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CHAPTER TWO

The Economic Precedents of the Twenties: The Soviet Economy under War Communism and the New Economic Policy (1918–1928)

This chapter considers the events of the period from 1918 to 1928 and their impact upon later Soviet economic policies. During this period, the economy operated under two quite different administrative regimes—War Communism and the New Economic Policy (NEP)—that provided experience to assist in making the final choice of comprehensive central planning (1928) and collectivization of agriculture (1929).

The lessons of War Communism and the New Economic Policy provide insights into the evolution of the Soviet economic system. The Soviet planning system did not appear from a vacuum—rather it emerged gradually as a response to the practical economic problems of earlier periods. Our emphasis on the precedents of the 1920s is not meant to deny the important impact of the early Five Year Plan period (the 1930s) and World War II upon the evolution of the current system. The former topic is dealt with in Chapter Four.

WAR COMMUNISM

(1918–1921)¹

In general terms, War Communism was an abortive attempt on the part of the inexperienced Bolshevik leadership to attain full Communism directly without going through any preparatory interme-

¹ The following discussions of War Communism and NEP are largely based upon the following sources: Alec Nove, *An Economic History of the USSR*

mediate stages: the use of money was virtually eliminated, private trade was abolished, workers were paid virtually equal wages in kind, and farm output was requisitioned. Were these war measures the product of the ideological intent of the Bolshevik leadership to establish full Communism directly, or were they forced responses to the civil war? The most generally accepted view, as postulated by the well-known British authorities on War Communism, Maurice Dobb and E. H. Carr,² is that War Communism was forced upon the Bolshevik leadership by the Russian civil war and that the various theoretical arguments posited by the Bolshevik leadership in support of War Communism were "no more than flights of leftist fancy."³ The opposite view, recently postulated by Paul Craig Roberts,⁴ argues that Lenin originally conceived War Communism—with its elimination of market institutions and its introduction of administrative controls—as a necessary step in the socialist revolution. In Roberts's view, War Communism was adopted for ideological reasons as a product of Marxian ideas (as interpreted by Lenin), not as a forced response to the wartime emergency. We can provide no final answer to this controversy; instead we shall attempt to outline as objectively as possible the basic features of War Communism.

The roots of War Communism can be traced to the October Revolution. One of the first actions of the fledgling Bolshevik regime was to confiscate the remaining large estates (the Land Decree of November 8, 1917) and to sanction the distribution of this land among the peasants. This action legalized in part the spontaneous appropriation of land by the peasantry, a process that had already taken place to a large degree. Irrespective of its causes, this change

(London: Penguin, 1969), chaps. 3 and 4; Eugene Zaleski, *Planning for Economic Growth in the Soviet Union, 1918–1932* (Chapel Hill: University of North Carolina Press, 1971), chap. 2; Maurice Dobb, *Soviet Economic Development Since 1917*, 5th ed. (London: Routledge & Kegan Paul, 1960), chaps. 4–9; E. H. Carr and R. W. Davies, *Foundations of a Planned Economy, 1926–1929*, vol. One, part II (New York: Macmillan, 1969), chaps. 33–35.

² Dobb, *op. cit.*, chaps. 4–9.

³ *Ibid.*, p. 122.

⁴ Paul Craig Roberts, *Alienation and the Soviet Economy* (Albuquerque: University of New Mexico Press, 1971), chap. 2.

of land tenure was to have a far-reaching impact upon economic policy throughout the 1920s. In their enhanced capacity as full proprietors, the peasants were no longer obligated to deliver a prescribed portion of their output either to the landlord (as a rental payment) or to the state (as a tax or principal payment). Now they, not the state or landlord, made the basic decisions about how much to produce and what portion of this output would be sold. Thus the total agricultural output and the marketed portion thereof became dependent for the first time upon the Russian peasant.

The initial Bolshevik attitude towards private industry was cautious and restrained since an uneasy truce between Bolshevik and capitalist was required to prevent a drop in industrial output. Workers' Committees in privately owned enterprises were given the right to supervise management, but, at the same time, the proprietor received the executive right to give orders that could not be countermanded by the Workers' Committees. Also the Workers' Committees were denied the right to take over enterprises without permission of higher authorities. Only enterprises of key importance such as banking, grain purchasing, transportation, oil, and war industries were nationalized—establishing a form of State Capitalism based upon state control of key positions in the economy, mixed management of enterprises, and private ownership of agriculture, retail trade, and small-scale industry.

The uneasy truce between the Bolsheviks and the capitalists and the peasants did not last long. By 1918 the Bolsheviks were locked in a struggle for survival with the White Russian forces supported in part by foreign powers. The Germans were in possession of the Ukraine, while the White Russian armies occupied the Urals, Siberia, North Caucasus, and other economically important regions. Poland invaded in May of 1920. At one time, the Bolsheviks retained only 10 percent of the coal supplies, 25 percent of the iron foundries, less than 50 percent of the grain area, and less than 10 percent of the sugar beet sources of the former Russian Empire.⁵

To divert industrial and agricultural resources from private into military uses, the Bolsheviks, lacking a domestic tax base and access to foreign aid, resorted to printing money. This expansion of

⁵ Dobb, *op. cit.*, p. 98.

the money supply combined with shrinking supplies of consumer goods created hyperinflation, and by 1920 the ruble had fallen to one percent of its 1917 purchasing power.

The hyperinflation resulted in the near-destruction of the market exchange economy. The state grain monopsony (grain elevators and warehouses were nationalized in 1918) acted to prevent grain prices from rising as rapidly as the prices of manufactured goods. The peasants, faced with the dearth of manufactured consumer goods that, when available, sold at inflated prices, felt no incentive to market their agricultural output. (Instead, the peasant either consumed his produce or hoarded it for future use, and the central government found itself powerless to obtain through the market agricultural products it needed to fight the war.)

War Communism Policies

The Bolshevik leadership under Lenin responded by introducing War Communism, a system by which the leaders attempted to substitute administrative for market allocation to marshal resources for the war. The crux of War Communism was its agricultural policy of forcibly requisitioning agricultural surpluses. Police (the *Cheka*) were sent into the countryside to collect the surpluses of the rich and middle peasantry—a policy that severed the existing market link between industry and agriculture. (In theory at least, the link was to be maintained by state allocation of manufactured products to the peasants and barter transactions for the remaining agricultural output. In fact, the peasants received only from 12 to 15 percent of prewar supplies of manufactured goods.⁶)

② Nationalization of the nonagricultural economy was the second major policy of War Communism. The sugar industry was the first to be nationalized in the spring of 1918, and by autumn of 1920, 37,000 enterprises had been nationalized of which roughly one-half were small-scale businesses that did not use mechanical power.

This pervasive nationalization of industry may be regarded in part as a crisis response, for a large number of former industrial proprietors had deserted to the White Russian side, and there was widespread fear of German takeovers of German-owned enterprises. Also, nationalization from below by workers had been pro-

⁶ *Ibid.*, p. 117.

ceeding at a rapid pace despite government opposition. On the other hand, the excessive nationalization from above down to enterprises employing only one worker may perhaps be regarded as an ideological response not to be justified by the crisis situation.

③ The abolition of private trade was a third cornerstone of War Communism policy. Private trade was regarded as incompatible with the War Communism system of centralized requisitioning and allocation. Government trade monopolies and monopsonies (mainly the Commissariat of Supply and the Commissariat of Agriculture) were set up to replace private organizations and concentrate commodity distribution in the hands of the state. In November 1918, all private internal trade was abolished, and the state ostensibly became the sole supplier of consumer goods to the population. In fact, the black market continued to supply a significant portion of total consumption goods and was unofficially tolerated by the authorities.⁷

Semimilitary controls over industrial workers became the major means of labor allocation. The movement of industrial workers was restricted, and they could be mobilized for special work. In some cases, army personnel were used for special projects. Labor deserters received severe penalties according to a Decree of November 28, 1919, which placed the employees of state enterprises under military discipline. Insofar as the state controlled the flow of consumer goods to a large degree, money wages lost much of their meaning and were mostly paid in kind from provisions provided by the state—with little differentiation among occupations. Money was virtually eliminated as a means of exchange, and inter-firm transactions were made with bookkeeping entries. Transportation and municipal services were provided free of charge.

An Evaluation of War Communism

Any evaluation of War Communism must emphasize a frequently neglected point: War Communism did enable the Bolsheviks to muster sufficient resources to win the civil war. In this sense, War Communism may be viewed as an important political and military success. It is easy to overlook this basic point and to concentrate

⁷ Nove, *op. cit.*, p. 62. Estimates of the period suggest that in the large towns, only 31 percent of all food came through official channels (1919).

instead on its many weaknesses. We seek rather to evaluate War Communism in terms of the following question: Was War Communism a viable economic system for coping with the long-term problems of economic growth and development facing the Soviet regime during the 1920s?

As one might expect, War Communism's replacement of market exchange by administrative resource allocation created several serious problems. First, there was a sharp decline in both agricultural output and marketings to the state during the 1918 to 1921 period even after adjustment for war devastation. Peasants were holding back grain in storage, were planting less, and were selling to private traders. The area of Siberia sown in wheat was halved and in the Volga and Caucasus regions was reduced to as little as one-quarter of previous levels. Actual sowing concealed from authorities was reported as high as 20 percent of the sown area in some regions.⁸ Since agricultural surpluses in excess of family subsistence were requisitioned, there was no incentive to produce a surplus. Instead, the peasant, if he could not conceal his surplus from the authorities, restricted output to the subsistence needs of his family. Thus, War Communism's agrarian policy estranged the Russian peasant from the Bolshevik regime and encouraged him to engage in dysfunctional behavior, such as restricting output and hoarding or concealing surpluses during a period of agricultural shortages.

② Soviet industry was also faced with serious problems. Almost all enterprises with the exception of certain small-scale handicraft shops had been nationalized without first establishing a suitable administrative structure to coordinate their activities. The industrial census of 1920 showed over 5000 nationalized enterprises employing only one worker each.⁹ The abolition of private trade, which was to be superseded by state rationing, however, removed the existing market link between consumer and producer. Producers, except those selling to the black market, therefore were no longer directed by the market in their production decisions.

Ostensibly, large-scale industry was to be coordinated by the Supreme Council of the National Economy (*Vesenkha*), which was broken up into subdepartments (*Glavki*), each of which was to di-

⁸ Dobb, *op. cit.*, p. 117.

⁹ Nove, *op. cit.*, p. 70.

rect a particular industry. In addition, the provincial economic councils (*Gubsovnarkhozy*) were the local organs of *Vesenkha*. This arrangement bordered on chaos. In 1920 there were over 37,000 nationalized enterprises. The *Glavki* possessed insufficient information about local enterprises to direct them effectively, to such a degree that an investigative committee of 1920 found that many *Glavki* not only "do not know what goods and in what amounts are kept in warehouses under their control, but are actually ignorant even of the numbers of such warehouses."¹⁰ As a result, the directives that the *Glavki* issued to the local authorities rarely corresponded to local capacities and requirements, causing a prolonged struggle between central and local administrations. Often, local authorities merely gave formal compliance to directives from above and then countermanded them, knowing they could do so with impunity.

In sum, War Communism industry operated essentially without direction, either from the market or from planners. Bottlenecks were eliminated by employing "shock" methods, which meant that whenever congestion in a particular sector became alarming, it would receive top priority in the form of adequate supplies of fuels, materials, and rations. The "shock" system provided a means of establishing priorities and was beneficial in this sense. However, while the concentration of resources in the "shock" industries allowed them to surge ahead and overcome the original bottleneck, the "nonshock" industries had, in the process, fallen behind and had created new bottlenecks, which would then be attacked by additional "shock" methods. In this manner, some weak sense of general direction was supplied to the economy to replace total chaos. The "shock" system was somewhat effective as long as it remained undiluted, which meant the number of "shock" industries at one time must be limited. As time went by, the agitation for widening the "shock" categories became so intense that eventually even the manufacture of pens and pencils was included, thus destroying the whole purpose of the "shock" method—to set up a system of priorities.

③ Finally, the lack of an adequate system of incentive wages led to industrial labor supply problems. The government controlled the

¹⁰ Dobb, *op. cit.*, p. 112.

legal distribution of consumer commodities among members of the industrial labor force, thereby controlling a significant portion of real industrial wages. The Bolshevik Party never officially subscribed to a utopian view of income distribution according to need; instead, it was realized that wage differentials were important in attracting labor into skilled and/or arduous jobs. For example, the Ninth Congress of the Communist Party in 1920 resolved that the food supply system should give preference to the industrious worker, and the Third Trade Union Conference of the same year proposed incentive premiums in kind to be paid to diligent workers.

The result, however, contradicted the intention, which led Trotsky to refer to War Communism wage policy as the measure of a "beseiged fortress." In fact, wages were rationed out to industrial workers on a fairly equal basis because first, shortages were so severe that local supply authorities were content to keep the working force at subsistence and second, it proved too complex to devise a system of incentive wages to be paid in kind.

The result of this equalitarianism was an insufficient pool of qualified labor in industry. Instead of being drawn into factories, labor was flowing out of factories during War Communism. The number of townspeople declined from 2.6 million in 1917 to 1.2 million in 1920.¹¹ Morale was poor, worker sabotage was rampant, absenteeism was high, and the tenuous loyalty of specialists was slipping. These developments were especially ominous in view of the dearth* of skilled laborers available in industry during this early period. (Strikes became quite common during the latter part of 1920.)

The Soviet regime had succeeded in solidifying its position by the end of 1920. A peace treaty had been signed with Poland, and the White Russian army had been driven out of the crucial industrial and agricultural regions that it had earlier occupied. The crisis under which War Communism had come into existence had been overcome, and the dangers of continuing that economic policy were growing more apparent. The still-powerful trade unions were revolting against the crippling centralization of industry and the conscription of labor. The alienated peasant population called for abolition of the state grain monopoly. Industrial workers were restive,

¹¹ Nove, *op. cit.*, pp. 66-67.

the military was in a rebellious mood, and the Soviet regime was in danger of falling victim to internal discontent. Factory output had fallen to less than 15 percent of its prewar level.¹² The final blow was the Kronstadt Uprising of March 1921, when the sailors of the Kronstadt naval base revolted in support of the Petrograd workers. The Soviet leadership moved quickly to dispel this discontent by replacing War Communism with the New Economic Policy in March of 1921.

THE NEW ECONOMIC POLICY (1921-1928)

Just as War Communism may have been thrust upon the Soviet regime by the civil war in 1918, the New Economic Policy (NEP) was forced upon the Soviet leadership by the excesses of War Communism. For whatever its reasons, the Soviet leadership at the time took pains to stress the temporary nature of both periods. Lenin declared that "War Communism was thrust upon us by war and ruin. It was not, nor could it be, a policy that corresponded to the economic tasks of the proletariat. It was a temporary measure."¹³ In the same vein, Lenin described NEP as a temporary step backward (away from socialism) in order to later take two steps forward. From the viewpoint of the Bolshevik leadership, NEP was a transitional "step backward" because of the important roles that "antisocialist" institutions, such as private ownership, private initiative, and capitalist markets, were allowed to play during this period.

The most striking feature of NEP was its attempt to combine market and socialism: Agriculture remained in the hands of the peasant, the management of industry (with the exception of the

¹² *Ibid.*, p. 94.

