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Measuring Soviet Economic Growth: Old Problems and New Complications

by

Joint H. MOORE*

Abstract

Recent estimates of Soviet GNP have cast serious doubt on existing measures of economic output there. This paper reviews research on Soviet industrial production done at the National Bureau of Economic Research in the 1950s which challenged the view held widely at the time that Soviet central planning would produce persistently high growth rates into the foreseeable future. It is seen that even these more pessimistic views were overly optimistic. It is suggested that analysis of systemic incentive structures would be valuable in evaluating statistical measures of output. (JEL: P24)

1. Introduction

The state of the Soviet economy is the subject of nearly as much discussion and dispute today as is the nation's political situation and future. Reports and evidence of widespread shortages, extensive queuing, hoarding, and other symptoms of breakdown in the system abound. Barter is said to be replacing exchange for money, even in dealings between Republics. Speculation that the nation would suffer a serious famine in the 1990—91 winter was heard earlier; no famine occurred, although non-price rationing and reports of food shortages were common and the Soviet government was again forced to seek American aid for grain purchases.

In view of these developments, it is hardly surprising that the level of Soviet GNP has become a matter of great interest and controversy. *Glasnost* produced much new criticism of official Soviet statistics on aggregate output¹ and alternative estimates of GNP.

* The paper was written before the attempted *coup d'etat* of August 1991 and the subsequent disintegration of the former Soviet Union.

¹ See **DIRECTORATE OF INTELLIGENCE** [1988 b], and **DIRECTORATE OF INTELLIGENCE** [1988 a], for reviews of some of these criticisms and their implications for official U.S. estimates.

Unofficial estimates by independent Soviet economists put GNP much lower than official U.S. estimates, and lower still than the official Soviet figures. One unofficial estimate, published in late 1988, puts Soviet GNP at about one third of the U.S. level,² and another estimates it at 14 percent of U.S. GNP,³ an astonishing figure if correct.

These revelations rekindled an old debate about the validity of Soviet statistics. Early on, the CIA convened a conference of Western experts in which these points were raised (see *DIRECTORATE OF INTELLIGENCE* [1988 b]). The Agency's most recent publication of estimates of Soviet GNP⁴ consists largely of a lengthy discussion of its methods and the criticisms that have arisen as a result of these much lower estimates.⁵

The purpose of this paper is not to review these criticisms or the CIA's counterarguments. Rather, it is to recall a much earlier study of Soviet economic growth, part of a National Bureau of Economic Research project on the measurement of Soviet GNP. This study, measuring Soviet industrial production, laid down the first strong challenge to the conventional wisdom about Soviet growth potential. The study was highly controversial and was the target of bitter attacks and criticism. It has been neglected despite its considerable insights,⁶ but its findings, perceptions, and reception by the profession are significant for understanding the state of knowledge of Soviet economic performance.

The review of this study reveals that, although *glasnost* has opened new windows on the weaknesses of Soviet statistics, basic points made more than thirty years ago remain true today. Indeed, criticisms of Soviet statistics that may have been viewed with skepticism then are now seen to have been unduly mild. Today, even more radical criticism of Soviet statistics are seriously put forward. The deficiencies in Soviet statistics are symptomatic of deep systemic problems in the Soviet economic system. Institutional economics has much to contribute to understanding these problems. Finally, the review serves as a reminder that all estimates based upon Soviet statistics should be viewed with skepticism.

² **KHANIN** [1988]. With co-author V. Saliunin, Khanin had earlier published an article with similar conclusions in *Novy mir* (February 1987). Cited and discussed in **ERICSON** [1988, 20—25].

³ Estimates by Victor Belkin of the Commission for Studies of Productive Forces and Natural Resources of the Soviet Union. Reported in **EBERSTADT** and **TOMBES** [1990, 77—80].

⁴ **DIRECTORATE OF INTELLIGENCE** [1991], Study Prepared for Use of the Joint Economic Committee. This report still puts Soviet GNP at about 55 percent of U.S. GNP (p. 5).

⁵ The report begins by saying that "The purpose of this paper is to describe the methods currently used by the Central Intelligence Agency... in its estimates of Soviet gross national product... The latest estimates... also are presented." (**DIRECTORATE OF INTELLIGENCE** [1991, 1]). Thus the estimates themselves take a back seat to explanations of the methods, indicating that the methodological criticisms have struck a sensitive target.

⁶ For example, a major recent survey of measurements of Soviet economic growth makes no reference to Nutter's studies in its text or bibliography (**OFER** [1987, 1767—1833]).

It must be recognized that this conclusion pertains equally to estimates that predict rapid rates of growth and to those that forecast disaster.

