

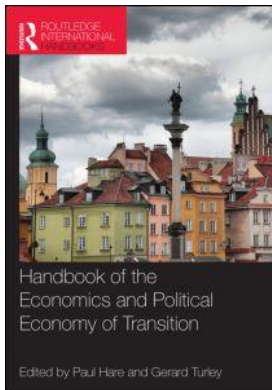
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Paul Hare, Gerard Turley

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Vladimir Mau

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6

CENTRAL PLANNING IN THE SOVIET SYSTEM

Vladimir Mau

Well intentioned people have begun advocating supervision and control of the economy by the state and even the supplanting of private enterprise by state enterprise. We have already gone quite far down this route: it is being suggested that the state should play an important part in the grain trade and in supplying grain to a population numbered in millions ... doubtless we shall next be told that the state should not only plough the land and sow and harvest the grain but also publish all newspapers and journals, write novels and short stories, and offer its services to the arts and the sciences.

(Nikolai Bunge, 1890)

Introduction

It was always maintained by Soviet theorists that the distinguishing feature of the Soviet socialist or Communist economy would be centralized economic planning. This was their *sine qua non* and all discussions over the Soviet economic model revolved around two questions: what should be the nature of economic planning and how was an effective centrally planned economy to be constructed? These were two sides of the same problem but historically solutions were sought along different lines of enquiry.

At the beginning of the 20th century, following the establishment of the industrial economy with its characteristics of large-scale machine production and a strong tendency towards the creation of ever-larger dominant firms in key branches of production and distribution, it seemed to many economists that, as a consequence of objective economic forces, market competition would inevitably be replaced by central planning. Such ideas were especially popular in countries that were 'catching up', such as Germany and then, later, Russia. The First World War gave an impetus to central planning, and the instruments of economic management that emerged at that time were looked upon by many economists and politicians not as emergency war-time measures but as portents of the economic system of the future. At the time the advantages of a planned economy seemed to these individuals to be self-evident, and they viewed their main task as being to develop the methodology of planning and to acquire practical experience of implementing the plan.

Later on, as the deficiencies of the planned economy became more apparent, new issues became topical – how to achieve efficiency in a planned economy and how to combine

centralization with incentives that would promote the economic growth of individual firms. After the Second World War, when the market economies in democratic countries entered a period of stable and dynamic growth, finding answers to these questions became a matter of urgency.

Formation of the planned economy

At the end of the 19th and the beginning of the 20th centuries, in a number of European countries, ideas of centralized economic planning acquired increasing popularity. This was associated with the growth of large scale machine-based industry and with the processes of centralization of production and capital on the one hand, and with the recurrence of serious economic crises on the other. In the Russian economy, where there was a significant state sector and where a long-standing tradition of 'étatisme' existed, these views were particularly widespread. In political and economic circles there were ever more frequent demands for the 'operation of market forces' to be limited and for a strengthening of the role of central government in the economy.¹ The opinion of Nikolai Bunge, the Chairman of the Russian Council of Ministers and former Minister of Finance, cited above, was remarkably prophetic. No less prophetic were the words of the major oil entrepreneur, P.O. Gusakov: 'Here in Russia the view is firmly established that the state can act in the economic sphere just as a private entrepreneur does ... This kind of thinking can very easily lead to state socialism.'²

Tendencies leading towards a planned economy obtained a powerful impetus with the coming to power in Russia of the Bolsheviks. A planned, moneyless economy was one of their programmatic objectives and the crisis of the money economy during the war and revolution was interpreted by many Bolsheviks as heralding the future Communist economy.³ During the years 1918–20, Russia, in conditions of severe budgetary crisis and steep inflation, was subjected to an experiment aimed at achieving within a short time span a planned economy, the abolition of money and a transition to commodity exchange. It was during these years that a debate began over the role, forms and mechanisms of realization of a single economic plan.⁴ The ideas that were put forward were based on the realities of 'War Communism', and for the most part they did not venture beyond the limits of that economic doctrine. The planned economy was conceived as being a strictly centralized natural economy, analogous to a huge trust, and the plan was conceived as a kind of prescription that laid down the parameters of economic activity for every producer.⁵ Attempts at implementing this policy resulted in severe poverty and in an acute political crisis, and it was for these reasons that the New Economic Policy (NEP) was introduced in 1921.

The NEP (1921–29) was an attempt at creating a socialist market economy in which state property dominated, large industry was centrally administered (the 'commanding heights') and private property and market anarchy (as it was usually described) were tolerated in the agrarian sector, in services, in small and medium-sized enterprises, and in construction.

During the 1920s, debates continued over the methodology of planning and several drafts were produced of the first national annual and long-term economic plans.⁶ These debates in many respects predetermined the future model of centralized economic planning of the Soviet type. A conception of planning emerged that was in fundamental contradistinction with the doctrine of War Communism: in place of the notion of the 'prescriptive plan' there arose a concept of the plan as the choice of an optimal trajectory for the progress of the economy towards a specified goal. The logic of the plan was now predicated upon the economic independence of enterprises and upon their accountability for the effectiveness of their decision-making. The realization of this system presupposed a transition from crude administrative

methods of planning to more economic methods, and the disappearance in due course of the directive character of the projects of the central planning organs. Market mechanisms were to operate in conjunction with planned regulation, enterprises and their workers were to be motivated by economic stimuli.⁷

The 1920s were a most productive period in the development of the theory of economic planning. Brilliant economists and leading industrial managers contributed to the debate. These included Bazarov, Bukharin, Ginzburg, Groman, Kondratiev, Krzhizhanovsky, Sokol'nikov, Strumilin and Yurovsky. A number of government institutions – the State Planning Agency (*Gosplan*), the Supreme Council of the National Economy (*VSNKh*), the Commissariat of Finance (*Narkomfin*) and the Commissariat for Agriculture (*Narkomzem*) – not only drafted the planning documents that belonged to their spheres of competence but put forward alternative conceptions for the long-term socio-economic development of the country. This open confrontation between different points of view made a positive contribution to the attempt to build a planning system that would really work.

During the 1920s extensive research was carried out into a whole range of aspects of economic planning. Planning methods such as the use of dynamic coefficients (obtained by analysing the actual development of the economy), the development of methods of balances, expert evaluations, the estimation of alternative plan variants, and techniques of mathematical modelling were worked out theoretically and tested in practice. Questions of plan optimality, the appropriate relationships between territorial and branch planning, the inter-relationships between the national economic plan and the financial plan were all studied. Work undertaken at this time to draw up a balance of the national economy was of great importance.

An understanding of the economic conjuncture and of the laws of development of the Soviet economy were considered to be important prerequisites of planning. Since the principal goal of the period was considered to be economic reconstruction, which would be followed only later by economic development, a number of researchers undertook the analysis of 'reconstruction processes'.⁸

The work that was done on the First Five-Year Plan occupied an important place in the history of the theory and practice of planning. Between 1925 and 1928 several variants of the Plan were elaborated by different groups of economists. The purpose of this long-term or 'perspective plan' was to plot a course for the industrialization of the economy. However, as work on the Five-Year Plan progressed, profound disagreements arose among leading economists as to the role, content and methodology of perspective planning. With the reconstruction period coming to a close, the main disagreements were over the sources for future economic growth. Inside *Gosplan* the view came to prevail that 'the creative will of the revolutionary proletariat' would be the decisive factor in the management of the economic plan: it would be sufficient, in order to ensure that the plan achieved its targets, to involve the workers in its realization. Furthermore, an idealization of the capabilities of government made for a dismissive attitude towards prudent management of the budget and of the monetary system. Budgetary expansion led to inflation and the central fixing of prices in particular areas resulted in shortages.

Proponents of an alternative model argued that the perspective plan should aim for the creation of conditions favourable to the accumulation and utilization of capital and emphasized the importance of economic equilibrium in a planned economy. The debate became structured around the issue of 'genetic' as opposed to 'teleological' planning. The ideas put forward in 1923 and 1924 by Bazarov for the organic fusion of these two concepts at first encountered almost no criticism. What Bazarov argued was that in the process of formulation of the perspective plan it would become necessary to combine the search for ways of realizing set goals (the teleological imperative) with a projection into the future of current economic trends (the genetic imperative). However, Bazarov's conception begged one important methodological

problem – namely, by what mechanisms should goals actually be set, how should one choose between alternative models of development of the economy, and how much discretion should be accorded for choosing between available alternatives. At the time, however, discussions focussed on the relationship between directive planning and forecasting, that is upon the interaction between government directives on the one hand and the results obtained from analysis of tendencies within the economy and economic forecasting on the other.⁹

At the end of the 1920s and beginning of the 1930s, the issue of the relationship between genetic and teleological imperatives, which had been compressed into the dichotomy ‘prognosis versus administrative command’, and which had been confined essentially to the realm of theory, acquired a political dimension. The idea that the administrative command was an inherent attribute of planned economic management became set in ideology and this was accompanied by a rejection of the pursuit of balanced economic growth and the adoption of a policy of ‘whipping’ the country forward. Efforts at applying real planning guidelines now collapsed. The Communist leadership of the USSR was afraid that the development of market relations would demonstrate that the state sector of the economy was uncompetitive and that this would ultimately lead to the overthrow of the political regime.

With the destruction of NEP and the consolidation of a strict administrative system, the practice of directive planning, in which there was no place for market stimuli, became entrenched. It was by these methods that the Soviet leadership achieved the rapid industrialization that to a significant degree made possible the victory of the USSR in the Second World War. For several decades, this decisive victory conferred political inviolability and legitimacy upon the model of centralized planning and greatly restricted the scope for any questioning of its economic effectiveness.

The search for an improved planning model

The low level of effectiveness of the central planning system gradually became apparent and by the 1950s discussions were taking place over how to improve it. These discussions took place not only in the USSR but also in other countries with Soviet-type economies, particularly Hungary and (the then) Czechoslovakia.

The Soviet economy had a powerful capacity for mobilizing resources but proved to be economically ineffective in peace-time. The main problem was the absence of economic incentives within the system encouraging growth and efficiency, responsiveness to consumer demand, and innovation. The principal motive of Soviet managers was to acquire the lowest possible plan targets from central government and the maximum amount of resources for the fulfilment of these objectives. This ‘de-stimulation’ operated at all levels of the hierarchy: thus, enterprises lobbied to be issued with a minimal plan by the Ministry and the Ministries then lobbied to obtain a minimal plan from *Gosplan*.

There were no incentives for innovation, for the renewal of products and improvements in the quality of output. The principal goal of enterprises was not increases in the productivity of labour, but the fulfilment and over-fulfilment of their centrally planned targets. Whereas the USSR surpassed the USA at the beginning of the 1970s in terms of gross capital investment, the productivity of labour in industry in the USSR in 1970 was 53 per cent and in 1975 55 per cent of that of the USA.¹⁰

Economic agents (households and enterprises) had no incentive to save or to invest. Growth was obtained by extra-economic methods, namely coercion, including the use of force. A shortage of goods and the secondary role played by money in the economy significantly curtailed the interest of citizens in working more effectively and in obtaining higher incomes. As a

result, the rates of growth of industrial output gradually declined – from 16.5 per cent per annum in 1929–33 to under 1 per cent in the 1980s.

The Soviet economic model relied, essentially, upon a kind of ‘fetishism of the plan’.¹¹ The plan was handed down by some higher power that was deemed to be capable of managing everything. The presumption was that every aspect of socio-economic development could be covered by including an appropriate indicator in the plan. This was very astutely noted by the first Chairman of *Gosplan*, Krzhizhanovsky, who wrote:

Reading these programmes, one has the impression that when they were drawn up it was implicitly assumed that government possesses some miraculous power enabling it to cater for every need to every conceivable extent ... In the final analysis, this has transformed production plans into projects for which no one is accountable. They have doubtless been drawn up with the best of intentions, but from the standpoint of economic management they are suspended in mid-air.¹²

In these circumstances, of course, the performance of all participants in the economic plan (branches of the economy, enterprises, workers) could only be assessed in terms of the fulfilment or over-fulfilment of plan targets.

The first attempts that were made to improve the planning system (during the 1930s–1950s) were imprisoned within this logic and merely sought ways of improving planning methods. The failures of the planned economy were attributed, at worst, to the sabotage of bourgeois economists, to the personal shortcomings of individual economic managers, to conservatism, bureaucratism, incompetence and low levels of accountability. At best, they were attributed to imperfect methodologies, to the absence of technical resources (computers) that would facilitate the calculation of all needs and resources and enable these to be matched. It was felt that any improvement in the functioning of planning in the socialist economy could only come from a tightening of the administrative and legal controls over enterprises.

The limitations of this approach, which essentially identified the planning system with administrative commands, became more and more evident towards the middle of the 1950s. Attention was then switched to the problem of planning indicators. It was argued that emerging problems could be solved simply by designing more appropriate indicators for measuring the performance of the enterprise. Economists criticized the use of gross output indicators as the key measure of performance; there were multifarious proposals for perfecting the system by introducing indicators measuring the volume of work completed in an enterprise. In other words, the plan was represented as being an agglomeration of indicators centrally imposed upon the enterprise and motivating it to achieve its plan targets.

In due course it became clear that there were more profound reasons for the ineffectiveness of the planned economy. Economists now focused on plan fulfilment as an indicator of the successful functioning of the enterprise. However, if plan fulfilment was a criterion for the payment of wages and bonuses then all participants had a vested interest in a lowering of the assessment of their production potential, in obtaining both low plan targets and increased allocations of resources for plan fulfilment. Efficiency of production and the interests of consumers took second place to the fulfilment of planning targets. The planning indicators become an end in themselves.

Elevation of the plan to the status of the key indicator of economic performance at times produced absurd and at other times even tragic results. A classic example of the latter is the attempt of the leaders of Ryazan Oblast in 1959 to obtain all kinds of rewards and bonuses for rapidly implementing the Party’s slogan for increasing the production of meat. In pursuit of this goal almost every herd of cattle in the farms of the Oblast was put to the knife. Cattle were

then purchased from other Oblasts and even from Kazakhstan. Of course, there was recourse to false accounting and all kinds of other machinations. The outcome was a massive destruction of livestock, including that of thoroughbred and breeding stock. For sure, the plan was over-fulfilled and the First Secretary of the Oblast Committee of the Communist Party of the Soviet Union, Larionov, received the award of Hero of Socialist Labour. However, within a year, when the catastrophic results of this planning bacchanalia were exposed, he committed suicide.¹³

In their efforts to achieve improved growth rates from enterprises, the highest government bodies of the Soviet system attempted to regulate not only the outcomes of the activity of enterprises but also their means of achieving these outcomes, deploying to this end an ever-increasing number of supplementary indicators. An illustration of this tendency is the uninterrupted increase in the number of indicators imposed on enterprises from above from the 1960s to the 1980s despite the fact that during this same period the government issued a number of directives opposing this practice. And so, whereas at the beginning of the 1960s enterprise activity was regulated by several tens of indicators imposed ‘from above’, by the beginning of the 1980s there were several hundred such indicators. In 1986, for example, the enterprises of the Ministry for Electro-Technical Production (*Minelektrotekhprom*) had to report annually on around 500 indicators, the Ministry of Instrumentation and Control Systems (*Minpribor*) on 450; the Ministry of Agricultural Machinery (*Minselkhovmash*) on 600 and the Ministry of the Machine Tool Industry (*Minstankoprom*) on 400.¹⁴ There developed a vicious circle: the more the activity of an enterprise was regulated, the more energetically it sought to lower its planning targets, the easier it became for the enterprise to create the impression that it had fulfilled its plan by improving its interim performance. Conversely, the more the assessment of the performance of an enterprise became divorced from its real contribution to the output of the national economy, the more pronounced became the drive for centralization, since the predominant method of influencing the behaviour of the enterprise had become the imposition of ever more planning targets.

Having become aware of this phenomenon, Soviet economists engaged in stormy debates over which indicators were the ‘correct’ indicators: which indicators would more accurately describe the performance of enterprises, branches of the economy and individual workers and in so doing bring about a qualitative improvement in the effectiveness of the planning system. Various clusters of indicators were compiled; many pilot studies were launched.¹⁵

At the end of the 1950s a number of economists put forward a fundamentally different solution which consisted not in any permutation of indicators but in the abandonment altogether of assessment according to plan fulfilment.¹⁶ This was a radical turn in the debate, but the Soviet system could not, as a matter of principle, abrogate assessment by the plan: the only alternative was assessment by profit or profitability and this would have entailed a transition to market price formation, which was perceived as being absolutely inimical to the survival of the Soviet system.¹⁷

Economic stimulation was understood in this context as a problem specific to planning, in so far as the system of socialist economic management needed to motivate the enterprise not only to fulfil the plan but to co-operate in the formulation of ‘taut’ plans. This approach attempted to link the planned management of the economy with mechanisms for harmonizing the interests of the subjects of socialist production. In reality, this was a new understanding of planning, whereby planning was conceived as a mechanism for reconciling the activity of enterprises and individual workers with national economic objectives.

The reform measures introduced in Hungary, Czechoslovakia and the Soviet Union during the 1960s were a landmark in the modernization of the planning system of the Soviet type. In the USSR the reform was launched in 1965 and has become known as the ‘Kosygin Reform’, in honour of the Chairman of the Council of Ministers of the USSR. A number of leading

Soviet economists of a liberal persuasion worked on key elements of the reform. They included Nemchinov, Novozhilov, Liberman and Birman.¹⁸

The reform entailed an increase in the independence of enterprises, a reduction in the number of planning indicators imposed from above, a reorientation of the system of stimulation away from plan fulfilment indicators that provided the enterprise with incentives to restrict the scope of its activity and to maximize its resource requirements towards outcome performance indicators based on profit and volume of production. The most radical proposals envisaged stimulating competition and allowing the possibility of bankruptcy for socialist enterprises. All of this, however, took for granted the absolute domination of state ownership of the means of production and the continuation of centralized price formation.

The economic reform produced ambivalent results: economic growth between 1965 and 1970 was around 8 per cent compared with less than 5 per cent for the previous five-year period. However, even these figures contained a significant degree of inflation. Enterprises had used their greater freedoms mainly to make formal changes to the assortment of their output and to increase the prices of their 'new' goods, in the final analysis with a view to increasing wages (instead of capital accumulation and investment) – behaviour that was natural given the absence of any real owner of the enterprise who might have given some thought to strategic investment. The political crisis in Czechoslovakia (1968) demonstrated that the consistent implementation of market reforms could sweep away the Communist Party's monopoly hold on power. By the end of the 1960s, the economic reforms had been wound up; it had become clear that the Soviet system had exhausted its potential for development. The need to find a way of enabling the system to evolve and adapt to the requirements of a new age had become evident and the economic reforms had been an opportunity to begin this process of transformation. With the termination of the reforms in 1965 the Soviet economic model gradually descended into a profound systemic crisis.

Centralized planning and the post-industrial challenge

The crisis of the planning system was accompanied by a political crisis but this was not the root of the matter. Fundamental was the need to transcend the established industrial system. As long as it operated within the straightjacket of centralized planning, the USSR was incapable of responding to the challenges of post-industrial society.

With the advent of post-industrialism an increasing degree of 'uncertainty' permeates all social activities. This results from two aspects of post-industrial society that radically differentiate it from the traditional and more familiar industrial society. Firstly, there is a sharp increase in the rate of technological change, which, in turn, makes for a dramatic curtailment of the time horizons available for economic and technological forecasting. Secondly, a virtually unlimited increase in the demands of consumers is accompanied by a dramatic increase in the ability to satisfy these demands (in respect of both material resources and technological capabilities). The scale of economic production increases many times whilst at the same time the economy becomes highly individualized (one could say personalized or even 'privatized'): consumer demands and technological decisions become increasingly *individualized* and this makes for an increase in levels of uncertainty.

The process of *individualization* enhances the importance of *decentralization*. Whereas large-scale production was a key feature of industrial society, its importance in the post-industrial world diminishes. Of course, in branches of the economy where production on a massive scale persists, huge centralized firms continue in their usual role. However, as science advances and finds increasing application in economic and social life, large-scale economic production recedes and there is less need for the centralizing principle in the organization of the economy.

Whereas in the past the key function of the state was to concentrate resources in priority areas, it now acquires the role of creating the conditions that will enable economic agents (firms) to comprehend the latest shifts in the development of productive forces and to take account of the latest challenges as they move forward. The adaptability of an economic system becomes a far more important condition of its success than its ability to mobilize material and human resources – the particular claim to fame of the USSR.

All of this entails a sharp reduction in the time horizons available for forecasting the special needs and dominant trends in technological development in any country and any individual sectors of an economy. Whereas in the industrial era it was possible to identify what should be developmental priorities for the next 20–30 years and, having achieved specific objectives, enter the ranks of the advanced countries (this was the achievement in the 19th century of Germany and in the 20th century of Japan and Russia), now priorities are rapidly changing. In the present day, a country that attempted to overtake the rest of the world in the number of computers produced per head of population, develop programmes for the production of world-class aircraft and telephones could well discover when these projects had been completed that technology had moved a step forward. It might not have realized at the time the projects were approved that universal computerization lay ahead. What this means for the future is that it is not hardware that is important (even in the sphere of so-called ‘hi-tech’) but the flow of information. The abuse of central planning by the state is *the fatal conceit* (to use the expression of Friedrich von Hayek) and can result only in perpetual economic backwardness.¹⁹

Despite all this, it seems that the global financial and economic crisis (that began in 2008) has revived interest in central planning. This is evident in Russia, especially on such occasions as when government departments come to prepare their performance budgeting reports. They are required to devise specific indicators for use in measuring the effectiveness of their performance. Once again we seem to be succumbing to the fetishism of the plan. It is practically impossible, in the first place, to devise indicators that will clearly and unambiguously measure the attainment of desired results. Many indicators either do not lend themselves to unambiguous interpretation or will produce very unreliable results.

Not only does the selection and definition of performance indicators present difficulties, such indicators are subject to the interplay of many complex factors operating on different time scales. On the one hand, the results of the activity of a given management team (branch or regional) become apparent only with the passage of time, and these time lags are, as a rule, not known in advance. In some circumstances, the efforts of one management team may only become apparent when a new management team has taken over. There are many examples of this in economic history and in present-day political and economic practice.

Besides, expecting results continually to improve is a throw-back to the Soviet economic system. When assessing the performance of government departments or regions we cannot expect to be able to identify trends for every conceivable indicator. Infatuation with performance assessment carries with it the additional risk that quantitative measurement will inexorably acquire greater importance than the assessment of qualitative improvements, for example in the structure of the economy or in the morale of institutions. Here is a relevant example from the 1970s. At that time the Soviet economy achieved a steady rate of growth, albeit at the rather low rate of around 3 per cent per annum. By contrast, the Western economies were stagnating and, furthermore, experiencing high inflation. Soviet economists and politicians pontificated on the appearance of a hitherto unknown phenomenon – ‘stagflation’. Western economists, for their part, produced pessimistic forecasts of ‘zero growth’. Yet within a relatively short period of time it transpired that the Western economies, in the very throes of the crisis, had been

developing resources that would in due course facilitate a dramatic break through into the post-industrial phase of development. And of course, this was not achieved by planning. In the meantime, the USSR headed for national catastrophe, diligently fulfilling its targets according to plan.

Conclusion

One of the most important developments of the 20th century was a significant increase in the role of the state in the economy, which culminated in the creation of a completely centralized national economy managed according to the requirements of a single central economic plan. The ideas of 'statism' and of state regulation, of limiting the operation of market forces, acquired ascendancy in almost all countries with developed market economies. However it was in the Soviet Union that the ideology and practice of planning reached their apogee, with the abolition of private property and the introduction of an economy wholly within the public sector.

We must distinguish between the ideology of communism and the ideology of central planning: the first is an abstract social and political doctrine with claims to 'universal' validity; the second emerged at a particular stage of development of the technical base of society, in the specific conditions of industrial development based on mass production. It was during this period, as large scale production units came into operation, that centralized management of the economy and the abolition of competition (perceived as being wasteful and inefficient) were judged by some to be not only feasible but also necessary.

The communist idea and the idea of a centrally planned economy coalesced during this period and they found their practical implementation when Soviet leaders proceeded to construct an economy on completely new foundations. Over almost a century of development, the planned economy, in both theory and practice, went through several stages of development:

The first was that of the widespread enthusiasm for planning of the beginning of the 20th century, when efforts were made to implement the idea, whilst at the same time retaining market relations. This was the model of the war economy in Germany during the First World War and the model of market socialism in the USSR between 1921 and 1929.

The next stage of the development of planning involved an intensification of central control, in defiance of market forces or by means of the almost complete abolition of the market (though money continued to play a role at all times). At first, this policy yielded positive results in the form of the accelerated industrialization of the USSR. However, there were enormous costs in terms of the expenditure of resources, which is to say that even if the policy was effective then it was effective only politically and militarily – the Communist Party was able to remain in power and the Soviet Union prevailed in the Second World War. However, it was not successful economically: the productivity of labour in the USSR significantly lagged behind that of the developed countries and never really caught up.

From the very earliest stages of the development of the planned economy, economists and politicians were aware of the defects of the system and sought ways of overcoming these defects. Discussions around this theme persisted during the years that followed the Second World War.

There were three basic approaches to improving the planning system. The first sought to improve the quality of the planning process, to recruit more able planners and to utilize contemporary computer technology. In the mid-20th century it seemed that genuinely scientific planning could be achieved with the assistance of computers that would at least provide complete information and make it possible to balance needs with resources. Paradoxically, however, it was the vigorous growth of information technology that aggravated the profound crisis of the centralized economy.

The second approach favoured improving the system of planning indicators, reducing their number and devising a key, integral indicator that would measure the contribution of a given enterprise to the general weal. Debates over how to improve indicators were never-ending, throughout the entire history of the planned economy.

The third approach focused on improving the management of centralized planning and the advocates of this approach spoke of the need to reform the system by increasing the role of market incentives. Here the emphasis was not on indicators but on the use of market mechanisms, including market processes of price formation. As experience would show, this approach was incompatible with the existence of a system of central planning.

In an era of technological progress, as development ceased to rely on large scale machine production and the production of goods and services became increasingly individualized, the inadequacies of the centralized planning became more and more evident. This led to the collapse of central planning and of the Soviet political and economic model.

Notes

- 1 Typical for the beginning of the 20th century was this pronouncement published in the principal journal of Russian entrepreneurs: 'We urgently require a business plan for our financial and economic life ... The plan does not require any deliberation by any new agency and it certainly does not require any additional state regulation. The economic conditions of our time have been so well studied and the financial and the economic circumstances of Russia are so well understood that in order for Russia to be transformed from an ignorant, hungry and deprived country into an enlightened, well-fed and confident one very little is required: the merger of all of the programmes that are scattered across individual departments into a single, common ... plan for the economic and financial development of Russia.' ('Minuvshii god', *Promyshlennost' i Torgovlya*, (1909), No. 1, p. 3).
- 2 P.O. Gusakov, 'Speech to the Conference of the Council of Congress on the oil problem', (*Promyshlennost' i Torgovlya*, (1908), No. 6, p. 351).
- 3 L. Kritsman, *The single economic plan and the Commission for Resource Utilization* (Moscow, 1921). Alexander Bogdanov was one who took issue with this, arguing that the war economy could in no way serve as the prototype of a planned socialist economy. See A. Bogdanov, *Problems of Socialism* (Moscow, 1918, pp. 44, 87).
- 4 See S.I. Gusev, *The single economic plan and the single economic apparatus* (Kharkov, 1920); A. Katyn, *The single economic plan and the single economic centre* (Moscow, 1920); L. Kritsman, *The single economic plan and the Commission for Resource Utilization* (Moscow, 1920).
- 5 L. Kritsman, *The single economic plan and the Commission for Resource Utilization* (Moscow, 1920), p. 7.
- 6 The first annual plan was the *Control figures for the national economy in 1925/1926* (Moscow, Leningrad, 1925). The drafting of perspective plans began in 1926 and the work undertaken then served as the basis for the five year plans. The First Five-Year Plan applied to the years 1929–33.
- 7 See A.M. Ginzburg, *Introductory sketches: Legislation on Trusts and Syndicates* (Moscow/Leningrad, 1926), pp. xi–xiii; A. Katyn, *Essays on the organization of the national Economy* (Moscow, 1922), pp. 21–22; V. Bazarov, 'On the question of the economic plan', *Ekonomicheskoe Obozrenie*, 1924, No. 6; V. Sarabyanov, *Key issues of the NEP* (Moscow/Leningrad, 1925), p. 194.
- 8 V.A. Bazarov, *Towards a methodology of perspective planning* (Moscow, 1924), p. 13; V. Bazarov, 'Concerning the "reconstruction processes" in general and the "prospects for emission" in particular', *Ekonomicheskoe Obozrenie* (1925, No. 1); V.O. Groman, 'Concerning a number of empirically observed regularities in our national economy', *Planovoe Khozyaistvo*, 1925, Nos 1, 2 and *passim*).
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- 10 Even these figures, based on official data of the period, were almost certainly rather over-optimistic estimates (editors' note).
 - 11 For a detailed analysis of this phenomenon, see V. Mau and I. Starodubrovskaya, 'The fetishism of planning: a necessary political-economic commentary', *Ekonomicheskie Nauki* (1988), No. 4.
 - 12 G.M. Krzhizhanovsky, Works, Vol. 2: *Problems of Planning* (Moscow/Leningrad, ONTI, 1934, p. 103).
 - 13 See *Ryazanskie Vedomosti* (1998), 27 November. <http://r-starina.chat.ru/3a.htm>.
 - 14 See *Pravda*, 22 September 1986.
 - 15 Soviet discussions on the perfecting of planning and of the system of management of the economy are reviewed in V.A. Mau, *In search of the plan: A contribution to the history of Soviet economic thought from the 1930s to the 1960s* (Moscow, Nauka, 1990).
 - 16 E.O. Liberman, 'On the planning of industrial production and material incentives for its development', *Kommunist* (1956), No. 11; V.S. Nemchinov, 'Fulfilling the plan and material incentives', *Pravda*, 21 September 1962.
 - 17 V.A. Mau, *In search of the plan: A contribution to the history of Soviet economic thought from the 1930s to the 1960s* (Moscow, Nauka, 1990).
 - 18 In some foreign publications the reform is described as the 'Liberman Reform', following the publication in 1962 of the article that initiated the most serious economic discussion since the 1920s: E. Liberman, 'Plan, profit and premia', *Pravda*, 9 September 1962.
 - 19 F.A. Hayek (1990) *The Fatal Conceit. The Errors of Socialism*. London: Routledge.