¹³ Quoted in Dobb, *op. cit.*, p. 130. According to Roberts, *op. cit.*, pp. 36-41, this quote is not reflective of Lenin's true position during War Communism. Instead, Lenin tended to view War Communism as a basically correct movement in the direction of revolutionary socialism, which he was forced to back away from by the strikes and civil unrest of 1920. Roberts points out the pains taken by Lenin during this period to justify the abandonment of War Communism on ideological grounds which would have been unnecessary if War Communism had simply been a temporary wartime measure.

“commanding heights” of industry) was decentralized. Market links between industry and agriculture and between industry and consumer replaced state control of production and distribution. On the other hand, most industrial enterprises were not nationalized. But many of the largest enterprises—the so-called commanding heights—remained nationalized and encompassed about three-quarters of industrial output. In this manner, it was thought that the state could provide general guidance by retaining direct control of the “commanding heights” of the economy—heavy industry, transportation, banking, and foreign trade, while allowing the remainder of the economy to make its own decisions.

The political basis of NEP was the *Smychka*, or collaboration between the Soviet regime (representing the urban proletariat) and the peasant. An important political objective of NEP was to regain the political and economic support of the peasant. Thus the War Communism policy of requisitioning agricultural surpluses had to be abandoned, for the peasant would never ally himself with a regime that confiscated his surpluses. Market agriculture had to be re-established in its place, freeing the peasant both to sell his surpluses freely and to buy industrial products freely.

The *Smychka* strategy represented a fairly significant concession from the Bolshevik leaders whose freedom of action was accordingly severely restricted because they were limited to policies that would not alienate the peasant.) This at times placed them in the tenuous position of having to choose between the support of the peasantry and the attainment of basic party objectives. However, there was even a more fundamental contradiction. The reestablishment of market agriculture would serve to create a commercially minded peasantry and an environment that would reward success and penalize failure. The very success of NEP would require increasing economic differentiation among the agricultural population, and the emergence of a class of relatively prosperous peasants, who would produce the critical market surpluses. Marx had condemned the wealthy and middle peasant as adamant opponents of socialism, but NEP would serve to promote this class. Thus the ideological concession underlying NEP was apparently very great.¹⁴

¹⁴ A quote from Stalin on this point (from the late 1920s after he had adopted his antipeasant stance): “What is meant by not hindering *kulak* farming? [The

NEP Policies

The cornerstone of NEP was the proportional agricultural tax introduced in March of 1921 to replace the War Communism system of requisitions. First paid in kind, and by 1924 in money, it was a single tax, based upon a fixed proportion of each peasant's net produce above his subsistence needs (subsistence being defined primarily according to the number of dependents). The state now took a fixed proportion of surplus production, and the peasant now had an incentive to aim for as large a surplus as possible.

The agricultural tax was the first step in reestablishing a market economy that, in turn, necessitated further measures. Unless the peasant could dispose profitably of his after-tax surplus, he would have little incentive to produce above subsistence. Therefore the state granted the peasant commercial autonomy to sell his output to the buyer of his choice, be it to the state, a cooperative, or a private dealer. This measure required the legalization of private trade, which was again permitted to compete with state and cooperative trade organizations. Now the peasant could market his after-tax surplus at terms dictated by market forces, not by a state monopoly. The resurgence of private trade provided a further incentive for the peasant to market his surplus, for he no longer faced a state supply monopoly, rationing out industrial products to him. Finally, peasants were allowed to lease land and to hire farm laborers, both of which had been forbidden under War Communism.

Within one year, private activity dominated Soviet retail trade and restored the market link between consumer and producer. In 1922–1923, nine-tenths of all retail trading outlets were private, and they handled over three-quarters of the value of all retail trade turnover, with state and cooperative outlets handling the balance.¹⁵ The private trader, or *Nepman* as he was called, was less strongly entrenched in wholesale trade, which remained dominated by state and cooperative organizations.

term *kulak* refers to the prosperous peasant.] It means setting the *kulak* free. And what is meant by setting the *kulak* free? It means giving him power.” I. V. Stalin, *Sochinenia* [Collected works] (Moscow: 1946–1951), vol. XI, p. 275. Quoted in Alexander Erlich, *The Soviet Industrialization Debate, 1924–1928* (Cambridge, Mass.: Harvard University Press, 1960), pp. 172–173.

¹⁵ Dobb, *op. cit.*, p. 143.

NEP also brought about significant changes in Soviet industry. The majority of industrial enterprises were permitted to make their own contracts for the purchase of raw materials and supplies and for the sale of their outputs; whereas during War Communism, the state had officially performed these functions. Small enterprises employing twenty persons or less were denationalized, and a small number of them were returned to their former owners. Others were leased to new entrepreneurs, thereby re-creating a class of small-scale capitalists. The Bolsheviks even granted a limited number of foreign concessions. Denationalization was limited to small-scale enterprises, and the overwhelming portion of industrial production during NEP was produced by nationalized enterprises. The industrial census of 1923 showed that private enterprises accounted for only 12.5 percent of total employment in "census" establishments.¹⁶ In addition only 2 percent of the industrial output of large-scale industry was produced by the private sector in 1924–25.¹⁷

While much of large-scale industry remained nationalized, decision-making throughout industry was decentralized to a great extent. Nationalized enterprises were divided into two categories: the "commanding heights" of the economy—fuel, metallurgy, war industries, transportation, banking, and foreign trade—were not separated from the state budget and remained dependent upon centralized allocations of state supplies. The remaining nationalized enterprises were granted substantial financial and commercial autonomy from the state budget. The latter enterprises were instructed to operate commercially, that is, to maximize profits and to sell to the highest bidder, be it state or private trade. Most important, they were not obligated to deliver output according to production quotas to the state as under War Communism.

The nationalized enterprises of this second category were allowed to federate into trusts which soon became the dominant form of industrial organization during NEP. By 1923, the 478 chartered trusts accounted for 75 percent of all workers employed in

¹⁶ *Ibid.*, p. 142. Census establishments were those employing 16 or more persons along with mechanical power or 30 or more without it. G. W. Nutter, *The Growth of Industrial Production in the Soviet Union* (Princeton, N.J.: Princeton University Press, 1962), pp. 187–188.

¹⁷ Nove, *op. cit.*, p. 104.

nationalized industry.¹⁸ These trusts were given the legal authority to enter into independent contracts. They were to be supervised loosely either by *Vesenkha* (the Supreme Council of the National Economy) or by the *Gubsovnarkhozy* (the provincial economic councils) but their commercial independence was protected in that the state was not allowed to acquire the property or products of a trust except by contractual agreement. In light industry, the trusts were largely independent of state control other than the usual forms of fiscal and monetary intervention. In some key sectors of heavy industry, *Vesenkha* exercised much stricter controls over trusts in the form of specific production and delivery targets. The profits of trusts were subject to property and income taxation in the same manner as private enterprises. The monopoly State Bank controlled trust commercial credit. Although the "commanding heights" enterprises remained within the state budget, they were instructed to operate as profitably as possible to eliminate reliance on subsidies.

NEP was not a command economy. Planning authorities generally provided trusts with "control figures," which were to be used as forecasts and guides for investment decisions. Mandatory output plans were drawn up only in the case of a few key sectors in heavy industry. The limited physical planning and distribution was carried out through the Committee of State Orders (representing the commissariats), which placed orders through *Vesenkha* that, in turn, negotiated the order with the producer trusts. During the major part of NEP, the most important force of economic control and regulation was the Peoples Commissariat of Finance (*Narkomfin*), which exerted its influence through the budget and credit system (the so-called dictatorship of finance). Planning during the NEP period was carried out by a variety of organizations—*Vesenkha*, the State Planning Committee (*Gosplan*, established in 1921), the commissariats, and local authorities. Until the late 1920s, planners primarily limited themselves to forecasting trends as dictated by market conditions. Also there was a notable lack of coordination among the various planning agencies until *Gosplan* established itself as the dominant coordinating planning body after 1927.¹⁹

¹⁸ Dobb, *op. cit.*, p. 135.

¹⁹ Carr and Davies, *op. cit.*, pp. 787–836.

Use of money had been virtually eliminated during War Communism as a result of hyperinflation, and had been replaced by a system of barter and physical allocation. Such a system, however, would have been too clumsy for the new market system of NEP.

To avoid this obstacle, the Soviets reintroduced the use of money with the reopening of the State Bank in 1921 for the expressed purpose of aiding the development of the economy. Both public and private enterprises were encouraged to deposit their savings in the State Bank: limitations on private bank deposits were removed and safeguards were established to protect such deposits from state confiscation. A new stabilized currency, the chervonets, was issued by the State Bank in 1921, a balanced budget was achieved in 1923–1924, a surplus in 1924–1925, and the old depreciated paper ruble was withdrawn from circulation in the currency reform of May 1924.

Thereby a stable Soviet currency was created, which, for a time, was even quoted on international exchanges. Money transactions between state enterprises replaced earlier barter transactions.

The Economic Recovery of NEP

Just as War Communism provided the means for waging the civil war, NEP provided the means for recovery from the war, and in this sense, it was an important strategic success for the Soviet leadership. The economic recovery during NEP was impressive (Table 7).

In 1920, production statistics (Table 7) indicate the low level of economic activity that existed at the end of War Communism. Industrial production and transportation were both only one-fifth of the prewar level. The shortage of fuel threatened to paralyze in-

Table 7 **Production Indexes, USSR: 1913, 1920, 1928 (1913 = 100)**

	Industry	Agriculture	Transportation
1913 ^a	100	100	100
1920	20	64	22
1928	102	118	106

^a The 1913 figures refer to interwar territory of the USSR.

SOURCES: G. W. Nutter, "The Soviet Economy: Retrospect and Prospect," in David Abshire and Richard V. Allen, *National Security: Political, Military, and Economic Strategies in the Decade Ahead*, (New York: Praeger, 1963), p. 165.

dustry and transportation, and industry was living on dwindling reserves of pig-iron. The food shortage led to exhaustion and demoralization of the labor force. Agricultural production was 64 percent of the prewar level.

In 1928—at the eve of the First Five Year Plan and the end of NEP—the statistics provide a striking contrast: both industry and transportation had moderately surpassed their prewar levels, while agriculture was almost 20 percent above its prewar level. Although the NEP recovery was impressive, one should note that high rates of growth during recovery periods are to be expected once a suitable economic environment is established. The NEP policies provided this suitable framework for recovery.

The End of NEP

The high level of NEP is usually dated to 1926 when prewar production levels were generally surpassed, according to Soviet statistics.²⁰ The absolute growth of the nonagricultural private sector stopped in 1926.²¹ At this time all seemed to be going well; yet two years later NEP was abandoned in favor of a radically different system of state central planning, collectivization of agriculture, and nationalization of industry and trade. This radical turn of events seems puzzling in view of the impressive NEP successes. Why was NEP abandoned? Several considerations stimulated the decision.

First, a large number of party members viewed NEP as a temporary and unwelcome compromise with class enemies. Now that the state was stronger, they argued, the offensive against class enemies could be resumed.²² Second, the Soviet authorities feared that economic policy might become dominated by the growing numbers of prosperous peasants and Nepmen. Increasingly, policies were being dictated to suit the needs of the peasants, not the objectives of the state. A prime example of this was the "Scissors Crisis" of 1923, which forced the Soviet regime into the paradoxical

²⁰ Nove, *op. cit.*, p. 94. Recent recalculation of the Soviet figures for the 1913 to 1927–1928 period show that these official figures may overstate the speed of recovery during the NEP period. See on this M. E. Falkus, "Russia's National Income, 1913: A Revaluation," *Economica*, vol. 35, no. 137 (February 1968), 61.

²¹ Nove, *op. cit.*, p. 137.

²² *Ibid.*, p. 138.

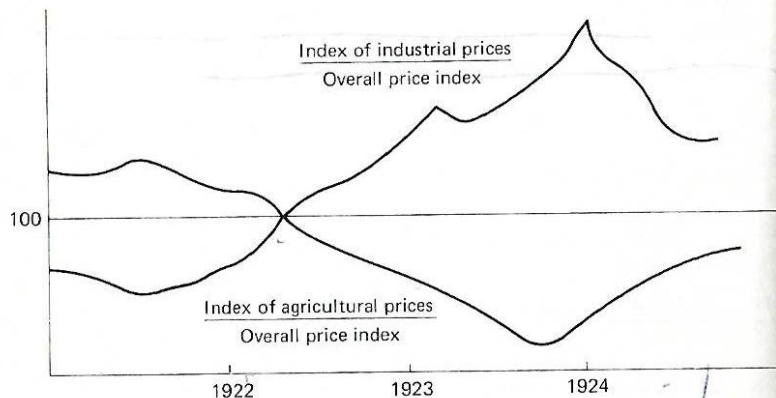
*Cause de
Terror*

stance of favoring private agriculture over socialist industry. The Scissors Crisis merits a slight digression at this point.

According to Soviet figures, the total marketed surplus of agriculture in 1923 was 60 percent of the prewar level with grain marketings falling even below this figure. On the other hand, industrial production was only (35) percent of the prewar level.²³ The more rapid recovery of agriculture placed upward pressure on industrial prices relative to agricultural prices. The different sectoral recovery rates were not the sole determinants of relative price movements. A portion of the already limited output of industry was being withheld from the market by the industrial trusts, who were using their monopoly power to restrict trust sales to raise prices. The net result was an even more rapid rise of industrial prices relative to agricultural prices. The relative price movements between early 1922 and late 1923 (Figure 1) take on the shape of an open pair of scissors, from whence came the term "Scissors Crisis."

The Soviet authorities viewed the opening price scissors with alarm, for they expected the peasant to react by refusing to market his surpluses as his terms of trade with the city fell. During the prewar period, the Russian peasant marketed (outside of the village)

Figure 1 The Scissors Crisis



SOURCE: Maurice Dobb, *Soviet Economic Development Since 1917* (London: Routledge & Kegan Paul, 1960), p. 164. Based on figures of S. Strumilin, in *Na khoziastvennom fronte* [On the economic front].

²³ Cited in Dobb, *op. cit.*, pp. 161–162.

on the average 30 percent of his output. In early 1923 before the price scissors had opened sharply, he marketed about 25 percent, and Soviet authorities feared a further drop.²⁴ It is uncertain what did happen to peasant marketings as the scissors opened, since statistics for this early period are difficult to find. A student of the scissors crisis, James Millar, suggests that the Bolsheviks mistakenly expected peasant marketings to decline as agricultural prices fell in relative terms.²⁵ In fact, Millar argues, the Russian peasant had traditionally responded to a decline in the terms of trade with the city by selling more to the city in order to maintain his standard of living. Grain marketing statistics for the Ukraine do, however, suggest a reduction in peasant marketings between 1923 and 1925, but such evidence is quite fragmentary,²⁶ and it is difficult to determine whether Millar's or the Soviets' perception of peasant behavior is correct.

Rightly or wrongly, the Soviet government viewed this development as a threat to the NEP recovery, for the industrial worker had to be fed. The regime's reaction to a similar problem in 1918 had been to requisition agricultural surpluses, which resulted in a costly reduction of agricultural output; a return to requisitioning would jeopardize the progress made by NEP between 1920 and 1923. Further, the government feared (probably irrationally) an insufficient aggregate demand if the Scissors Crisis continued: if the peasant refused to market his output, peasant demand for industrial commodities would shrink, thereby causing an eventual glut of industrial commodities, which would also threaten the industrial recovery.