2. Background of the NBER Soviet GNP Project

In the early 1950s, the National Bureau of Economic Research undertook the sponsorship of a series of studies on the Soviet economy. As initially planned, the project included studies of Soviet statistics, freight transportation, agriculture, and industry, plus a final summary volume. G. Warren Nutter, then Assistant Professor of Economics at Yale University, was named general editor of the project, with responsibility for the major study of Soviet industry and the summary volume. Nutter became a member of the NBER research staff in 1955 and devoted much of his subsequent career, at NBER and later at the University of Virginia, to issues of measuring industrial growth and interpreting the results of these measurements.

The first result of the work was a collection of statistics on industrial growth in the Soviet Union (**NUTTER** [1956]), a compendium of five volumes compiled and edited by Nutter that brought together in one place a large volume of statistics that were, at the time, exceedingly difficult to obtain. Eugene Zaleski captured the nature of the matter in 1963 when he likened research involving Soviet statistics to “archeological work” (**ZALESKI** [1963, 314]). Ironically, the first official Soviet handbook of industrial statistics was published in 1956, the same year that the Nutter compendium was completed.

The NBER statistics were the starting point for the estimates and analysis that Nutter then carried out, assisted by Israel Borenstein and Adam Kaufman. Nutter presented the first results at the American Economic Association meeting in December 1956 (**NUTTER** [1957 b]). They were highly controversial, much at odds with standard views of the time, and touched off a series of exchanges between Nutter and his critics that continued for many years. **NUTTER** [1962] continued the research, culminating with the publication of his *Growth of Industrial Production in the Soviet Union*. The estimates in this study and Nutter’s interpretation of them were no less controversial than the results presented earlier.

Subsequent sections of this paper review Nutter’s methods, results, conclusions, and interpretations in the light of the performance of Soviet industry since that time. Predicting the future course of economic events remains one of the black arts; sometimes it seems that the best we can say is that if change is not too radical, the future will look much like the past. Forecasting Soviet industrial performance in the 1980s from the vantage point of 1960 was a truly impossible task — indeed, one that Nutter eschewed. But how good a guide to that future were Nutter’s conclusions and understanding of the Soviet economic system? Would students of the time have been better *off*, in the sense of making forecasts, if they had more fully accepted that analysis? What were the weaknesses and drawbacks of Nutter’s work? In what senses can it be faulted, with the benefit of nearly 30 years of hindsight?

3. Methods and Data

Before constructing measures of industrial growth, it is necessary to have a theoretical basis for aggregating the data at hand and to understand the strengths and weaknesses of the data themselves. The NBER project laid the basis for its estimates on Nutter's own work on index number theory⁷ and Gregory **GROSSMAN'S** [1960] careful study of the shortcomings of Soviet industrial statistics. Grossman's analysis of Soviet statistics, done almost forty years ago, illuminates the systemic distortions that the Soviet system of central economic administration and the political motivations of the leadership produced.

In his understanding of the limitations of the available Soviet data, Nutter relied largely on this analysis, saying in his book that "[Grossman's] excellent study is... the basis of much that will be said here."⁸ As noted, Grossman's book remains a highly valuable source for understanding the problems and issues surrounding Soviet statistics, even though recent Soviet publications make additional criticisms not made or emphasized by Grossman.⁹

Based on Grossman's work, Nutter notes three major defects in Soviet data: the selectivity of published data, ambiguity of definitions, and the tendency to overreporting of output (**NUTTER** [1962, 11—12]), problems still to be noted in recent studies of Soviet GNP. Nutter points out that any country's statistics are subject to criticism and concludes that, despite their drawbacks,"... Soviet data... do provide a basis for assessing Soviet industrial performance and growth, if carefully used and interpreted" (**NUTTER** [1962, 13]).

Nutter's indexes were based on a sample of industries whose composition was dictated largely by the availability of data.¹⁰ As Nutter noted, his selection criteria could introduce bias into the estimates. A downward bias could be introduced in several ways: included industries are older ones that generally would be expected to grow relatively slowly; newer industries, producing new products, that would be expected to grow more rapidly, tended to be excluded; the military sector, also thought to grow relatively rapidly, was not included in the basic indexes." On the other hand, the sample had characteristics that could bias estimates upward: only one industry known to have declined (low grade tobacco) was included;

⁷ Two of Nutter's key works on index numbers are **NUTTER** [1957 a] and [1966 a].

⁸ **NUTTER** [1962, 11]. The work referred to is **GROSSMAN** [1960].

⁹ **ERICSON** [1990] reviews Soviet work that is far more critical of Soviet physical output data and investment and capital stock data. See discussion below.

¹⁰ Specifically, industries had to exist in both 1913 and 1928 in order to be included in his sample, and data had to be available during that period for the industries included (**NUTTER** [1962, 84]).

¹¹ Although Nutter did, in response to critics, estimate the growth of military production to determine the impact of its exclusion on his other indexes. See **NUTTER** [1962, Appendix A].

and there is the general tendency of Soviet statistics to overstate growth over long periods. Nutter [1962] was unwilling to reach a conclusion about which of these biases was likely to be stronger, noting only that they existed.

The sample design was immediately attacked by Nutter's critics. Hans Heymann, Jr., commenting on Nutter's paper presented at the December 1957 American Economic Association meetings, said "...he seems to like [the industrial materials index], not because it reliably measures the whole range of industrial output, but because it reliably measures a part of output; namely, that part which it is most feasible to measure."¹²

There is no *a priori* way to settle the dispute about whether the index as composed is a reliable representation of the capacity of the Soviet economy's industrial sector to grow, which was Nutter's purpose. The best way to assess its value in that respect is to review its performance, done later in this paper. In that regard, it is important to bear in mind that Nutter's index was criticized for having too small a sample and for excluding goods that observers thought should grow rapidly (see, e.g., SETON [1960, 132]). On that argument, expansion of the sample should result in faster measured growth of output.

4. Nutter's Principal Findings

In his articles and the NBER volume on industrial growth, Nutter presented many conclusions and findings. These may be divided for convenience into two groups: those pertaining to the Soviet Union and its capacity to grow seen in isolation, and those pertaining to comparisons between the growth records of the Soviet Union and the United States. There were controversial findings in both groups.

4.1 Findings on Soviet Growth in Isolation

Two main conclusions were advanced about the general record of Soviet industrial growth. First, it was slowing. Retardation in growth was noted in NUTTER's [1958, 408] presentation to the American Economic Association (AEA) in December 1957 and elaborated in NUTTER [1962, 105ff and 287]. In the light of what has happened in the last fifteen or twenty years, this is hardly surprising. But in the late 1950s, it was a highly controversial conclusion, in opposition to the prevailing wisdom of the time. In the 1950s and early 1960s, it was widely believed that the Soviet system of central planning could generate consistently high rates of growth of output over long periods of time. For example, in an early and highly regarded work that serves to illustrate the prevalent view, Donald HODGMAN [1953, 244] said that an annual growth rate of eight percent would be "...not unreasonable as a basis for extrapolation." As late as

¹² HEYMANN [1958, 422]. Although Heymann refers to Nutter's preference for the industrial materials measure of output, his point would apply equally to the sample used.

1962, Peter **WILES** [1962, 253] published the assertion that Soviet industrial production increases at an annual rate of ten percent.²⁶ Soviet claims of overtaking the United States, most notably voiced by Nikita Khrushchev, were based in part on this alleged capability.

Soon after Nutter's first reports, others began to report on evidence of retardation. For example, **KAPLAN** and **MOORSTEEN** [1960, 306] noted that their indexes showed slightly declining rates of increases for all industrial products between the first and second Five Year Plans, and sharper reductions as between the prewar years and 1950—58. They also noted that the Seven Year Plan implied growth rates lower than those experienced in the 1950—58 period. However, they qualified their conclusion about this slowing, hinting that a possible overfulfillment of the Seven Year Plan would result in a reversal of the retardation (**KAPLAN** and **MOORSTEEN** [1960, 310—311]).

By 1962 the CIA had reported on retardation (**GREENSLADE** and **WALLACE** [1962, 119—124]). However, the explanation given of the reasons for the slowdown suggests that, in contrast to Nutter's view, the authors of the CIA study thought that the retardation was reversible. They attributed the slowdown to two factors: a reduction in labor input (due to a cutback in the workweek during the period 1958—60) and a shift in investment from the civilian to the military sector. A workweek reduction would cause a one-time downward shift in output, but not a long term slowing of growth rates unless labor inputs continued to fall. And investment could be reallocated to the civilian sector. Thus even though retardation was acknowledged, it was not thought to be inherent in the system, and those reporting it left open the possibility that it would be reversed.

By 1966, retardation was so obvious that it was a main focus of the CIA report to the Joint Economic Committee (**NOREN** [1966]). The author of this report pointed to a number of factors that could have contributed to the slowdown (in both absolute growth and growth of factor productivity): the exhaustion of postwar opportunities to exploit Western technology, a slowing in improvement of educational attainment, a slowing in the rate of civilian investment in 1960—63, low operating efficiency in new plants (**NOREN** [1966, 295—300]). No doubt these are among the factors responsible for the general retardation. But the more fundamental weakness, the inherent inefficiencies of the Soviet economic system, was not included in the list, it is somewhat surprising that the author still concluded that “[t]he planned average annual increase in industrial output of 8.0—8.4 percent during 1966—70 seems cautious enough.”²⁷

¹³ **NOREN** [1966, 301]. Noren's contribution focussed on industrial production, of course. Considering the broader measure of Soviet GNP, Stanley Cohn was somewhat less optimistic. Noting significant retardation in the GNP growth rate, **COHN** [1966, 103] projected that it would rise at an annual rate of 4.5—5.5, or “...at best only about 1 percent above the United States.”

Thirteen years later, the CIA had reached a very different conclusion about prospects for Soviet industrial growth (**WHITEHOUSE** and **CONVERSE** [1979]). In this report, the authors predicted “a major slowdown in industrial growth from now through much of the 80s” (**WHITEHOUSE** and **CONVERSE** [1979, 402]). It is interesting, however, that the report began with the words “After 25 years of sustained high rates of growth, fueled by even larger increases in new capacity...” (**WHITEHOUSE** and **CONVERSE** [1979, 402]).

These observations about retardation did little or nothing to alter the conventional wisdom, however, which continued to dominate popular and political beliefs. Only very recently, when it became official Soviet policy openly to criticize the economic situation and the system¹⁴, did these views begin to change significantly. The change was exemplified in a 1990 editorial by Senator Daniel P. **MOYNIHAN** [1990], who said that “...for forty years we have hugely overestimated both the size of the Soviet economy and its rate of growth.” Senator Moynihan may exaggerate the magnitude of the error. But the idea that the Soviet system of central planning could generate sustained high rates of growth received such strong support in earlier days that it was abandoned only slowly and reluctantly.

Nutter addressed the long term prospects for growth in Soviet industrial production in another way, by looking back to industrial growth in Tsarist Russia. Again he created great controversy: by making the comparison at all, which critics thought was irrelevant, and by choosing to compare that period with the period from 1913 to 1955, the terminal year of the NBER study. An important review of his book presents a typical statement: “[Nutter’s] emphasis on the 1913–55 period as a whole systematically underestimates Soviet prospects...” (**HUNTER** [1963, 251]). This was a common criticism of Nutter’s work despite his repeated comments that no single estimate should be taken as the basis for predicting the future growth of Soviet industrial production. The additional thirty years of experience available today provides a basis for reviewing, however, whether the 1913–55 period provides reasonable evidence regarding those prospects.

In the 1958 report, **NUTTER** [1958, 407] noted that growth between 1913 and 1955 was “...roughly consistent with the growth trend established by Russian industry during the last half century of the Czarist period.” Presumably as the result of further revisions in the calculations, his conclusion in 1962 was that “...the average annual growth rate over 1870–1913 was higher than over 1913–1955 and lower than over 1928–1955...”¹⁵

¹⁴ By this is meant criticism by the highest officials in the Communist Party and the government that is widely published in the Soviet Union and in the foreign press — the campaign of *glasnost*, in short. However, it should be noted that criticism of economic performance in the official Soviet press is not new; at different times, the political leadership has found it expedient to encourage the publication of complaints about the economic situation and performance. **NUTTER** [1962, 55–61] has examples of such criticism.

Nutter was always very cautious about making predictions, and there is little in his work that looks to the long range future. But he frequently argued that the best indicator of the long range outlook in the Soviet Union was the growth rate observed during that lengthy period of Tsarist rule. How well does this hold up?

A rough measure is presented in Figure 1, in which the Nutter index for Industrial Materials is linked to the CIA index for the category of the same name.¹⁶ Also plotted in Figure 1 is a similar set of data for U.S. industrial production during the same period.

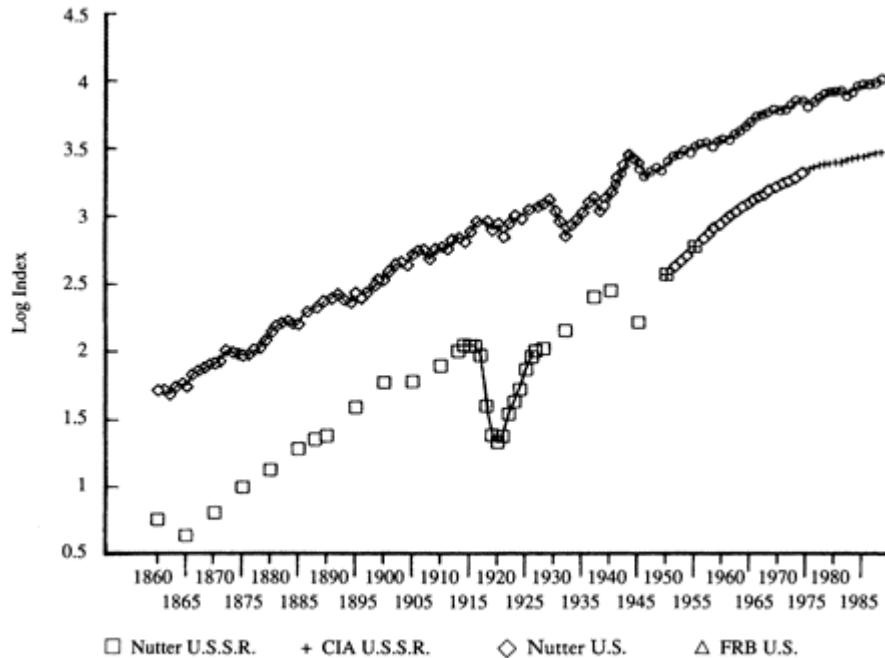


Figure 1
Soviet and U.S. Industrial Growth

¹⁵ NUTTER [1962, 164]. The reference is to the Industrial Materials index.

¹⁶ The Nutter indexes for both the Tsarist and 1913—1955 periods are his Industrial Materials indexes, both with 1913 bases. They are taken from NUTTER [1962, 164, 522—23]. Sources for the CIA index are U.S. CONGRESS, JEC [1982, Table 4, 191—192] for 1950—80, and DIRECTORATE OF INTELLIGENCE [1989, Table 38, 61] for 1980—88; index numbers for 1981—88 were calculated by applying the growth rates in DIRECTORATE OF INTELLIGENCE [1989] to the series in U.S. CONGRESS, JEC [1982]. The CIA index has broader coverage than the Nutter index and should, by the argument that the Nutter index tended to downward bias because of its restricted sample, grow faster, other relevant things the same. Data for the index of industrial production for the United States were taken from Nutter [1962, 164] for 1860—1955. They were linked to the FRB index for industrial production, taken from ECONOMIC REPORT OF THE PRESIDENT [1989, 362] beginning with 1939. All linkages are strictly mechanical; no efforts were made to adjust coverage or weighing systems in any of the indexes.

Table 1²
Average Annual Growth Rates U.S. and U.S.S.R. Industrial Production for Selected
Periods (percent per year)

Period	Russia or U.S.S.R.	U.S.
1870—1988	5.3	4.2
1870—1955	5.5	4.5
1870—1913	6.6	5.1
1913—1988	4.6	3.7
1928—1988	5.7	3.7
1913—1955	5.7	3.7
1928—1955	6.7	3.8
1955—1988	5.0	3.6
1970—1988	3.3	3.1

For ease of interpretation, Figure 1 shows logarithmic values of the index numbers. The vertical separation between the curves for the Soviet Union and the United States reflects only a different (and arbitrary) choice of base years (1928 for the U.S.S.R. and 1873 for the U.S.). The measure is a rough one for reasons noted in footnote 16, but the sheer length of time over which the indexes run and the strength of trends shown make it highly significant. Table 1 presents average annual growth rates, calculated between terminal years, for selected subperiods from Figure 1.

Inspection of Figure 1 and Table 1 suggests that the Tsarist record from 1860 to 1913 is a reasonably good predictor for the entire period shown; the average annual growth rate, 1860—1913, was 5.6%, while that for the entire 1860—1988 period was 5.0%. But use of 1860 as a base year appears to bias the estimate downward, as Figure 1 reveals, perhaps the reason that Nutter shifted the base year to 1870 for his analysis. However, shifting to 1870 as a base produces an estimate of 6.6% (Table 1) as the sustainable growth rate, which is clearly too high. Thus the 1870—1913 Tsarist record gives an over optimistic forecast of prospects for Soviet industrial growth.

Nevertheless, Nutter's use of the last part of the Tsarist period as a forecaster of long-term Soviet growth prospects was highly controversial. Equally controversial was Nutter's comparison of this to the 1913—1955 period. In his December 1957 AEA paper, he compared the Tsarist record to the 1913—1955 period, noting that growth between those dates was "...roughly consistent with the growth trend established by Russian industry during the last half of the Tzarist period..." (NUTTER [1958, 407]).

This brought much criticism. Hans HEYMANN [1958, 423] may have been the first to put such views in the printed record. His comments were a precursor of criticisms that were repeated many times during subsequent years:

The main point of Nutter's discussion — and the one with which I find myself completely out of sympathy — is his attempt to focus our attention on an imaginary "long-term trend line" which he superimposes on his data by connecting his terminal years 1913 and 1955.

Why 1913—55? Nutter is well aware of the misleading nature of this perspective. ...A glance at Nutter's graph and a quick recollection of the historic events that lie behind it should be sufficient to convince anyone of the futility of reading a long-term trend into such a period of history.

According to the data presented in Table 1, if the record of growth, 1913—1955, is used as an estimate of growth in the subsequent 33 years, the estimate is low by about 0.7 percentage points. To that extent the critics were right in saying that the 1913—1955 period underestimates growth potential. However, the principal alternative, 1928—1955, overestimates by nearly 1.7 percentage points. Neither is precisely correct, of course, and there is no completely convincing way to choose between them. It may be tempting to argue that the 1955—1988 growth rate is suppressed by the dismal performance of the last twenty years or so. If this is merely an aberration, rather than an indication of a real trend, the 1955—1988 growth rate might be artificially low.

This argument raises a central question in interpreting the Soviet record, a question as pertinent today as it was then. Nutter recognized that Soviet history is turbulent, filled with disasters. Indeed, in the same paper that Heymann criticized, one of **NUTTER's** [1958, 407] principal conclusions was that Soviet industrial growth had shown short spurts of rapid growth following economic catastrophes which were unmatched by any similar episodes in American history. In fact, the NBER volume begins with a survey of the dramatic ups and downs of Soviet history and a discussion of which period or periods to study. Nutter concluded that "The wisest course would seem to be to weigh evidence from both short and long periods of growth before making judgments on the future, the weight given to each depending on the problem at hand" (**NUTTER** [1962, 6]). In retrospect, this conclusion remains sound.

Today it is popular to speak of the collapse of the Soviet economy, and there is evidence, mostly non-systematic, that is consistent with impending doom. Economic analysis and sixty years of experience with centrally administered economies both indicate that recovery from this situation is most unlikely without radical restructuring of the system. But it should not be forgotten that Russia possesses great natural and human resources which, in a different set of conditions, could produce a powerful resurgence.

In that light, how should the recent record, the 1970—1988 period in Table 1, be interpreted? Is it one of the periodic downward aberrations in Soviet performance? Or is it the start of a new long run trend? The Soviets seem to think the latter, and I believe most external observers do also. However, history suggests that short periods are not reliable predictors of the future in the Soviet Union. The record of the last twenty years may prove to be the measure of the future. But the lesson of more than a century of Russian and Soviet industrial growth is that caution is in order in interpreting those years. What we are witnessing today could be just another violent episode in Russia's turbulent history.

The record of the last decade or so, in which the average annual growth rate is only 2.4%, may turn out to be the best indicator of future growth. If so, or if even lower

growth rates occur (which now appears not unlikely), the Tsarist record would be a very substantial overestimate of the system's capacity to generate growth, as would be the 1928—1955 period. Indeed, it is remarkable how close these two periods are.

Even if there were to be a dramatic turnaround, in the sense that growth accelerated to the average rate recorded since the mid-50s, it would show no higher value than the record over the entire 1870—1988 period, and would be lower than the growth rate of the last half-century of Tsarist rule. Thus, that period is an over optimistic predictor of long-run growth prospects.

4.2 Findings on Comparisons With the United States

Nutter made many comparisons of Soviet and American industrial growth. He compared roughly equivalent industries in the two countries, and tried to measure their growth from equivalent stages of development. He estimated lags in development of Soviet industries behind their American counterparts, and changes in these gaps during the period of study. He developed comparisons of growth over long periods and, finally, of performance in shorter periods when there might have been surges of growth.

The reason for estimating lags in development between Soviet and U.S. industries was straightforward: since growth rates typically are faster in the earlier stages of development of an industry than later, and since Soviet industrialization started later than U.S., a better comparison would be obtained if growth rates were measured from initial points that represented equivalent stages of development. This, too, ran afoul of much criticism,¹⁷ but it is now a fully accepted method of analysis. For example, Ofer, in his recent review of Soviet economic growth says “A common pattern of such studies is to compare the growth record of the country under investigation with that of other countries at a similar stage of development” (**OFER** [1987, 1775]).

Lags entered Nutter's work in two ways. First, he used them in his estimates of the “stage of development” of individual industries, which he defined in terms of the output of the industry as a fraction of the output of its U.S. counterpart.¹⁸ He used the stage of development to evaluate the pattern of growth over the 1913—55 period (**NUTTER** [1962, 93—95]). The result showed a rough inverse correlation between rate of growth in the 1913—55 period and stage of development in 1913 and a stronger inverse correlation between growth rates in 1928—55 and stage of development in 1928. Nutter interpreted these results to mean that Soviet planning emphasized the industries that were least developed in 1928 (**NUTTER** [1962, 93—104]). This conclusion, of course, rests on the degree to which the industries included in his sample represent the universe of industrial sectors that were subject to priority in Soviet planning.

¹⁷ See, e.g., **THORNTON** [1963 b, 255], **GREENSLADE** and **WALLACE** [1959, 694].

¹⁸ **NUTTER** [1962, 93]. In footnote 9, p. 93, and in the text, pp. 271 ff., he is careful to point to the shortcomings and problems associated with this measure.

Nutter's estimates of stage of development also produced estimates of the lags of individual industries behind their counterparts in the U.S. The distribution of these estimates provided a median lag. On the basis of changes in the median lag, he concluded that "...over the Soviet era as a whole, Soviet industries have generally lost historical ground to their American counterparts..." (**NUTTER** [1957b, 623 and 625], [1962, 268]). Of course, he meant that industries in his sample, not Soviet industry as a whole, had lost ground to U.S. industry. Nevertheless, this too was subject to much criticism. This criticism was especially misplaced in view of Nutter's (separate) conclusion that Russian industrial output was 11 to 14 percent of U.S. in 1913, while Soviet industrial output was 19 to 23 percent of U.S. in 1955.

Be that as it may, his conclusion about the relative level of Soviet industrial production in 1955 drew much criticism. For example, Ward, in his review of the NBER volume, said that "The surprisingly low estimate of Soviet industrial output as a fraction of the U.S. in 1955 is among the more questionable of Nutter's results" (**WARD** [1963, 442]). Official U.S. estimates were much higher; Thornton, for example, cited a figure of 48 percent in 1962 (**THORNTON** [1963 a, 630]). Thornton herself estimated the ratio as 46.1 % in 1960 (**THORNTON** [1963 a, 630]); Tarn estimated that it was 43.9% in 1955 and had risen to 65.1 % in 1960 (**TARN** [1964, 411]); and Thornton reports an earlier estimate by Campbell and Tarn that put it around 75 percent in 1958.¹⁹

Where does the truth lie? A definitive answer is probably impossible because of measurement and comparability problems. Nutter was fully aware of these problems; in a comment on Thornton's paper, he pointed out that all such estimates are sensitive to the choice and adjustment of weights used in constructing ruble-dollar conversion ratios (**NUTTER** [1966b, 526—528]).

If a precise calculation is beyond our means, what would have been the right end of the scale to pick? Nutter's 20—23 percent set the low end; Campbell and Tarn's 75 percent the high end. According to the CIA's figures, Soviet industrial output grew at an average annual rate of 5 percent between 1955 and 1988. The corresponding figure for the U.S. was 3.6 percent. These growth rates can be used to calculate implied ratios of industrial production in 1988; obviously, the validity of the result depends on how accurate these growth rates are.

Figure 2 depicts the simple relationship of assumed ratios of industrial output between the two countries in 1955 and the calculated ratios in 1988, using these growth rates. The relationship is easily calculated: by applying the assumed growth rates to indexes of relative size in a base year, the index values for the terminal year can be calculated and the ratio between them obtained.²⁰

¹⁹ **THORNTON** [1963 a, 630]; the reference is to **CAMPBELL** and **TARN** [1962, 703]. It is of passing interest to note that this figure is simply inconsistent with **TARNB**'s [1964] estimate.

²⁰ For example, let Soviet industrial output in 1955 be 100 and suppose it is 50% of U.S. industrial output. Then the index for the U.S. is 200. Then applying the two assumed growth rates to these indexes, values for 1988 can be computed. The ratio of these indexes represents one point in Figure 2. Obviously, this is a linear relationship.

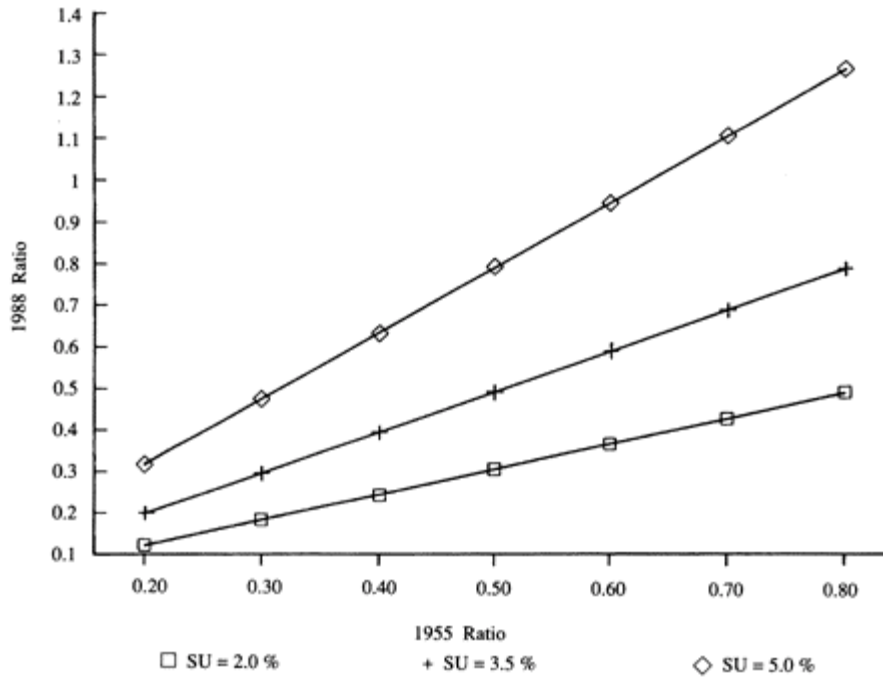


Figure 2
Ratios of Industrial Output (US = 3.6%; SU as Shown)

It is left to the reader to decide which 1955 estimate is more nearly correct. It seems clear, however, that 1955 estimates in the upper ranges do not meet naive expectations. For example, Campbell and Tarn's estimate of relative size implies that Soviet industrial output would exceed that of the U.S. today! A recent official Soviet statistical yearbook put the 1988 ratio at 79% (defined in terms of gross value of output), which implies a 1955 ratio of about 50%. This can be taken to set an upper limit on the true ratio. Nutter's 23% figure implies a 1988 ratio of less than 40%; this is not inconsistent with some of the unofficial Soviet estimates.

Other conclusions that Nutter reached in his comparisons of Soviet and U.S. industrial growth either were not highly controversial (for example, that the Soviet record shows spurts of recovery from catastrophe unlike anything in U.S. history) or cannot be evaluated on the basis of developments since 1955. This last group includes his observation that the Soviet rate of growth from 1913—1955 was slightly faster than that of the U.S. in the same period (NUTTER [1962, 226]), that U.S. growth from 1885—1920 was greater than Soviet growth from 1913—1955 (NUTTER [1958, 409]), or that no period in U.S. history shows as rapid growth as does 1928—1955 in the Soviet Union (NUTTER [1958, 409]). Other conclusions, all controversial to some extent but none illuminated substantially by later experience, were that Soviet growth

in the plan period was faster than U.S. growth in a “comparable” period and that Soviet percentage growth was faster overall than U.S. over comparable periods, but slower in output per unit of output (NUTTER [1962, 239]).

5. Nutter's Conclusions in Retrospect

Near the end of the NBER study, NUTTER [1962, 266] makes the following observation:

In terms of its ability to generate sheer growth in industrial output — the questions of how much the growth cost, what product mix evolved, and how the products have been put to use being left aside — the Soviet system of centralized direction has proved itself to be more or less the peer of the market economy, as exemplified by the United States.

This is, characteristically, cautiously phrased, and refers only to the 1913—55 record of Soviet industrial growth. But the years since then, especially during the last decade or so, have produced industrial growth rates that are below those of the United States and probably below industrial growth rates of other market economies.

Based on the record of growth since 1955, Nutter was over optimistic about the prospects for the Soviet industrial sector and overly generous in his assessment of the central planning system's ability to generate sustained high rates of industrial growth. For the last twenty years, at least, the Soviet record has fallen short of the U.S. and performance has been even worse in more recent years. Even given the qualifications that he included, it is surprising that Nutter gave as much credit to the Soviet system as he did.

And yet, as citations in this paper have shown, his conclusions generated a storm of criticism. What are the reasons for this? The failures of Soviet central planning, especially its inability to create a modern industrial power, clearly were the driving force behind the development of *perestroika* and Gorbachev's ascendancy. Those weaknesses, fatal to the continuation of the traditional Soviet system, reverberated through Eastern Europe, and, powered by the realization that a weakened Soviet Union would not intervene, led to the world-shaking revolutions of 1989. In the face of this experience, the position of Nutter and scholars of similar views thirty years ago, arguing that central planning was not viable in the long run and supporting the stability and power of the market system, is amply vindicated.

One line of criticism seems to have been based on concern that Nutter's work might lead to complacency about Soviet strength and the military threat that the Soviets posed.²¹ For example, Harry SCHWARTZ [1963, 10] said that “Nutter's skepticism

²¹ Such criticism is noted by Eugene ZALESKI [1964, 311]. This line of criticism is especially ironic, since Nutter himself was far from complacent. In fact, he was generally perceived as a hawk when most of the profession were doves. He was certainly concerned about Soviet arms production; he emphasized it as one of the divergences of the central planning result from what a market would produce (see NUTTER [1958, 410]).

about the long-term significance of the record of the 1950's has not yet been supported by subsequent developments..." and that "the Nutter conclusion cannot be adopted as an indication of relative capabilities in the Cold War." In fact, in response to criticisms by U.S. officials, Nutter revised his work to include military output in the measures published in 1962 (see **NUTTER** [1962, 149]). Even so, those who thought that the indexes understated Soviet production before military production was taken into consideration frequently were not satisfied with the results of this revision. Consequently, these criticisms continued.

Something akin to this may be occurring today. As reported output continues to grow more slowly, as the CIA estimates indicate (**DIRECTORATE OF INTELLIGENCE** [1991]), or actually falls, Soviet military power and potential may be discounted. Nutter's critics feared that merely lowering estimates of Soviet growth would create complacency. Today's more dire predictions could lead to unwarranted complacency. Understanding of short run fluctuations and long range growth patterns in Soviet output is crucial to this assessment.

Another line of criticism grew from prevailing interests and attitudes of the economics profession. In the early 1960s, economists were preoccupied with the question of economic growth, which was seen as the best hope for curing the ills of poverty. Economic systems were judged heavily on the basis of what was believed to be their capacity to generate growth. Thus Nutter's conclusion that the system of central planning was no better than the market system struck at a sensitive point.

This was particularly important among those who were committed to socialism or who were not, in any event, favorably inclined to market capitalism. Economics is arguably the most scientific of the social sciences, but ideological positions seemed to color assessments of scientific work. The belief that socialism would work, or that it should be made to work because of the virtues claimed for it, was strong in academics. This included not only economics but other fields as well, and extended beyond academics to journalism and politics. Many believed that socialism was not only more just than capitalism, but also that it avoided capitalism's perceived deficiencies. An ability to deliver higher rates of economic growth, based on the claim that the system of central planning could more effectively marshal and allocate resources, was only one of the advantages that socialism's advocates claimed for it. Intellectually, the great socialist debate was far from settled; Hayek's insights into the workings of the market were equally far from being accepted.

Moreover, