requirements are accelerated. Simultaneously, in the absence of credit financing, exports must rise to pay for the growing imports. The higher the rate of growth, the more rapidly must exports be accelerated, and the greater are the problems of securing foreign markets, given the marketing difficulties. A higher rate of growth would require greater export or anti-import undertakings and efforts. A larger physical volume could probably be sold only at reduced prices. The export drive will be accompanied by a reduction of prices for particular products on some markets, forcing exports of products whose exchange increasingly becomes less effektive. The inputs required to secure the growing volume of imports would rise either because they would be imported at the sacrifice of larger than heretofore physical volume of exports, or a changed product mix of exports, requiring more inputs; or because the inputs required to produce import substitutes would be larger than those for manufacturing goods for exports exchanged for the required imports.

The difficulties in equilibrating the balance of payments are not confined to the limited ability to sell products abroad at the prevailing terms of

trade and to the deterioration of the effectiveness of foreign trade, which accompanies sharp increases in the volume of trade. Another difficulty is encountered when, as a result of unduly accelerating the growth rate, the rate of output of a number of industries, especially materials, falls behind – particularly due to technical and organizational barriers. As a result of the growing deficiencies of materials, the necessity to meet the shortages by imports adds to the balance of payments difficulties (alternatively, the export potential is diminished). The growing balance of payments disequilibrium requires measures to increase exports or contract imports which, in turn, limits or reduces the rate of growth.

The technical and organizational barriers that limit the tempo of growth include: (1) limited natural resources; and (2) experience shows that exceeding a particular rate of development of a given industry is accompanied by insurmountable difficulties, including inordinate scattering, extension of the gestation period, and freezing of capital resources. A larger volume of investments (overinvestment) and extension of the protracted time of construction contribute to the scattering of unfinished construction (with a given rate of capital formation in a particular industry, the number of projects under construction is proportionate to the construction period). The existing technical and managerial personnel are incapable of handling effectively the manifold and expanding projects. There occurs a bottleneck of sufficiently qualified personnel to cope with the problem.

As a result of foreign trade difficulties, the rate of growth cannot exceed a certain level. In fact, at a certain growth rate, attempts to balance imports with exports do not produce effective results. Further reduction of export prices is pointless if the result of increased physical volume produces no increments to revenue, as the additional revenue from an additional quantity sold is smaller than the loss resulting from the reduction of price on goods previously sold. Difficulties in equilibrating foreign trade cause a rise in capital and labor inputs to produce a given increment of national income.

The obstacle to an inordinately high planned rate of growth of gross national product in Professor Kalecki's words,

> is the high capital input required both directly and as a result of the difficulties in equilibrating the balance of foreign trade and possibly also a shortage of labor. In fact the difficulties in foreign trade may make it virtually impossible exceeding a certain level of the rate of growth.
>
> Realistic plan variant adopted should be characterized by the highest sustainable growth rate at which there is a realistic possibility of equilibrating foreign trade and at which the relative share of productive investment plus the increase in stocks in the national income is tolerable by the authorities from the standpoint of the impact upon consumption and productive investment in the short run [Kalecki 1964, pp. 51-59].

The adopted normative standard of valuation – the preference function (Cf. Bergson 1966) – in Professor Kalecki's model of growth in a socialist economy is diametrically opposed to that of his celebrated model analyzing the capitalist economy in motion (Kalecki 1954). Kalecki emphatically stressed that the primary aim of the socialist economy is consumption. The fundamental problems of the socialist economy are production, productivity, technical progress, the rate of investment, and investment efficiency, foreign trade and its efficiency, realistic and effective planning, and equitable income distribution. The underfulfillment of an unrealistic plan mainly and in final analysis reflects on current consumption. Planners exhibit a natural proclivity to continue the investment processes in order to avoid extensive freezing of capital in unfinished projects. The recurring dramatic underfulfillment of consumption plans bears witness to it. Faced with overambitious plan and built-in inefficiencies, the planners are prone to compensate for blunders by reshuffling resources from consumption to priority or growth producing activities. Kalecki forcefully argued that one should not underestimate the damage caused by underfulfillment of consumption plans. The resulting apathy of the population does not have only multifarious adverse consequences in economic life (as it conditions performance of the human agents of economic processes), but, what is no less important, it reflects negatively on the socialist consciousness of society.

A comparison of goals and achievements of the successive postwar long-term Polish plans, for example, shows that targets in productive investments, material and labor costs, increase in inventories, and planned period of construction have been substantially exceeded, while targets of increase of national income, comsumption, real wages, production of consumer goods, etc. were underfulfilled. In none of these long-term plans was the program of commissioning new capacities (real or physical investment plan) fully executed. At the same time, the long-term plans were drastically revised on several occasions during execution. Substantial shifts in the pattern of resource allocation occurred. There were periods when the rate of investment was sharply escalated and pattern of allocation drastically revised to promote a structural break or to react to this or that contingency, while in other periods the capital formation activity was stabilized and consumption accelerated. These alterations of the growth rate of accumulation (investment) and consumption – not always deliberatly planned and often forced on the planners by breakdowns – untolerable hypertensions and strains, unsurmountable foreign trade barriers, etc. created wave-like movements, deleterious, unbalanced growth, and pronounced fluctuations in the dynamics of ecomomic activity.

Among the principal factors generating marked fluctuations in growth rates the place of honor is reserved for investment policy, together with the

manner of constructing and implementing the investment program and the system-made or induced propensities to overexpand investment at all levels of economic activity and to prolong the process of gestation and fruition of investment, thus reducing the efficiency of investment and the entire production system. Radical changes in the investment program during the course of plan fulfillment appear to have been one of the key factors responsible for underfulfillment of the bulk of plan targets (Kucharski 1965; Ryc 1965).

The disproportions, overstrain, and hypertensions generated by a precipitous rise in investment activity (overinvestment) can only be remedied by decelerating the pace of expansion, some retrenchments in the industrialization policy pursued, and drastic measures to cope with this or that contingency, widening bottlenecks and alleviating or mitigating growth barriers. While the intensity of the construction activity abates and the tempo of industrialization drive flags, the pressures on the balance of payments recede and the foreign trade, raw materials, and organizational barriers are lowered. This breathing spell continues until industry and construction are provided with the required materials from the newly commissioned capacities under construction in the preceding period of the upswing of the investment cycle (the "deleted effect" or "output time lag of investments") (Kalecki 1957), thus filling or substantially reducing the materials gap.

The improvement of the economic situation, especially if coupled with a good showing in agricultural perfomance, is not devoid of dangers. Favorable economic circumstances whet the planners' appetite; and are conducive to voluntaristic rising of growth targets, to "romanticism" in planning, to dangerous and venturesome overinvestments, to superrapid industrialization, and to a reshuffle of resources from current (short-run) consumption (individual and collective). In such a state of affairs the planners display the dangerous proclivity to underestimate the impediments to growth, to minimize growth barriers, bottlenecks and ceilings, and to promote "heroic and mobilizing", but unrealistic plans (Kalecki 1959). At the planning stage, the role assigned to noninvestment factors, such as improvement of the system of functioning of the economy as an additional source of growth or condition for plan fulfillment misfires not only because the reforms are as a rule partially implemented and frequently inconsistent half-measures, but because the hypertensions, overstrain, and conditions of plan underfulfillment are built into the overambitious and ill-balanced growth program.

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