In essence, the Scissors Crisis forced the Soviet leadership to choose between two alternatives: to abandon NEP and return to requisitioning, or to retain NEP and to favor agriculture over industry to preserve the tenuous peace with the peasantry. More on this below.

A third source of dissatisfaction with NEP was the conviction

²⁴ *Ibid.*, p. 162.

²⁵ James R. Millar, "A Reformulation of A. V. Chayanov's Theory of Peasant Economy," *Economic Development and Cultural Change*, vol. 18, no. 2 (January 1970), 225–227.

²⁶ Jerzy Karcz, "Thoughts on the Grain Problem," *Soviet Studies*, vol. 18, no. 4 (April 1967), 407.

at that time that economic recovery had reached its limits, and that further advances could be achieved only by expanding the capacity of the economy, that is, by accumulating capital. NEP statistics revealed that much capacity had been lost as a result of World War I and the civil war: the capital stock of heavy industry as of 1924 was estimated to be 23 percent below its 1917 peak, and this capital equipment was, on the whole, old and outmoded. In 1924 the output of steel, a principal component of investment equipment, was 23 percent of 1913 output.²⁷ Thus industrial capacity had been lost between 1917 and 1924 and little had been done to replace it, although the building of socialism in the Soviet Union and expansion of military capacity were priority objectives of the Soviet state. After eight years of Soviet rule, investment and military commodities accounted for the same proportion of industrial output as they had prior to the revolution. For example, 28 percent of manufacturing net output was devoted to heavy industry in 1912, and this share had only risen to 29 percent by 1926.²⁸

In spite of their dissatisfaction with the course of industrial development during the 1920s, the Soviet leadership viewed its hands as tied as long as NEP was retained. They feared that a drive to increase industrial capacity, that is, to increase the share of heavy industry, would reduce the availability of and consequently raise the prices of manufactured goods in the short run, and would further turn the terms of trade against agriculture, thus creating a further agricultural supply crisis that would impede industrialization.

Fourth, the NEP period demonstrated to the Soviet leadership its inability to make policy in a market environment. The handling of the Scissors Crisis described above is a classic case in point. Although the scissors probably would have closed by themselves when (and if) the peasant reduced his marketings, the Soviet government actively intervened directly to improve the peasant's terms of trade: first, maximum selling prices were set for industrial products and price cuts for selected products were ordered. Second, imports of cheaper industrial commodities were allowed to enter the country. Third, the State Bank restricted the credit of the industrial trusts to force them to unload excess stocks. The substan-

²⁷ Erlich, *op. cit.*, pp. 105–106.

²⁸ Paul Gregory, *Socialist and Nonsocialist Industrialization Patterns* (New York: Praeger, 1970), p. 28.

tial closing of the scissors (Figure 1) by 1925 indicates the apparent success of these measures.

However, the setting of maximum industrial selling prices in a period of rising wage income had an important side effect: an excess demand for industrial products was soon created, which could not be eliminated through price increases as ceilings had been set. Despite this excess demand and its resulting shortages, no formal rationing system was in effect, which meant that lucrative profits could be made by the Nepmen by selling at prices in excess of ceiling prices. This general shortage of industrial commodities has been called the "goods famine," and the peasant—because of his isolation from the market—was hit especially hard.²⁹ Despite the efforts of the Peoples' Commissariat for Trade to sell in the village at the established ceiling prices, the peasant had to buy primarily from the Nepman, who sold at much higher prices. Thus the peasant, despite the nominal closing of the scissors, still lacked incentive to market his surplus. In fact, there is some evidence to suggest that grain marketings were falling as the scissors were closing.³⁰ The net marketings of grain in 1926–1927 were between 50 and 57 percent of prewar levels although grain output was close to the prewar level.³¹

The state's pricing policy had another serious side effect that eventually destroyed the market orientation of NEP. Initially two sets of industrial prices coexisted side by side: the higher prices of the Nepmen who sold to a great extent in the villages, and the official state ceiling price. The Nepman soon came to be regarded as a black-marketeer and enemy of the state. Beginning in late 1923, policies were adopted to systematically drive out the Nepmen and widen the state's control over trade. This objective was pursued through the control of industrial raw materials and goods produced by state industry, surcharges on the rail transport of private goods, and taxes on profits of Nepmen. In 1926, it became a crime punishable by imprisonment and confiscation of property to make "evil-

²⁹ Karez, *op. cit.*, 419.

³⁰ The marketed share of grain for the Ukraine between 1923–1924 and 1925–1926 was: 1923–1924 = 26%, 1924–1925 = 15%, 1925–1926 = 21%.

³¹ R. W. Davies, "A Note on Grain Statistics," *Soviet Studies*, vol. 21, no. 3 (January 1970), 328. The controversy over grain marketings during the late 1920s will be discussed in Chapter Seven.

intentioned" increases in prices through speculation.³² Finally in 1930, private trade was declared a crime of speculation. Similar phenomena can be noted in agriculture. After 1926-1927, the state lowered grain procurement prices (which eventually caused peasants to divert production to higher priced crops and livestock), and a gap between state procurement prices and private purchase prices developed. Again the private purchaser was systematically forced out of the agricultural market by the state. This trend culminated in 1929 when compulsory delivery quotas replaced the agricultural market system.

Such actions, however, effectively signaled the end of NEP, for the market upon which NEP primarily depended for direction was no longer functioning. Prices were set by the state and no longer reflected supply and demand. The economy was without direction, either from market or plan—a situation that was not to be tolerated long.

A final source of dissatisfaction with NEP relates to national security problems. The fear of imperialist conspiracies, England's breaking off of diplomatic relations in 1927, and concern over Japanese activities in the Far East prompted the Soviet leaders to realize that rapid industrialization would be required to meet the security needs of the Soviet Union and that NEP was not well suited to generate such rapid industrialization.³³

THE PRECEDENTS OF THE 1920s

During the 1920s, the economic problem of resource allocation was dealt with using two radically different economic systems. The first—War Communism—relied heavily upon command elements, whereas the second—NEP—attempted to combine market and command methods. The experiences of this early period tended to establish precedents that had a visible and lasting impact upon the eventual organizational structure of the Soviet planned economy. These precedents are introduced at this point as recurring themes throughout the ensuing chapters.

³² Nove, *op. cit.*, pp. 137-138.

³³ *Ibid.*, pp. 121-122.

First, we emphasize the Soviet experiences with central planning during the 1920s. War Communism indicated that the market cannot be eliminated by fiat, for, unless an enforceable plan is introduced in its place, the economy will be without direction other than that provided by the "sleepless, leather-jacketed commissars working round the clock in vain effort to replace the market."³⁴ The "paper" planning of War Communism was shown to be virtually no plan at all, and unless planners have detailed and coordinated information from the enterprise level and up, and the political and economic muscle to ensure compliance, planning will be ineffective. A further precedent in the area of planning was the importance of "shock" tactics in a world of deficient information and imperfect control. Thus the concentration of resources on priority projects to eliminate bottlenecks was seen as a way to give guidance to the planned economy in accordance with politically determined priorities. It was also noted that the success of "shock" tactics depended upon their limited application. This precedent can be seen in the "storming" tactics and the practice of singling out a few key branches for preferential treatment that persist until today. The 1920s also introduced the issue of central versus regional direction, which was to become a recurring theme throughout later periods. The friction between central and regional planning authorities (the *Glavki* and the *Gubsovnarkhozy*) throughout the 1920s revealed an imperfect harmony of national and regional interests that persists to the present period. Thus the vacillation between ministerial and regional planning, a particularly important issue during the Khrushchev years, had its roots in the 1920s.

Second, the Soviet leadership's experiences with peasant agriculture during the 1920s also set important precedents. It was widely feared that peasant agriculture could be a thorn in the side of rapid industrialization, for the success of industrialization was seen as being dependent upon peasant marketings. It was thought that attempts on the part of the state to extract surpluses from the peasantry without offering economic incentives in return would be met by reductions in agricultural output and/or marketings. The Soviet leaders' apprehension was the impetus for the introduction of force into the countryside with the collectivization of agriculture

³⁴ *Ibid.*, p. 74.

in 1929 and provides an explanation for the continuing reluctance of the leadership to reinstate individual peasant farming (other than the small household plot) despite the often disappointing performance of collective agriculture.

A third important precedent of this early period was the development of an ingrained mistrust of the market that persists to the present. Most of the experiences with the market during the late NEP period were negative. The predominant trusts utilized their monopoly positions to restrict output and withhold stocks. The Nepmen sold at high market prices despite the efforts of state pricing authorities to set limits on industrial prices. The peasant withheld his output whenever he deemed market incentives insufficient. For these and other reasons, the market was virtually abolished after 1929 with only minor exceptions such as the collective farm market and, in part, the labor market. It is in this context that one can better understand the Soviet leadership's inbred opposition to fluctuating prices, output and input decisions based on profit maximization, and other market phenomena that persists to the present.

Viewing this antimarket bias in perspective, one could perhaps argue that it was irrational and stemmed from an insufficient understanding of the forces of supply and demand. On the other hand, the bias might be viewed as a rather keen perception of a development problem not always realized: Often during periods of rapid industrialization the interests of the state may conflict with the interests of individual consumers and producers—especially if the state lacks the means and expertise to manipulate the market; the individual wishes to consume, while the state wishes to save, for example. Could one not then argue that the most rational course of action is to eliminate, or at a minimum, substantially modify the market during early phases of development?

A fourth precedent, which can be related directly to the experiences of War Communism labor policies, was the evident necessity of freedom of choice of occupation. If the worker is to be productive, he must be allowed to choose his occupation on the basis of economic incentives. (The militarization of labor that was attempted under War Communism proved to be an ineffective tool for allocating labor. Not only must wages be differentiated, but the resultant money income must have meaning in terms of real purchasing power; i.e., a consumer goods market must exist. The labor

experiences of War Communism set an important precedent in favor of free occupational choice—a precedent followed in subsequent periods except when temporarily abandoned during the late 1930s and 1940s in response to the tremendous turnover of the inexperienced factory labor force and wartime emergency.

The year 1928 found the Soviet Union on the eve of the Five Year Plan period—about to embark on an ambitious program of forced industrialization. It was during this period that the Soviet command system evolved in large part to its present form. The period that we have just discussed—from the Revolution to the First Five Year Plan—is important because of its impact on this Soviet command system. One might in fact argue that War Communism and NEP represented a practical learning experience for the Soviet leadership. The next chapter describes another (more theoretical) learning experience that also had a significant impact on the evolution of the Soviet command system—the Soviet Industrialization Debate.

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CHAPTER THREE

The Soviet Industrialization Debate (1924–1928)¹

An extraordinary debate on how to initiate economic development took place in the Soviet Union between 1924 and 1928 that anticipated Western discussion on the same topic by some twenty-five years. Its participants ranged from leading party theoreticians to nonparty economists, and its audience included almost everyone of political and intellectual importance in the Soviet Union. The most remarkable feature of this debate was that it raised a multitude of questions concerning development strategy—issues of balanced growth versus unbalanced growth, agricultural savings, the proper scope of planning, taxation, and inflation to promote development—which are still widely debated among Western students of economic development.² The debate focused upon the alternative development strategies open to the Soviet economy in the late 1920s. An

¹ Our discussion of the Soviet Industrialization Debate is drawn primarily from the following sources: Alexander Erlich, *The Soviet Industrialization Debate, 1924–1928* (Cambridge, Mass.: Harvard University Press, 1960); Nicolas Spulber, *Soviet Strategy for Economic Growth* (Bloomington: Indiana University Press, 1964); Nicolas Spulber, ed., *Foundations of Soviet Strategy for Economic Growth* (Bloomington: Indiana University Press, 1964); Alexander Erlich, "Stalin's Views on Economic Development" in Ernest Simmons, ed., *Continuity and Change in Russian and Soviet Thought* (Cambridge, Mass.: Harvard University Press, 1955), pp. 81–99.

² Erlich, *Soviet Industrialization Debate*, *op. cit.*, p. xv.

important point to note is that Stalin, who actually made the eventual choices of central planning and collectivization in 1928 and 1929, respectively, was an observer of and participant in this debate.

In the present chapter, we consider the major issues of the Soviet Industrialization Debate, without undue emphasis on details and biographical information. The debate on the scope and objectives of planning will be considered in the next chapter. Here, we limit ourselves to the views of spokesmen for three important factions: Lev Shanin and N. I. Bukharin representing different views within the right wing of the Bolshevik party, and E. A. Preobrazhensky, the economic spokesman of the left wing of the party. We omit mention of significant contributors such as Bazarov, Rykov, Sokolnikov, and many others not because they are unimportant but because of space limitations and because the three views presented cover a broad spectrum of the debate subsuming many of the ideas of other participants. A mathematical appendix at the end of the chapter summarizes the three programs and supplements the textual exposition.

THE SETTING OF THE SOVIET INDUSTRIALIZATION DEBATE

The economic recovery of NEP reached its peak in 1926. The extensive loss of industrial capacity during World War I had not been recovered by the limited industrial investment during NEP. Therefore, industrial capacity during the late 1920s was probably below prewar levels. The economic instability of the 1920s—the “scissors crisis” and the “goods famine,” the desire for rapid industrialization, and concern with defense all pointed to the need for massive capital accumulation in industry.³ Yet could this capital accumula-

³ The growth models developed during this period by V. A. Bazarov and V. G. Groman predicted a declining growth rate as the Soviet economy approached its prewar equilibrium. For a discussion of these models, see Leon Smolinski, “The Origins of Soviet Mathematical Economics,” in Hans Raupach et al., eds., *Yearbook of East-European Economics*, Band 2 (Munich: Gunter Olzog Verlag, 1971) p. 144.

tion occur without ruinous inflation? This was the inflationary imbalance dilemma that initially sparked the Soviet Industrialization Debate.

The Soviet inflationary imbalance of the 1920s can be described in terms of some elementary macroeconomic concepts: the rapid NEP recovery had brought aggregate demand back close to the capacity limits of the economy. In fact, given the loss of industrial capital stock and the limited net investment of the 1920s, the fact that industrial output had regained prewar levels indicates that industrial capacity was probably already being overtaxed by the recovery of the mid-1920s. (If) in this situation, considerable industrial investment was undertaken to raise industrial capacity, additional income would be created through the investment multiplier thereby generating severe inflationary pressures. This was the Soviet inflationary imbalance in a nutshell: industrial investment was required to raise industrial capacity; yet the capacity-creating effect of investment would be felt only after a period of time. The income-generating effect of investment, however, would be felt almost immediately, thus creating an inflationary problem.

If this inflation were to occur, the peasant would again be alienated by the increasing prices of manufactured goods, which would rise rapidly as capacity was diverted to producing investment goods. The terms of trade would again move against agriculture and another scissors crisis would ensue. The *smychka* basis of NEP would be jeopardized, and some alternative system would have to be substituted to feed the industrial workers.

A second alternative, a slow rate of capital accumulation, would avoid excessive inflation and preserve the alliance with the peasant. On the other hand, the basic problem—the low capacity of the economy—would not be met, thereby keeping the economy on the brink of inflation without achieving long-run objectives.

→ This inflationary-imbalance dilemma was the spark that ignited the Soviet Industrialization Debate in 1924. The scope of the debate then broadened to include far-reaching discussions of the long-run development alternatives available to a growing economy. The fact that the relevance of the issues raised by the Soviet Industrialization Debate is not limited to the Soviet Union of the 1920s strengthens our conviction that the problems facing developing

economies are similar irrespective of the nature of the economic system utilized during the development process.

SECTOR PRIORITIES AND MARXIAN DYNAMICS

The participants in the Soviet Industrialization Debate addressed themselves to the proper way to industrialize the Soviet economy. The debate centered to a great extent on sectoral growth strategies, that is, on whether industry or agriculture should be favored or whether sectoral growth should be balanced. This same question has been widely discussed by Western economists in the post-war period and has been called the “balanced versus unbalanced growth controversy.”⁴

In view of the pervasive ideological impact that Marxian economics had upon the Soviet Industrialization Debate—all figures involved were interested in “building socialism,” all agreed that the state should own the means of production at least in industry, and all used a Marxist framework to support their programs—we begin our discussion of the Soviet debate by considering Marx’s views on sectoral priorities. As it turns out, they are fairly general: If one subdivides the total economy into two broad sectors—the investment goods sector (which roughly corresponds to heavy industry) and the consumer goods sector (which roughly corresponds to agriculture and handicraft), Marx concludes that the economy will expand (grow) only if the output of investment goods exceeds the capital replacement needs of both sectors. According to Marx, this is the minimum condition that a growing economy must meet. Once it is met, growth can occur along a variety of sectoral expansion paths. However, net investment (upon which the economy depends for growth) would depend upon the capacity of the investment goods sector relative to the overall economy. Thus the higher the relative share of the investment goods sector in overall output, the higher the growth rate of the economy.⁵

⁴ Benjamin Higgins, *Economic Development* (New York: Norton 1959), pp. 396–408.

⁵ Erlich, *Soviet Industrialization Debate, op. cit.*, pp. 147–148.

**PREOBRAZHENSKY —
UNBALANCED GROWTH
OF INDUSTRY**

E. A. Preobrazhensky, the vocal spokesman of the left wing of the Bolshevik Party, took up where Marxian dynamics left off and argued that a discontinuous spurt in the output of investment goods was required in order to attain rapid industrialization.⁶ Preobrazhensky envisioned two possible courses of action at the end of the 1920s: The Soviet economy could either continue to stagnate or even retrogress to lower levels of capacity, or a "big push" to expand capacity could be undertaken. In taking this latter step which he supported, halfway measures would not be advisable, for a spurt below the crucial minimum effort of investment would be self-defeating.

Preobrazhensky based this conclusion upon several factors. It was his opinion that the inflationary imbalance had two causes: the low capacity of the industrial sector, and a loss of saving ability—the latter being a consequence of institutional change in agriculture. Prior to the Revolution, the peasant had been forced to "save" in real terms a substantial portion of his output, which was delivered either to the state or to the landlord.⁷ This saving limited his capacity to purchase industrial products. The Revolution, however, established him as a free proprietor. Rent payments were eliminated and agricultural taxes (in 1924–1925) were less than one-third of prewar obligations.⁸ The peasant became accustomed to receiving industrial commodities in return for the sale of his agricultural surplus. This caused, according to Preobrazhensky, a "drastic disturbance of the equilibrium between the effective demand of the village and the marketable output of the town."⁹ That is, the effective demand of the peasant had increased substantially

⁶ Preobrazhensky's views are outlined in his famous work: *Novaia Ekonomika* [The new economics], which is available in English translation. See E. Preobrazhensky, *The New Economics*, Brian Pierce, trans. (Oxford: Oxford University Press, 1964).

⁷ This view is supported by Gerschenkron's analysis of the objectives of the 1861 Emancipation Act (see Chapter 1).

⁸ Erlich, *Soviet Industrialization Debate*, *op. cit.*, p. 35.

⁹ *Ibid.*, p. 35.

without a substantial increase in industrial capacity—thus creating an inflationary gap.

Preobrazhensky suggested that net investment in industry must be raised significantly to close the gap between effective demand and capacity and that the inflationary effects of this action must be neutralized by altering the structure of demand significantly away from consumption and toward saving. Once the new industrial capacity had been created, private consumption could again be free to approach its previous position.

As far as the sectoral allocation of this net investment was concerned, Preobrazhensky argued for unbalanced growth to favor industry in general and heavy industry in particular on the grounds that the short-run benefits of investment in agriculture and light industry would be well outweighed by the long-run benefits of investment in capacity-expanding heavy industry. Thus he emphasized that investment-goods and consumer-goods industries must be arranged in "marching combat order" in keeping with the Marxian theory of economic dynamics.¹⁰

¹⁰ This conclusion follows the Fel'dman growth model of 1928. Employing Marxian definitions and accepting Marx's division into an investment goods sector (Department A) and a consumption goods sector (Department B), G. A. Fel'dman developed a mathematical model for the USSR State Planning Commission that made a stronger case for unbalanced growth in favor of Department A than the original Marxian model of expanded reproduction outlined above. Fel'dman made several implicit and explicit assumptions in deriving his model: (1) that the state had the power to control the division of total investment between Department A and Department B; (2) that once investment had been made in one sector, this capital could not be shifted later for use in the other sector; (3) that the economy was closed to trade with the outside world; (4) (implicitly) that the state controlled aggregate consumption and savings rather than individuals (given a particular aggregate investment goal, the state could make saving equal that amount); and (5) that capital was the sole limiting factor of production, and that labor was overabundant.

Given these assumptions, Fel'dman concluded that the rate of growth of GNP in the long-run depends upon the proportion of output of the investment goods sector that is ploughed back into that sector. If a substantial portion of the Department A output goes into the consumer goods sector, then the rate of growth of total output will be small. The long-term rate of growth of consumption also depends upon reinvestment in the investment goods sector. (A high reinvestment ratio will yield high rates of growth of consumption in the long-run; whereas a low reinvestment ratio will yield a relatively high short-term rate and a relatively low long-term rate of growth of consumption. That is, current consumption must be sacrificed in order to

In arguing in favor of a "big-push," Preobrazhensky stressed that moderate increases in the capacity of the capital goods sector would be self-defeating: the technological gap between the USSR and the advanced capitalist powers had become so wide that it was now impossible to adopt advanced technology gradually. Second, he echoed a view widely held at the time that the replacement arrears of the Soviet economy had become so immense that a significant increase in investment was required just to keep industrial capacity from falling.

Foreign trade, according to Preobrazhensky could, to some extent, act as a substitute for domestic capital production by importing foreign capital. However, the Soviets' capacity to import was limited by the lack of foreign credits (which would probably not be offered by the capitalist foes of the USSR) and by the small size of

obtain a maximum rate of growth of both output and consumption in the long-run. In sum, Fel'dman's model concludes that the bulk of investment must flow into the capital goods sector at the expense of consumer goods sectors if the growth rate of consumption and GNP is to be maximized in the long run. The partial derivation of the Fel'dman model is given below:

Symbols:	I : total investment
	F : investment allocated to A
	C : total consumption
	α : portion of I allocated to A
	V_1 : capital coefficient of A
	V_2 : capital coefficient of B
	t : time subscript

Model:

$$I_t^i = \alpha I_t \quad (1)$$

$$I_t - I_{t-1} = \frac{\alpha I_{t-1}}{V_1} \quad (2)$$

$$I_t = \left(1 + \frac{\alpha}{V_1}\right) I_{t-1} \quad (3)$$

$$= I_0 \left(1 + \frac{\alpha}{V_1}\right)^{t-1} \quad (4)$$

$$C_t - C_{t-1} = \frac{(1 - \alpha) I_{t-1}}{V_2} \quad (5)$$

$$C_t - C_{t-1} = \frac{I_0(1 - \alpha) \left(1 + \frac{\alpha}{V_1}\right)^{t-2}}{V_2} \quad (6)$$

See Evsey Domar, "A Soviet Model of Growth," in *Essays in the Theory of Economic Growth* (New York: Oxford University Press, 1957), pp. 223-261.

the exportable agricultural surplus. However feasible, he argued that a foreign trade monopoly would be essential to insure that machinery and not luxuries would be imported. In any case, considering the massive capital requirements of the Soviet economy in the 1920s, Preobrazhensky felt that the foreign sector could only play a limited role in the Soviet capacity build-up.

The long-run payoff of Preobrazhensky's policy of one-sided reinvestment in the capital-goods sector would be an enhanced capacity to produce manufactured consumer goods and industrial farm machinery. Yet he recognized that it would take years for this to happen:

... a discontinuous reconstruction of fixed capital involves a shift of so much means of production towards the production of means of production, which will yield output only after a few years, that thereby the increase of the consumption funds of the society will be stopped.¹¹

To dampen the interim inflationary pressures, Preobrazhensky proposed a system of primitive socialist accumulation, which was to replace the market so as to force the economy to save more for capital investment than it would have had the market prevailed. Instead of the market, state trade monopolies would set prices. By purchasing at low delivery prices and then selling at higher retail prices, the state would be able to generate a form of profit or forced saving (affecting a downward shift in the consumption function in real terms) that would reduce inflationary pressures. Preobrazhensky further suggested that during the period of primitive socialist accumulation, the main burden of industrialization should be placed on the peasantry in the form of low state purchase prices and high manufactured consumer goods prices, thereby extracting forced savings through a reduced peasant living standard.

In addition to his ideological preference for industry, Preobrazhensky chose to burden the peasants because of the high potential of their saving capacity as exhibited prior to the Revolution, and because of peasant agriculture's ability to be independent of industry. The overall purpose of primitive socialist accumulation was

¹¹ Quoted in Erlich, *Soviet Industrialization Debate*, op. cit., pp. 56-57.

accumulated
primitive
socialist

to let the state, not private individuals, decide how much would be saved. In doing so, the state would try to equate real savings (composed of both voluntary and involuntary savings) with the output of the capital goods sector (real investment).

Preobrazhensky clearly recognized the dangers inherent in primitive socialist accumulation. Given the large volume of savings that had to be extracted from agriculture, extremely low agricultural purchase prices would have to be set. The peasant would again be faced with deteriorating terms of trade and would withdraw from the market, alienated from the Soviet regime. This was the weakest point of his program and proved the focus for strong attacks by Preobrazhensky's opponents. How was the industrialization drive to be sustained if agricultural supplies were not available?¹²

SHANIN—UNBALANCED GROWTH OF AGRICULTURE

Lev Shanin, a representative of the extreme right wing of the Bolshevik Party, favored a program of unbalanced growth emphasizing agriculture within an essentially free market environment. The inflationary imbalance of the mid-1920s also provided the point of departure for Shanin. In view of this imbalance, Shanin thought that the Soviet economy should adopt a short-term horizon in planning policy. If massive investments were made in heavy industry with its long gestation periods, demand-creating income would be released without a parallel increase in capacity except in the long run, and by that time it would be too late. Thus, Shanin empha-

¹² Stalin's solution to this dilemma—collectivization of the peasantry, which eliminated the peasant's freedom to dispose of surpluses—did not occur to Preobrazhensky. Several years after the collectivization decision, Preobrazhensky declared in a speech: "Collectivization—this is the crux of the matter! Did I have this prognosis of the collectivization? I did not." Quoted in Erlich, *Soviet Industrialization Debate*, op. cit., p. 177. Erlich adds to this: "He [Preobrazhensky] was careful not to add that neither did Stalin at the time when the industrialization debate was in full swing. And he was wise not to point out that the decision to collectivize hinged not on superior intellectual perspicacity but on the incomparably higher degree of resolve to crush the opponent. . . ."

sized the income-generating side of capital investment, whereas Preobrazhensky emphasized its capacity-creating aspect.

The difficult transition from NEP recovery to new construction of capacity could be smoothed, according to Shanin, by adopting an agriculture-first policy. There were several reasons for this conclusion.

(First), Shanin argued that the short-term increment in real output to be derived from an additional ruble of investment (the marginal output-capital ratio) in agriculture far exceeded that of industry, especially in view of agriculture's surplus population and its low capital-intensity.¹³

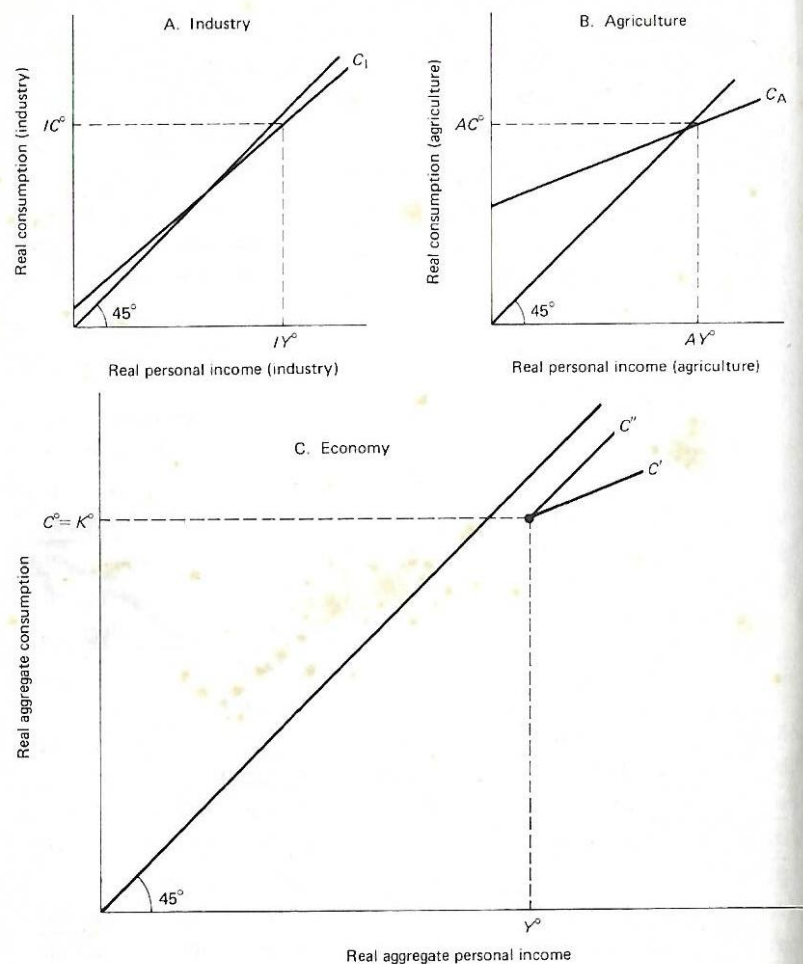
(Second), Shanin believed that there was a higher propensity to save in agriculture than in industry. According to this assumption, aggregate savings (a crucial factor in an inflation-prone economy) would be enhanced by a redistribution of money income in favor of agriculture.¹⁴ Using these two assumptions, Shanin derived his agriculture-first policy.

Shanin presented his arguments by contrasting two alternative investment programs; one channeling investment into industry, the other channeling investment into agriculture. By investing a given amount in agriculture, a relatively large increase in capacity would be generated because of agriculture's low marginal capital-output ratio. In addition, the increased investment in agriculture would increase agricultural incomes, and because of the high marginal propensity to save in agriculture, this increase in income would create a relatively large amount of incremental saving and inflationary pressures would be reduced. On the other hand, an equivalent amount of investment in industry would not only generate a smaller increase in capacity but would also fail to create as large an increase in saving because of the high marginal propensity to consume of the industrial worker.¹⁵

¹³ Lev Shanin, "Questions of the Economic Course," in Spulber, ed., *Foundations of Soviet Strategy*, op. cit., p. 219.

¹⁴ *Ibid.*

¹⁵ The accompanying graphs illustrate Shanin's argument: Part A shows the consumption function of industrial workers (C_I) with a high marginal and average propensity to consume out of personal income. Industrial personal income in the mid-1920s is represented by IY^0 , which yields a consumption level of IC^0 for industry. The consumption function of agriculture (C_A) in Part B is drawn to have a low marginal but high average propensity to con-



sume at the initial agricultural income level (AY^0) of the mid-1920s. The agricultural consumption level is AC^0 .

The aggregate personal income of the economy in the mid-1920s is Y^0 (in Part C), which is the sum of IY^0 and AY^0 (from Parts A and B). Aggregate consumption is C^0 , which is the sum of IC^0 and AC^0 (from Parts A and B). This consumption level is assumed to equal the real output of consumer goods of the two sectors operating at full capacity, which is denoted by K^0 .

The graphs can be used to support Shanin's invest-in-agriculture policy: Because of agriculture's smaller marginal capital-output ratio, agricultural investment would tend to raise capacity (K) more than would industrial investment. In this manner, inflationary pressures in the consumption goods sector would be eased, for the additional investment would raise personal income and consequently consumption—hence the necessity to raise capacity. Second, because of the lower marginal propensity to consume within the agricultural sec-

According to Shanin, two benefits would be derived from investment in agriculture. First, the capacity of the economy would be increased by a larger amount, in a shorter period of time, thereby ameliorating the short-term inflationary imbalance. Second, the creation of additional income in agriculture would generate a larger amount of incremental saving that could be used to finance additional investment without inflation.

Finally, Shanin emphasized the benefits to be gained from foreign trade. By trading according to its comparative advantage in agriculture, the Soviet Union could exchange agricultural products for industrial capital equipment thereby building up the capital stock of industry while at the same time avoiding the inflation that would have occurred had the investment initially been in industry.¹⁶

Shanin envisioned that his policies would have to be carried out within an essentially free market environment to insure the support of the peasantry and thereby the efficient utilization of investment in agriculture. He was sufficiently realistic to see that his proposals would have to be altered in the case of an imminent military threat, which would require the short-run enhancement of industrial capacity irrespective of the economic consequences. He also saw that certain industrial investments such as in transportation would be required in order to carry out his agricultural programs.¹⁷ Therefore, industrial investment could not be neglected entirely. Another circumstance mitigating against the full-scale adoption of his agriculture-first program would be the exhaustion of foreign markets for Soviet agricultural products. Nevertheless, he minimized the importance of these exceptions, and did not allow them to materially alter his main conclusions.

In the long run, after the initial inflationary imbalance had been eliminated, Shanin proposed a shift in emphasis toward industry,

for, more savings could be generated by investing in agriculture, thereby raising agricultural income. As agricultural income rises, the economy would expand along the C' consumption function (which tends towards the marginal propensity to consume of agriculture). If investment had been in industry, the economy would have expanded along C'' , which tends toward the higher marginal propensity to consume of industry. In this manner, Shanin's invest-in-agriculture policies allow the economy to expand through additional investment without inflation.

¹⁶ Erlich, *Soviet Industrialization Debate*, *op. cit.*, pp. 140–141.

¹⁷ *Ibid.*, p. 132.

a shift toward reinvesting in capital goods that could be now accomplished free of inflationary pressures. At this time, the "building of socialism" could begin in earnest unhindered by short-term inflationary problems.

BUKHARIN—BALANCED GROWTH

According to N. I. Bukharin, the official spokesman of the right wing of the Bolshevik Party, any investment policy that one-sidedly favors agriculture over industry or vice versa, or one branch of industry over another, will fail because of the interdependence of economic sectors.¹⁸ First, industry cannot function successfully without agricultural supplies: the productivity of the industrial worker depends upon the availability of marketed agricultural food-stuffs. Further, industrial capacity will be reduced greatly if agricultural raw materials are not available for sale. Industry requires sophisticated capital equipment, which it initially cannot produce domestically, and which cannot be purchased abroad if agricultural surpluses are not exported to finance such imports. Agricultural producers, on the other hand, depend upon industry for hand tools and agricultural machinery and manufactured consumer goods. If these goods are not forthcoming, the peasants will retaliate by not supplying agricultural products for industry.

Bukharin recognized the need for capital accumulation, but argued that it should be kept within manageable proportions. The overextension of one sector or subsector of the economy at the expense of other sectors would create critical bottlenecks—steel shortages, deficits of vital agricultural raw materials, insufficient foreign exchange earnings—that would inevitably retard overall economic development. According to Bukharin, any formula calling for maximum investment in heavy industry without a corresponding expansion of light industry would not only aggravate the "goods famine"—owing to the channeling of investment resources into time-consuming capital goods industries—but would also threaten to undermine the NEP recovery.

¹⁸ *Ibid.*, pp. 82–83.

Because he emphasized economic interrelationships, Bukharin's economic program called for a gradual expansion of all sectors simultaneously. The critical link between agriculture and industry would be maintained by creating a favorable atmosphere for peasant agriculture. Instead of setting low agricultural delivery prices and high industrial prices, the state should do the opposite: first to provide an incentive for the peasant to produce and market a larger output, and second, to pressure state enterprises to lower costs. It would not be necessary to force saving from agriculture as Preobrazhensky proposed; instead, only a stable economic environment free of the uncertainties of War Communism and NEP would be needed. In such a situation, the peasant would return to his traditional frugality, creating the savings to finance the further expansion of capacity.¹⁹

To resolve the incongruity between limited industrial capacity and his call for moderate capital investment spread fairly evenly among economic sectors, Bukharin proposed a series of measures to economize and utilize the available capital more fully. Small-scale manufacturing and handicraft were to undergo a technological "rationalization" and be transformed into supposedly more efficient producers' cooperatives. Large-scale investment projects were to be made more efficient by better planning and more efficient construction work. Maximum attention was to be accorded to the speedy completion of investment projects. The available capital equipment was to be used more exhaustively by employing multiple shifts. Attention was to be given to appropriate factor proportions, that is, capital was not to be invested in areas where labor could do the job as efficiently. The state pricing policy should stimulate cost economies and more efficient use of available resources by eliminating monopoly profits.²⁰

In sum, Bukharin favored the balanced expansion of both industry and agriculture under a general policy of moderate capital accumulation financed by the voluntary savings of the peasantry. This balanced growth was to be fostered by an environment that would encourage the peasantry to produce and sell their surpluses to the city. State pricing policy would be used to gain the favor of the

¹⁹ *Ibid.*, pp. 86–87.

²⁰ *Ibid.*, pp. 84–86.

peasants by setting low industrial and high agricultural prices. By fostering methods to increase the efficiency of capital utilization, a return to the "goods famine" of the 1920s could be avoided without resorting to the massive industrialization drive favored by the superindustrialists of the left wing. The foreign sector would play an important role in that it would provide the foreign machinery to sustain the growing capacity of industry.

THE OUTCOME OF THE SOVIET INDUSTRIALIZATION DEBATE

In a series of adroit political maneuvers, Stalin consolidated his power within a rather brief period of time after Lenin's death in 1924. First, he allied himself with the right wing of the party (Bukharin) to purge the leftist opposition led by Trotsky from positions of power—a phase completed in late 1927. Then Stalin turned his attention to the "right deviationist" Bukharinites, who were denounced by the Central Committee of the Communist Party in November of 1928. This occurred just one month after Stalin's adoption of the more ambitious alternative draft of the First Five Year Plan, which was supportive of the original left-wing industrialization program.²¹

The variant of the First Five Year Plan adopted in 1928 would have staggered the imagination of even the superindustrialists. The low capacity of the Soviet industrial sector was to be subjected to an all-out attack: the Soviet fixed capital stock was to double within five years to provide the industrial base for building socialism. The First Five Year Plan also called for a 70 percent expansion of light industry which was quite unrealistic in view of the limited industrial capacity in 1928.²²

The First Five Year Plan was adopted in October of 1928 amidst a new grain collection crisis that was to have a crucial impact

²¹ *Ibid.*, chap. 9. It was not until the Stalin purges in the late 1930s that this political process was complete. Preobrazhensky, Shanin, and Bukharin all lost their lives in the purges.

²² *Ibid.*, p. 166.

upon subsequent events. According to Stalin, the very success of the industrialization program was clearly jeopardized, for it was dependent upon an increasing supply of food products and agricultural raw materials from the countryside. As long as the peasants refused to turn over such deliveries to the city, they held the power to halt the entire industrialization program.²³

Stalin's answer to the crisis he perceived was to mount a counteroffensive designed to break once-and-for-all the peasants' hold over the pace of industrialization. In the autumn of 1929, he ordered the wholesale collectivization of agriculture. Peasant landholdings and livestock were forcibly amalgamated into collective farms, which were obligated to deliver to the state planned quotas of farm products at terms dictated by the state.

The ensuing turmoil was great not only in the countryside, which burst into open rebellion, but also in Soviet cities, which received a vast influx of workers from the countryside and saw a significant redistribution of labor among industrial branches as enterprises attempted to fulfill their taut production targets.

The actual Soviet industrialization pattern that emerged after 1928 (Panels A, B, and C, Table 8) bears a close resemblance to Preobrazhensky's industrialization program: Soviet economic growth between 1928 and 1940 was heavily biased in favor of industry in general and in favor of heavy industry in particular. Industrial production grew at an annual rate of 11 percent, whereas agricultural production grew at an annual rate of only 1 percent between 1928 and 1937 (Panels C-3, C-4). The negative rate of growth of livestock graphically indicates the impact of collectivization upon agricultural performance. The same trends are apparent

²³ According to Jerzy Karcz, there was no real agricultural crisis during this period. The grain collection "crisis" was precipitated by the lowering of state grain procurement prices in 1926–1927, while procurement prices for animal products were raised. Peasants shifted their attention to animal products, fed grain to livestock, and held grain in stock, waiting for grain prices to be increased. Total agricultural sales did not fall during this period. Thus the "crisis" was caused not by the weakness of peasant agriculture but by the ineptitude of state pricing policy. In addition, Karcz raises the question of deliberate falsification of grain statistics by Stalin to gain support for collectivization. Jerzy Karcz, "Thoughts on the Grain Problem," *Soviet Studies*, vol. 18, no. 4 (April 1967), 399–434. For a different view, see R. W. Davies, "A Note on Grain Statistics," *Soviet Studies*, vol. 21, no. 3 (January 1970), 314–329. This controversy will be discussed in detail in Chapter Four.

Table 8 Outcome of the Soviet Industrialization Debate:
The Industrialization Drive of 1928-1940

	1928	1933	1937	1940
A. Changes in manufacturing				
1. heavy manufacturing ÷ overall manufacturing				
a. net product share (1928 prices)	31	51	63	—
b. labor force share	28	43	—	—
2. light manufacturing ÷ overall manufacturing				
a. net product share (1928 prices)	68	47	36	—
b. labor force share	71	56	—	—
3. net product per worker in heavy ÷ net product per worker in light manufacturing (1928 prices)				
	.94	1.40	—	—
B. Changes in major economic sectors, structure of output				
1. share in net national product (1937 prices)				
agriculture	49	—	31	29
industry	28	—	45	45
services	23	—	24	26
2. share in labor force				
agriculture	71	—	—	51
industry	18	—	—	29
services	12	—	—	20
3. net product per worker in industry ÷ net product per worker in agriculture (1937 prices)				
	2.3	—	—	2.7
C. Rates of growth (1928-1937) and capital stock				
1. GNP (1937 prices)				
			4.8%	
2. labor force				
a. nonagricultural labor force			8.7%	
b. agricultural labor force			-2.5%	
3. industrial production (1937 prices)				
			11.3%	
4. agriculture production (1958 prices)				
a. livestock			-1.2%	
5. gross industrial capital stock (1937 prices, billion rubles)				
	34.8	75.7	119	170

Table 8 (Continued)

	1928	1933	1937	1940
D. Changes in the structure of GNP by end use (1937 prices)				
1. household consumption ÷ GNP annual growth rate (1928-1937)				
	80	—	53	49
			.8%	
2. communal services ÷ GNP annual growth rate (1928-1937)				
	5	—	11	10
			15.7%	
3. government administration and defense ÷ GNP annual growth rate (1928-1937)				
	3	—	11	21
			15.6%	
4. gross capital investment ÷ GNP annual growth rate (1928-1937)				
	13	—	26	19
			14.4%	
E. Foreign trade proportions				
1. exports + imports ÷ GNP				
	6% ^a	4%	1%	—
F. Shares of the socialist sector in				
1. capital stock				
	65.7%	—	99.6%	—
2. gross production of industry				
	82.4%	—	99.8%	—
3. gross production of agriculture				
	3.3%	—	98.5%	—
4. value of trade turnover				
	76.4%	—	100.0%	—
G. Prices				
1. consumer goods prices (state and cooperative stores, 1928 = 100)				
	100	400	700	1000
2. average realized prices of farm products (1928 = 100)				
	100	—	539	—

^a 1929.

SOURCES: Panel A.: Paul Gregory, *Socialist and Nonsocialist Industrialization Patterns* (New York: Praeger, 1970), pp. 28-29, 36. Heavy manufacturing is defined according to the International System of Industrial Classification as IIC 30-38. Light manufacturing is defined as ISIC 20-29. Panel B: Simon Kuznets, "A Comparative Appraisal," in Abram Bergson and Simon Kuznets, eds., *Economic Trends in the Soviet Union* (Cambridge, Mass.: Harvard University Press, 1963), pp. 342-360. Panel C: Bergson and Kuznets, *op. cit.*, pp. 36, 77, 187, 190, 209. Panel D: Abram Bergson, *Real Soviet National Income and Product Since 1928* (Cambridge, Mass.: Harvard University Press, 1961), pp. 217, 237. Panel E: Bergson and Kuznets, *op. cit.*, pp. 288-290. Panel F: *Narodnoe khoziastvo SSSR v 1958 g.* [The national economy of the USSR in 1958], p. 57. Panel G: Franklyn Holzman, "Soviet Inflationary Pressures, 1928-57," *Quarterly Journal of Economics*, vol. 74, no. 2 (May 1960), 168-169.

in the differential rates of growth of the agricultural and nonagricultural labor forces between 1928 and 1937 (C-2): The former actually declined, while the latter expanded rapidly at an annual rate of almost 9 percent.

The structural transformations resulting from these differential sector growth rates are impressive (Panel B). Agriculture's shares of net national product and labor force declined from 49 percent and 71 percent, respectively, in 1928 to 29 percent and 51 percent, respectively, in 1940; whereas the increase in industry's product and labor force shares was from 28 percent and 18 percent, respectively, to 45 percent and 29 percent, respectively, during the same period.

The most remarkable feature of the 1930s was the extent to which the pro-heavy-industry bias asserted itself (as Preobrazhensky said it should). Between 1928 and 1937, heavy manufacturing's net product share of total manufacturing more than doubled from 31 percent to 63 percent; whereas light manufacturing's product share fell from 68 percent to 36 percent. The sharp increase in output per worker in heavy manufacturing relative to light manufacturing, from .94 to 1.40 between 1928 and 1933, indicates the pro-heavy-industry bias of investment allocation (Panel A).

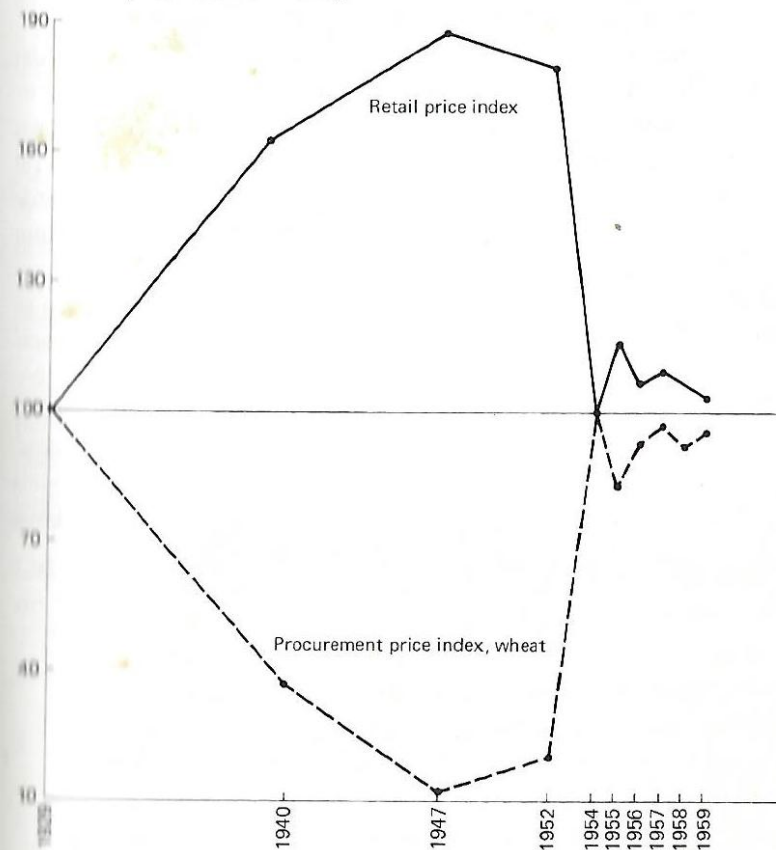
The impact of this production program upon real consumption levels in the absence of significant foreign trade (the ratio of imports plus exports to GNP sank to one percent by 1937, Panel E) had already been foreseen by Preobrazhensky. Between 1928 and 1937 household consumption scarcely grew (at an annual rate of .8 percent), and the share of consumption in GNP (in 1937 prices) declined markedly from 80 percent to 53 percent. During the same period, gross capital investment grew at an annual rate of 14 percent and the ratio of gross investment to GNP doubled from 13 percent to 26 percent. If we define total consumption expenditures to include both private consumption and communal services, and nonconsumption expenditures to include investment, government administration, and defense, then total consumption fell between 1928 and 1937 from 85 percent of GNP to 64 percent of GNP (Panel D).

The changing institutional setting within which these transformations were occurring should also be noted (Panel F): between 1928 and 1937 the share of the socialist sector of total capital

stock, industry, agriculture, and trade expanded sharply so that by 1937 the socialist sector totally dominated all economic activity.

Panel G has special relevance to the outcome of the industrialization debate. Consumer prices rose by 700 percent between 1928 and 1937 and probably would have risen even faster without the

Figure 2 Correlation of State Wholesale Prices for Objects of Mass Consumption and Purchase Price of Wheat (USSR 1929 = 100)



SOURCES: A. N. Malafeev, *Istoriia tseonoobrazovaniia v SSSR*, [The history of price formation in the USSR] (Moscow: 1964), p. 286. These figures are not directly comparable to those in Fig. 1, which relate an index of agricultural prices to an index of all prices, because of the vast change in agricultural prices after 1929 when procurement prices began to diverge significantly from the retail prices of agricultural commodities, and because Figure 2 refers only to wheat prices, not to a more general farm price index.

extensive formal and informal rationing of the period. Average realized prices of farm products, which are weighted averages of the extremely low state procurement prices, the above-quota state delivery prices, and collective farm market prices, on the other hand, rose by 539 percent, which indicates a reopening of the price scissors against agriculture between 1928 and 1937. An examination of some partial data (Figure 2) suggests that, in fact, the scissors did reopen and were not closed again until the mid-1950s, with a resultant squeeze upon the agricultural sector in terms of low procurement prices.

In sum, the left opposition program was apparently the model for the Soviet industrialization drive. The pro-industry and pro-heavy industry bias of the first two Five Year Plans is clearly shown in Table 8 and was implemented at the expense of the agricultural sector and the consumer. The expected deterioration in the agricultural terms of trade occurred, but did not halt the industrialization drive possibly owing to the forced collectivization of agriculture.

In retrospect, the Soviet industrialization drive must be seen as a remarkable and rapid shift of the Soviet economic structure. However, as we examine this process in greater detail, it will become even more apparent that the "Soviet development model," like any approach to economic development, is not without cost. Thus, the costs and benefits of alternative development models must always be carefully considered. We shall return to this issue in Chapter Twelve.

Appendix 3

Mathematical Models of the Soviet Industrialization Debate

Introduction. The models of Preobrazhensky, Shanin, and Bukharin, which have been described verbally in the text, can also be shown in terms of a fairly basic mathematical growth model. Such a model is developed in this appendix, which shows how, by varying the assumptions, the policy conclusions of all three were derived.

In keeping with the original debate, the model consists of two sectors—industry and agriculture—and allows for differences in sectoral capital-output ratios and savings functions. The allocation of investment between industry and agriculture is treated as the principal policy variable of the model. The initial assumptions are: (a) the economy is closed; (b) capital is the sole limiting factor of production in both sectors; and (c) all variables are in real terms. Other less crucial assumptions are: (d) the average and marginal capital-output ratios are equal; (e) the average and marginal propensities to save are equal; (f) the initial allocation of investment does not change over the planning period; and (g) the initial sector capital ratio is equal to the constant investment allocation factor.

List of Symbols:

- m marginal capital-output ratio of agriculture (assumed equal to the average capital-output ratio), e.g., $m = dka/dYa = Ka/Ya$
- bm marginal capital-output ratio of industry (assumed equal to the average capital-output ratio), e.g., $bm = dKi/dYi = Ki/Yi$
- s marginal propensity to save of agriculture (assumed equal to the average propensity), e.g., $s = dSa/dYa = Sa/Ya$
- $s-e$ marginal propensity to save of industry (assumed equal to the average propensity), e.g., $s-e = dSi/dYi = Si/Yi$
- S savings (real)
- I investment (real)
- Y real income (output)
- K capital stock (real)
- g ratio of income allocated to industry
- $1-g$ ratio of income allocated to agriculture

- a* subscripts refer to agriculture
i subscripts refer to industry
f ratio of investment allocated to agriculture
 $1 - f$ ratio of investment allocated to industry
 $DY = dY/dt$

Derivation of the Model. The derivation of the model begins with the allocation of investment between industry and agriculture, from which an investment equation is developed. The equilibrium condition requires equality of savings and investment. The savings equation is derived by starting with a particular allocation of income between industry and agriculture (how this allocation is determined will be considered later). In the familiar Harrod-Domar manner, the savings equation is set equal to the investment equation, and then solved for the growth rate of the economy. The steps are as follows.

Investment is allocated by the state between agriculture and industry:

1. $I_a = f \cdot I$
2. $I_i = (1 - f)I$

Investment sector

3. $DY = fI/m + (1 - f) I/bm$
4. $I = [bm/(bf - f + 1)] DY$

Savings sector

5. $Y_a = (1 - g)Y$
6. $Y_i = gY$
7. $S = s(1 - g)Y + (s - e)gY$
 $= (s - eg)Y$

Equilibrium of savings and investment

8. $S = I$
9. $bm/(bf - f + 1) = (s - eg)Y$
10. $DY/Y = (bf - f + 1)(s - eg)/bm$

It is now necessary to determine how the allocation of income between industry and agriculture (the factor g) relates to the allocation of investment between industry and agriculture (the factor f). Because capital is the sole scarce factor of production, one would

expect intuitively that the allocation of investment between sectors will determine the allocation of income between sectors. By equating the income of each sector with the output of that sector (as determined by the sector capital stock and the average sector capital-output ratio), the model can be completed with the following steps:

Determination of g

11. $Y_a = (1 - g)Y$
12. $Y_a = K_a/m$
 $= fK/m$
13. $(1 - g)Y = fK/m$
14. $g = 1 - (f/m)(K/Y)$
15. $K/Y = m/f + bm/(1 - f)$
16. $g = -fb/(1 - f)$

This new expression of g (equation #16) is then substituted into the growth equation (#10):

$$17. DY/Y = (s/m) \left[\frac{f(b-1)+1}{b} + \frac{ef[fb(b-1)+1]}{(1-f)} \right]$$

Thus the growth rate of the economy has been related to the structural parameters (s, b, m, e) which are taken as given, and to the policy variable f . As one might expect, the growth equation (#17) reduces to the familiar Harrod-Domar equation ($DY/Y = s/m$) if the sector capital-output ratios and savings propensities are equal ($b = 1, e = 0$).

Policy Implications. Shanin's policy conclusions can be derived easily from equation #17. His crucial assumptions were: (a) the industry capital-output ratio was larger than in agriculture ($b > 1$), and (b) the marginal propensity to save in agriculture was greater than in industry ($e > 0$). Differentiating the growth equation #17 with respect to the policy variable f , we get:

$$18. \frac{\partial (DY/Y)}{\partial f} = (s/m)(1 - 1/b) + \frac{em[f(b-1)(2-f)+1]}{(m-fm)^2}$$

Under Shanin's two assumptions, the expression (#18) is positive, and the higher the allocation of investment to agriculture, the higher the growth rate of the economy.

To derive Preobrazhensky's policy conclusions from the above model, we follow his assumptions that (a) the state can control the aggregate real saving rate by "primitive socialist accumulation" and that (b) the industry capital-output ratio (after a big push) is smaller than in agriculture ($b < 1$). Thus a different savings equation must be substituted:

$$19. S = wY$$

for equations #5-#7, where w is the state controlled saving rate. The growth equation now becomes:

$$20. DY/Y = (w/bm)(bf - f + 1)$$

Taking the partial derivative of the growth rate with respect to f , one gets:

$$21. \frac{\partial(DY/Y)}{\partial f} = w/m - w/bm$$

which is *negative* under Preobrazhensky's assumptions, and the higher the allocation of investment to agriculture, the lower the growth rate of the economy. Thus Preobrazhensky's conclusions.

Bukharin's policy conclusions are even easier to derive from the model. If one accepts Bukharin's assumption that, owing to the rigid interrelationships between industry and agriculture, investment must be allocated between them in roughly fixed proportions, f is no longer a policy variable but is, instead, a constant determined by technology. The growth rate of the economy can now be raised either (a) by more efficient utilization of sector capital (reducing m) or (b) by raising the marginal propensity to save (raising s), which is exactly what Bukharin proposed: to create a stable environment in agriculture, to promote peasant saving, and to lower capital-output ratios in industry by amalgamation, multi-shift operations, and industrial price setting.

Further Evaluation of the Soviet Industrialization Debate.

To the extent that the models of Shanin, Preobrazhensky, and Bukharin are logically consistent yet arrive at different policy conclusions, we are led to examine the different assumptions upon which each model is based. The logical consistency of the three models has been demonstrated above; let us now turn to the assumptions of each to further evaluate the Soviet debate.

First, Preobrazhensky's model requires that the state, not individuals and enterprises, determine the portion of output saved. The substitution of the state's time preferences for those of individuals was, in fact, the objective of his system of primitive socialist accumulation. Preobrazhensky was thus able to assume away the savings constraint that played such an important role in Shanin's and Bukharin's models.

Preobrazhensky's plan to place the savings decision in the state's hands illustrates the dangers of ignoring omitted variables in the growth equation. For inherent in his scheme is the assumption that those variables will not be affected by manipulation of the savings rate—a rather tenuous assumption in view of the disincentive effects that would follow. Both Shanin and Bukharin paid more attention to secondary impacts upon incentives, especially in agriculture, which caused them to favor lower rates of capital accumulation within a market context.

Second, many of the differences between Shanin, Bukharin, and Preobrazhensky can be explained by variations in planning time horizons. The Fel'dman model (p. 71 above), which Preobrazhensky implicitly accepted by stressing the long gestation period of the capital goods sector, clearly indicates that if planners have a short planning horizon they should invest in light industry and agriculture. A long time horizon, however, would require them to invest in heavy industry.

Even Shanin's model might favor investment in industry if the time horizon were changed. If we define sector marginal capital-output ratios as the ratios of the *present discounted values* of the present and future increments in output attributable to current net investments, the sector marginal capital-output ratios would then depend on the social discount rate. A high rate (Shanin and Bukharin) would yield low marginal capital-output ratios in consumer goods sectors ($b > 1$, in the model) and a low discount rate (Preobrazhensky) would yield a low ratio in the industry sector ($b < 1$ in the model).

The general model outlined above assumes a closed economy. Once the economy is opened to the world market, the policy differences can be explained more fully. Thus a third major difference in assumptions concerned the exhaustibility of foreign demand. Preobrazhensky was skeptical about the Soviet Union's ability to

transform indefinitely agricultural exports into machinery imports at fairly constant terms of trade. Not only was the USSR surrounded by belligerent capitalist countries in his view, but also the foreign demand for Soviet agriculture was in danger of imminent exhaustion (which did occur during the 1930s). Thus he proposed a rapid build-up of domestic heavy industry in spite of comparative advantage in agriculture. Shanin and Bukharin held more sanguine views of the world market, which seemed to them to offer almost unlimited expansion possibilities at constant terms of trade. They stressed the obvious point that the USSR could "have its cake" (build industrial capacity) and "eat it too" (produce consumer goods) by investing in agriculture and exporting its surplus for machinery.

A fourth difference concerned the question of shifting fixed capital between sectors. Preobrazhensky's model (in its strict form) requires that once capital is invested in one sector it cannot be shifted to another sector. If a factory is built to mill wheat, it cannot be used later to produce cement. If fixed capital could be shifted, however, then one might first invest in low marginal capital-output ratio consumer goods sectors for the short-run return and then shift this fixed capital to heavy industry for the long-run return. In this manner, the degree to which fixed capital is shiftable between various sectors has a profound impact upon proper investment allocation.

A fifth difference concerned sector interrelationships. Of the three participants, only Bukharin emphasized sectoral interdependence. By proposing the one-sided expansion of either agriculture or industry, Preobrazhensky and Shanin were assuming a decomposable economy, that is, an economy in which one sector can expand independently of others without negative effects. Of the two, Shanin better recognized that in certain obvious cases, such as transportation, the expansion of agriculture would be limited by the lack of investment in nonagricultural sectors. Shanin failed, however, to realize that such cases are not isolated and that many industrial products not obtainable through trade—electricity, gas and construction—are crucial to the long-run development of agriculture. Yet if one were to invest according to capital-output ratios, such products would not be developed. Preobrazhensky, on the

other hand, thought that agriculture could subsist (as it did before the Revolution) independent of industry, but not vice versa. His program therefore called for investment in heavy industry without a simultaneous expansion of agriculture, extracting sufficient surpluses from the latter by administrative means (primitive socialist accumulation) to finance this investment.

Bukharin emphasized the interdependence of economic sectors and thus disavowed unbalanced growth. The weakness of Bukharin's model is the weakness of all balanced growth models: given the limited amount of resources that will be available, to spread it evenly among sectors means that it will be diluted and ineffective. While the concept of balanced growth is sound, it requires more resources than will be available. Instead Bukharin unrealistically called for spontaneous increases in the efficiency of factor utilization to surmount this problem.

Finally, all three assumed that the availability of labor was not an effective constraint on economic growth because of the surplus labor in Soviet agriculture. This assumption can be questioned on two counts. First, the overwhelming portion of the Russian rural population was illiterate during the 1920s. Thus the number of skilled industrial workers that could be drawn immediately from this vast reservoir of rural manpower was limited. Preobrazhensky's one-sided concern with the expansion of heavy industry via massive investment in that sector was perhaps misplaced and should possibly have been directed toward investment in human capital. The same conclusion holds for Shanin's model. Shanin assumed that the economy would encounter no structural difficulties in transforming savings into real investment either via domestic production or foreign trade. He therefore concluded that investment should be allocated to maximize voluntary savings. On the other hand, Western development economists¹ have concluded that a "skill constraint" limits the investment capacity of the economy even with an unlimited savings capacity or foreign aid. Thus the growth rate of skilled labor must also be included in the planning model.

¹H. Chenery and A. Stroud, "Foreign Assistance and Economic Development," *American Economic Review*, vol. 56, no. 4 (September 1966), 679–733.

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CHAPTER FOUR

The Foundation of the Soviet Planned Economy: Planning and Collectivization (1928–1940)

We have already described the precedents of the 1920s and the impact of the Soviet Industrialization Debate upon the course of Soviet industrialization during the 1930s. Our focus of attention now turns to the historical evolution of the Soviet command economic system during the early plan era, specifically to the development of a coordinated central planning apparatus and to the introduction of forced collectivization into the countryside. This brief chapter concludes our historical survey of the Soviet economy. Part Two will describe in detail how the Soviet command economic system allocates resources.

The 1920s witnessed two significant struggles over the nature of economic planning in the Soviet Union. The first was the debate over the theory of planning in a socialist economy—the debate between the so-called *genetic* and *teleological* schools of planning. The second was the struggle among the various planning bodies in existence during the 1920s for ascendancy in the planning hierarchy—a battle eventually won by Gosplan (the State Planning Committee). Let us first turn to the planning debate.

**THE PLANNING DEBATE:
THE GENETICISTS
VERSUS THE
TELEOLOGISTS¹**

During NEP, an important controversy arose in the course of the industrialization debate concerning the proper role of economic planning in the Soviet Union. The debate centered largely around the issue of whether planning was to be directed (and limited) by market forces or molded by the will of planners, unconstrained by market forces and limited only by the physical constraints of the economy. The so-called geneticists advocated the first approach to planning, the most notable being N. D. Kondratiev (the prominent Russian authority on business cycles), V. A. Bazarov, and V. G. Groman, the latter two being Gosplan economists. The geneticists basically argued that economic planning should be directed by consumer demand, which would dictate to planners the needed direction of change in the economy. Thus, the principal function of the planner would be to forecast and project market trends to aid central and local administrators in their decision-making; i.e., the geneticists envisioned a form of indicative planning, as it is called today. In drawing up such plans, authorities should always make sure of their internal consistency, for the geneticists viewed the economy as a vast complex of interrelated sectors (a general equilibrium system), the balance of which would be severely disturbed if planners neglected sectoral interrelationships. For example, to expand the heavy industry sector without concern for the resulting impact on the general equilibrium of other interrelated sectors would create serious disproportions that would impede overall development. Thus the geneticists advocated a form of planning that was largely consistent with the precepts of NEP in view of the dominant role that market forces would be allowed to play in the planning process.

¹ Our discussion of the planning debate of the 1920s is based on the following sources: E. H. Carr and R. W. Davies, *Foundations of a Planned Economy, 1926-1929*, vol. I, part 2 (London: Macmillan, 1969), pp. 787-801; Nicolas Spulber, *Soviet Strategy for Economic Growth* (Bloomington: Indiana University Press, 1964), pp. 101-111.

The teleological approach to planning, as advocated by S. Strumilin, G. L. Pyatakov, V. V. Kuibyshev, and P. A. Fel'dman, stated that the economic plan should be consciously formulated by social engineers and shaped by national goals established by the state. Such planning should seek to overcome market forces, rather than be directed by them as the geneticists argued. The market and finance, according to the teleologists, should follow the plan rather than dictate the plan. Planning should begin only after national economic goals have been set by the political authorities. Then the planners should form economic strategy, largely in terms of binding targets for basic industries, limited only by the availability of investment, and such investment should be allocated to meet the needs of industry independently of market forces.

In drawing up output and investment plans, the teleologists argued that planners need not be constrained by the need to preserve the general equilibrium of the economy, for to do so would be to subject the growth of the economy to the spontaneous forces of the market. Instead, the concept of equilibrium should be denounced as an unnecessarily severe constraint on the flexibility of planners. As stated by one teleologist, to accept the direction of the market meant acceptance of the "genetical inheritance" of 300 years of tsarism.²

According to the teleologists, the actual process of plan construction should proceed according to a system of "successive approximations," that is, first plans for the leading branches (namely, heavy industry) were to be drawn up; then the plans for other sectors (light industry, agriculture, trade, etc.) would have to be molded into the framework of the first set of plans. In this manner, the plans of lower priority sectors would be predetermined by the plan for heavy industry, not by the market.

The late 1920s witnessed the conclusive victory of the teleological viewpoint. As the NEP system was gradually abandoned, the advocates of the genetic approach, tied as it was to a market-directed system of planning, saw their support within the party deteriorate. From the summer of 1927, actual planning paid little attention to market equilibrium and financial stability as advocated

² Statement of P. Vaisburg in *Planovoe Khoziastvo* [The planned economy], no. 4 (1928), p. 167. Quoted in Carr and Davies, *op. cit.*, p. 793.

by the geneticists. Instead, attention turned to physical planning involving a "ferocious straining of effort," the outcome of which would be "decided by struggle."³ Eventually, the geneticists came to be accused of counterrevolution and right-wing Menshevism. The advocates of the teleological approach, namely Strumilin and Krzhizhanovsky and others remained prominent in the Gosplan apparatus during the 1930s and played a guiding role in the planning for rapid industrialization.

THE EVOLUTION OF THE PLANNING STRUCTURE⁴

A variety of agencies dealt with planning problems throughout the 1920s—Vesenkha (the Supreme Council of the National Economy), the Peoples Commissariat of Finance, the Peoples Commissariat of Transportation, Gosplan USSR (State Planning Committee of the USSR), the regional Gosplans, local authorities, and many others. However, of these agencies only Gosplan was explicitly and exclusively concerned with economic planning. Gosplan's duties (according to a 1922 decree) were "the preparation not only of a long-range plan but also of an operational plan for the current year."⁵

From modest beginnings in February of 1921 (in 1925, Gosplan employed only around 50 economists and statisticians⁶), Gosplan gradually came to be accepted by the late 1920s as the planning agency in charge of coordinating economic planning for the entire economy. Much of this recognition emerged as a consequence of Gosplan's work on the annual control figures or tentative output targets for the various branches of the economy. The first control

³ *Pravda*, September 14, 1927. Quoted in Carr and Davies, *op. cit.*, p. 818.

⁴ Our discussion is based on the following sources: Carr and Davies, *op. cit.*, chaps. 33–35; Alec Nove, *An Economic History of the USSR* (London: Penguin, 1969), pp. 212–215, 263–267; Maurice Dobb, *Soviet Economic Development Since 1917*, 5th ed. (London: Routledge & Kegan Paul, 1960), chap. 13; Eugene Zaleski, *Planning for Economic Growth in the Soviet Union* (Chapel Hill: University of North Carolina Press, 1971), pp. 40–73.

⁵ Zaleski, *op. cit.*, p. 41.

⁶ Carr and Davies, *op. cit.*, p. 802.

figures were prepared covering the year 1925–1926, and while they did not initially prove important in directing economic activity, the 1925–1926 figures were used to establish the principle that economic policy should be guided on an annual basis by control figures prepared by Gosplan. In this manner, Gosplan came to play a supervisory role in the preparation of plans by other administrative bodies. The growing importance of Gosplan's control figures is clear: by 1926 the control figures were the first order of business of the Central Committee meeting of the party.

While Gosplan's role as the coordinator of all planning was developing, it had little to do with the actual operational planning of the economy, especially at the enterprise and trust level. Such work was primarily performed by the central planning staff of Vesenkha and by the Glavki planning offices of Vesenkha. In this manner, annual plans including production and financial targets, known as promfinplans, were drawn up. Gradually, the promfinplans drawn up by Vesenkha were merged into the control figures compiled by Gosplan. Beginning in 1925, Vesenkha was instructed to prepare its promfinplans on the basis of Gosplan's 1925–1926 control figures. By 1926–1927 Vesenkha was in the habit of compiling a comprehensive promfinplan for all industry, to be scrutinized by Gosplan and the Peoples Commissariat of Finance, and it was established that the promfinplan was clearly dependent upon the control figures.

During this period, the machinery for physical planning was also being developed—the system of material balances. As certain basic industrial commodities grew scarce as early as 1925 and the administrative allocation of commodities increased, planning bodies began compiling balances for critical industrial materials. In 1925, a balance for the production and uses of iron and steel was compiled, and in 1927 an energy balance of fuel and power consumption was drawn up. The balance system was extended to building materials in 1928.⁷ In charge of coordinating these balances through the promfinplan and control figure system were Vesenkha and Gosplan, but initially this coordination proved too complex in the absence of detailed statistical information, and most of these early material balances were poorly prepared.

Thus the plan period began with the adoption of the First Five

⁷ Carr and Davies, *op. cit.*, pp. 830–831.

Year Plan in 1928, with the following planning principles established: Gosplan was to be the central coordinating planning body to which all other planning bodies were to submit their proposals.

2 Second, the annual control figures prepared by Gosplan were to provide the general direction for the economy on an annual basis.

3 Third, the actual detailed operational plans for industries and for enterprises (the *promfinplans*) were to conform to the control figures prepared by Gosplan. Fourth, materials were to be allocated through a system of balances, compiled from the control figures and *promfinplans*, which would elaborate the supplies and uses of basic industrial materials.

Gosplan's elevation to full planning authority came in 1932 with the development of the ministerial system. Between 1928 and 1932, the functions of *Vesenkha* had grown increasingly complex and confused, and in 1932, *Vesenkha* was in effect dissolved as a central coordinating agency for industry. Its chief departments, the *glavki*, which later became ministries, were allowed to take direct power over planning and administering their enterprises. Earlier, *Vesenkha* had served to coordinate the activities of the industrial departments—a role that *Gosplan* now inherited.

→ This period also witnessed the evolution of a centralized administration for the setting of prices. Extensive centralized price setting and regulation, introduced during the early plan era, proved to be a complex task involving issues well beyond the setting of prices per se and requiring the expansion of administrative arrangements.⁸ Although the setting of prices was largely decentralized during the NEP period (typically reflecting cost-price relationships of the pre-Soviet period), the Commission for Internal Trade and *Vesenkha* gained increasing authority toward the end of NEP. This tendency towards the centralization of price formation and related functions was greatly enhanced after the introduction of comprehensive central planning in 1928. Not only were internal prices subsequently shielded from world prices through the creation of a state monopoly in foreign trade, but also, a series of decrees in the late 1920s and early 1930s harnessed the price system toward the achievement of state goals; price dis-

⁸ The discussion here is based upon Raymond Hutchings, "The Origin of the Soviet Industrial Price System," *Soviet Studies*, vol. 13, no. 1 (July 1961), 1–22.

crimination in state purchases (buying the same product at different prices determined by factory costs of production and then selling at one set price) was introduced, as was the system of multiple pricing (charging different retail prices for the same product), profit margin controls, and differentiated sales taxes (the so-called turnover tax), the latter serving as a primary mechanism for generating state revenues.

As might be expected, the early 1930s witnessed a significant expansion of the number of administrative organs concerned directly or indirectly with price formation, although during the 1930s there was a measure of consolidation with *Vesenkha* and later the ministries becoming the main price setting bodies.⁹

Our foregoing discussion of the evolution of the Soviet planning structure stressed the growing role of *Gosplan* and its emergence from the confusing maze of local, regional, and national agencies engaging in planning and economic coordination during the late 1920s and early 1930s to become the dominant figure in Soviet economic planning.

THE DECISION TO COLLECTIVIZE

Developments in agricultural sector during the late 1920s were as significant in the evolution of the Soviet planned economy as the formation of the centralized planning structure. Our examination of War Communism and NEP pointed, above all, to the crucial nature of the relationship between the peasant and the state. This relationship, the subject of continuing discussion in the 1920s, was abruptly formalized by the Communist Party under Stalin's leadership when the historic collectivization movement (the introduction of the collective farm, the *kolkhoz*, into the countryside) was begun in 1929.

Our purpose here is to examine the decision to collectivize (i.e., the decision to introduce a significant command element into the Soviet countryside) and in particular to understand the reasons for collectivization as perceived by the Soviet leadership at that time.

⁹ For details of the organizational arrangements, see *ibid.*, 13–14.

In addition, it is important that we examine the process of collectivization as it was in fact carried out, and finally, the impact of this process upon immediate postcollectivization agricultural performance. With this background, we will be in a position to consider long-run agricultural organization and the nature of the *kolkhoz* and its performance in Chapter Seven and finally, in Chapter Twelve, the role of agriculture in the Soviet development model.

The reader should be aware that the collectivization decision and the forces underlying that decision have only recently been the subject of in-depth research. A full understanding, therefore, must await further investigation when, hopefully, our presently limited picture can be significantly expanded.¹⁰

UNDERPINNINGS OF THE COLLECTIVIZATION DECISION

It will be recalled that the focus of the Soviet Industrialization Debate of the 1920s was the strategy of industrialization; the desire to industrialize not being a matter of contention among the participants. From this discussion and the fact that the Soviet Union was in the 1920s primarily an agricultural economy, it is not surprising that alternative roles for the agricultural sector in the development process would be a point of focus for the participants.

Recall that Preobrazhensky had argued that the rate of saving

¹⁰ In the present section, we rely heavily upon the following sources: Jerzy F. Karcz, "From Stalin to Brezhnev: Soviet Agricultural Policy in Historical Perspective," in James R. Millar, ed., *The Soviet Rural Community* (Urbana: University of Illinois Press, 1971), pp. 36-70; Jerzy F. Karcz, "Thoughts on the Grain Problem," *Soviet Studies*, vol. 18, no. 4 (April 1967), 399-434; M. Lewin, *Russian Peasants and Soviet Power* (London: Allen & Unwin, 1968); James R. Millar and Corinne A. Guntzel, "The Economics and Politics of Mass Collectivization Reconsidered: A Review Article," *Explorations in Economic History*, vol. 8, no. 1 (Fall 1970), 103-116; Alec Nove, "The Decision to Collectivize," in W. A. Douglas Jackson, ed., *Agrarian Policies and Problems in Communist and Non-Communist Countries* (Seattle: University of Washington Press, 1971), pp. 69-97; Erich Strauss, *Soviet Agriculture in Perspective* (London: Allen & Unwin, 1969), chaps. 5-6; Lazar Volin, *A Century of Russian Agriculture* (Cambridge, Mass.: Harvard University Press, 1970), chaps. 10-11; R. W. Davies, "A Note on Grain Statistics," *Soviet Studies*, vol. 21, no. 3 (January 1970), 314-329.

had to be increased as industrial investment rose. The peasant, according to Preobrazhensky, should bear the burden of this increase in the savings rate through the system of primitive socialist accumulation, whereby savings would be extracted from the countryside by setting low agricultural prices. How to insure the critically needed peasant marketings under such a system was a question that Preobrazhensky was unable to answer. Bukharin, on the other hand, argued that any system designed to extract involuntary savings from the peasants would destroy any positive relationship between peasant and state and lead to active peasant resistance in the form of reduced peasant marketings. Instead, Bukharin argued, it would be better to adopt a slower rate of economic growth and set prices to favor the peasant. The perceived behavior of the peasants during the Scissors Crisis was thought to underscore this view—that is, the falling trend in peasant marketings as relative agricultural prices dropped.¹¹

Against this background, it should be pointed out that Lenin had long stressed the need to take advantage of economies of scale in agricultural production. Although there was some experimentation with various forms of agricultural collectives in the pre-plan era, these were largely unsuccessful.¹² At the same time, and under the prevailing institutional arrangements, improvements in the performance of NEP peasant agriculture must have appeared ideologically unpalatable to the regime insofar as the NEP arrangements would imply the use of market forces and the enrichment of certain segments of the peasant population.¹³

Collectivization of agriculture, therefore, to the extent that it

¹¹ As was pointed out above (footnote 25, Chapter Two), there is some controversy surrounding the Scissors Crisis and the traditional interpretation of the Russian peasant's response to falling agricultural prices.

¹² The reader interested in the agricultural collectives of the 1920s should consult D. J. Male, *Russian Peasant Organization Before Collectivization* (Cambridge: Cambridge University Press, 1971); and Robert G. Wesson, *Soviet Communes* (New Brunswick, N.J.: Rutgers University Press, 1963).

¹³ Class stratification played an important role in the thinking about collectivization and its actual implementation. Although census data from the 1920s suggests that the wealthy peasants (*kulaks*) were a very small proportion of the total peasant population, they were nevertheless seen as politically unreliable at best and enemies of the Soviet industrialization program at worst. For a detailed discussion of the problems of class stratification in this case, see Lewin, *op. cit.*, chaps. 2 and 3.

might provide a mechanism for effective control of the countryside, might have appeared both ideologically and practically a rather ingenious solution to the complex problem of Soviet agriculture, yet more difficulties were to arise.

To what extent Stalin was personally responsible for the collectivization decision and all its ramifications is unclear and to some extent uninteresting.¹⁴ He did, however, use as a major justification for instigating collectivization the grain procurement crisis of 1928, a matter that merits further attention.

Although the output of the Soviet agricultural sector had declined sharply during the Revolution and World War I, prerevolutionary output levels were generally met or exceeded by 1928, although yields remained poor and fluctuations from year to year in major crops made agricultural performance uncertain (see Table 9). Indeed by 1928, gross agricultural production had reached 124

Table 9 **Gross Production of Major Agricultural Products, 1913–1929**
(millions of metric tons)

Year	Grain	Raw Cotton	Sugar Beets	Sunflower Seeds	Flax	Potatoes	Meat ^b	Milk	Eggs ^c
1913 ^a	76.5	0.74	10.9	0.74	0.33	23.3	4.1	24.8	10.2
1923	56.9	0.14	2.6	—	0.22	—	—	—	—
1924	51.8	0.36	3.4	—	0.30	—	—	—	—
1925	72.5	0.54	9.1	2.22	0.30	38.6	—	—	—
1926	76.8	0.54	6.4	1.54	0.27	43.0	—	—	—
1927	72.3	0.72	10.4	2.13	0.24	41.2	—	—	—
1928	73.3	0.82	10.1	2.13	0.32	46.4	4.9	31.0	10.8
1929	71.7	0.86	6.3	1.76	0.36	45.6	5.8	29.8	10.1
1930	83.5	1.11	14.0	1.63	0.44	49.4	4.3	27.0	8.0
1931	69.5	1.29	12.0	2.51	0.55	44.8	3.9	23.4	6.7
1932	69.9	1.27	6.6	2.27	0.50	43.1	2.8	20.6	4.4
1933	89.8	1.32	9.0	—	0.56	—	2.3	19.2	3.5

^a All data apply to pre-1939 boundaries.

^b Meat and milk production in millions of tons.

^c Eggs in billion units.

SOURCE: Erich Strauss, *Soviet Agriculture in Perspective* (London: Allen & Unwin, 1969), pp. 304–305.

¹⁴ Millar and Guntzel, *op. cit.*, 112.

(1913 = 100) while crop production had reached 117 and livestock products 137.¹⁵

Stalin, however, in a now-famous presentation made in May 1928 put forward data to suggest that grain output (considered a critical indicator by the Soviet leadership) had declined between 1913 and 1926–1927, but most important, that the marketed share of grain had declined much more rapidly.¹⁶ According to the data presented by Stalin, between 1913 and 1926–1927 gross output of grain declined slightly but the marketed share declined by roughly 50 percent. In addition, while grain production and marketings by the *kulaks* fell back sharply (both had declined to less than one-third of prewar levels), output and marketings of the middle and poor peasants had both expanded. For Stalin, this was evidence of the need for a move against the *kulaks*.

There are, however, two important considerations. First, as Jerzy Karcz has pointed out, Stalin's grain data was "... completely misleading and presents an exceedingly distorted picture of the relation between 1913 and 1926–1927 grain marketings."¹⁷ According to Karcz, these data, when appropriately reconstructed as grain balances for these years, suggest that in fact gross grain output had, by 1928, all but recovered prewar levels and that the problem was the definition of marketings. Thus in the data brought forth by Stalin, gross marketings were presented for 1913 while net marketings were given for 1926–1927.¹⁸ With two sets of data, quite incomparable, Stalin's case for collectivization as the answer to the marketing problem appeared to be strong.

A second and related factor, according to Karcz, was the role of government policy in bringing about the grain procurement "crisis." In the few years immediately preceding collectivization, net grain marketings did decline precisely because the state lowered grain procurement prices in 1926–1927, naturally encouraging peasants to market their grain through other than state channels where prices were relatively more attractive. At the same time, peasant taxes

¹⁵ Strauss, *op. cit.*, p. 303.

¹⁶ For details of Stalin's argument and related data, see Karcz, "Thoughts on the Grain Problem," *op. cit.*, 399–402.

¹⁷ *Ibid.*, 403.

¹⁸ *Ibid.*, 403–409.

were lowered as were the prices of manufactured goods, thus stimulating peasant demand. Also, in the face of lower state grain procurement prices, peasants were encouraged to shift into the production of meat and related products, the prices of which were generally rising. Thus, although peasant marketings of grain were falling, output and marketings of (other) farm products were rising in response to the more favorable prices and offsetting the declining grain marketings.

The immediate justification for collectivization may, therefore, have been based upon inadequate statistical information and adverse state policy against the peasants, in addition to ideological underpinnings and the drive for large-scale production units.¹⁹

THE COLLECTIVIZATION PROCESS

While the discussion of collectivization and Stalin's arguments on its behalf were well underway in 1928, it was not until mid-1929 that central control over existing cooperatives was substantially strengthened, and the system of grain procurements changed—in short, the beginning of the process of mass collectivization.²⁰ By the latter part of 1929 an all-out drive for collectivization had been initiated by the Communist Party, becoming in large measure an organized movement against the kulaks.

There were, of course, significant regional differences in the speed of collectivization and also a continuing debate over the precise organizational form to be utilized. The data in Table 10 suggest, however, that the overall speed of collectivization was rapid. Between July 1, 1929, and March 1, 1930, for example, the number of peasant households in collective farms increased from 4 to 56 percent.²¹

¹⁹ Karcz's analysis of grain marketings and agricultural performance during the late 1920s has been disputed by R. W. Davies. Thus we cannot know for sure whether Stalin's analysis of the agricultural "crisis" was erroneous. For example, Davies estimates that the 1926–1927 net grain marketings were slightly more than one half of prewar marketings—a figure close to the Stalin figure. See Davies, *op. cit.*, 328.

²⁰ Lewin, *op. cit.*, p. 409.

²¹ Volin, *op. cit.*, p. 222.

Although Stalin, in a famous speech in March 1930, warned against proceeding too rapidly and blamed local party leaders for the excesses that had occurred—in fact the pace of collectivization remained rapid and by the mid-1930s the collectivization process was basically completed.²² The role of the Communist Party in the countryside was formally strengthened when in 1933 political departments (Politotdely) were established in the machine tractor stations. The machine tractor stations (MTS) had themselves been established earlier, and in addition to serving as a mechanism for supplying machinery and equipment to the collective farms (for which payment in kind would be made to the state), they were to play a significant role in the management of collective farms.²³ Informal party control in the countryside had also been strengthened considerably by collectivization through the party's placing of "reliable" men in the posts of collective farm chairman.

Table 10 **Expansion of the Collective Farm Sector, 1918–1938**
(selected years)

Year	Collective Farms (in thousands)	Households in Collectives (in thousands)	Peasant Households Collectivized (percentage)
1918	1.6	16.4	0.1
1928	33.3	416.7	1.7
1929	57.0	1,007.7	3.9
1930	85.9	5,998.1	23.6
1931	211.1	13,033.2	52.7
1932	211.1	14,918.7	61.5
1935	245.4	17,334.9	83.2
1938	242.4	18,847.6	93.5

SOURCE: Lazar Volin, *A Century of Russian Agriculture* (Cambridge, Mass.: Harvard University Press, 1970), p. 211.

²² *Ibid.*, pp. 228–229.

²³ For a detailed account of the history and functions of the MTS, see Robert F. Miller, *One Hundred Thousand Tractors* (Cambridge, Mass.: Harvard University Press, 1970), especially chap. 2.

THE IMMEDIATE IMPACT OF COLLECTIVIZATION

In Chapter Twelve we will examine the role of collectivization and the collective farm system in the Soviet development model. At this juncture, our interest is in the immediate impact of the collectivization process upon agricultural output, human lives in the rural sector, and the agricultural capital stock.

The most immediate result of collectivization was a decline in agricultural output. Although there were year to year fluctuations, the general decline is unmistakable (see Table 9). The index of gross agricultural production (1913 = 100) declined from a pre-collectivization high of 124 in 1928 to an immediate postcollectivization low of 101 in 1933.²⁴ In large part this can be accounted for by a sharp decline in gross production of livestock products from 137 in 1928 (1913 = 100) to 65 in 1933.²⁵ Although grain output declined in the initial years of collectivization (1928 through 1932, with the exception of 1930), both gross and net marketings of grain increased between 1928–1929 and 1931–1932, to some extent due to a sharp decline in the number of cattle for which grains would now not be necessary as fodder.²⁶ The worsening of agricultural performance during the First Five Year Plan (1928–1932) plus the losses from state reserves were major factors contributing to the famine that reached a peak in 1932–1933.

The loss of lives (especially severe in grain-producing regions) from both the collectivization process *per se* and the famine thereafter (the famine being the major factor) has been the subject of considerable discussion, but very little hard data is available by which to assess its severity. The most frequently quoted estimate of lives lost is 5 million, although the reader should be cautioned that other estimates vary from 1 to 10 million.²⁷

In addition to the loss of life and the decline in agricultural pro-

²⁴ Strauss, *op. cit.*, p. 303.

²⁵ *Ibid.*

²⁶ Jerzy F. Karcz, "From Stalin to Brezhnev: Soviet Agricultural Policy in Historical Perspective," *op. cit.*, p. 42.

²⁷ For detailed discussion of various estimates, see Dana G. Dalrymple, "The Soviet Famine of 1932–1934," *Soviet Studies*, vol. 15, no. 3 (January 1964), 250–284.

duction, there was a sharp decline in agricultural capital stock, most notably caused by the mass destruction of animal herds as the peasants vented their hostility toward the collectivization process by slaughtering their livestock rather than bringing them into the collective farms. The impact of this development can be observed in Table 11. In addition, Naum Jasny, one of the research pioneers in this area, has indicated that other forms of capital stock—notably buildings and machinery, simply disappeared during the turmoil of collectivization.²⁸ The impact of collectivization upon per capita incomes of the farm population was predictable: they fell sharply.²⁹

Collectivization was indeed a unique "solution" to what Soviet leaders apparently viewed as an intractable problem. In Chapter 7 we shall examine the organizational structure of the collective farm and the means by which it was to extract a "surplus" from the

Table 11 Numbers of Livestock in the Soviet Union, 1928–1935
(in millions of head)

Year	Cattle (total)	Cows	Pigs	Sheep	Goats	Horses
1918 ^a	60.1	29.3	22.0	97.3	9.7	32.1
1929	58.2	29.2	19.4	97.4	9.7	32.6
1930	50.6	28.5	14.2	85.5	7.8	31.0
1931	42.5	24.5	11.7	62.5	5.6	27.0
1932	38.3	22.3	10.9	43.8	3.8	21.7
1933	33.5	19.4	9.9	34.0	3.3	17.3
1934	33.5	19.0	11.5	32.9	3.6	15.4
1935	38.9	19.0	17.1	36.4	4.4	14.9

^a Borders of the Soviet Union as of 1939.

Source: Erich Strauss, *Soviet Agriculture in Perspective* (London: Allen & Unwin, 1969), p. 307.

²⁸ Naum Jasny, *The Socialized Agriculture of the USSR* (Stanford, Calif.: Food Research Institute, 1949), p. 323.

²⁹ Naum Jasny, *Essays on the Soviet Economy* (New York: Praeger, 1962), p. 107. Jasny's figures on per capita income of the Soviet farm population in constant prices reveal the following picture:

1928	100
1932–33	53
1936	60
1937	81
1938	63

countryside. It did, of course, have both costs and benefits, and a proper evaluation of collectivization can only be cast in a long-term framework with due consideration for potential alternatives. These matters we leave for further discussion in Chapter Twelve.

**CONCLUSIONS:
SOVIET ECONOMIC
HISTORY TO 1940**

We have outlined in capsule form the events between the Revolution and World War II that played an influencing role in the evolution of the Soviet command economic system. Beginning with the economic heritage that the Bolsheviks inherited from the tsars, to the War Communism and NEP periods preceding the plan era, and finally to the evolution of the Soviet planning structure and collectivization during the early plan era, we sought to relate the early economic history of the Soviet Union to the broad issues of Soviet resource allocation and Soviet economic development dealt with in this work. Of course, certain events that likely had a large impact upon the contemporary Soviet economic structure, such as World War II, have not been dealt with. In this instance, the amount of independent Western research of the Soviet economy during World War II was deemed insufficient to warrant its inclusion. Also other events, such as labor policy during the 1930s and the evolution of investment allocation rules during the same period, will be dealt with in Part Two.

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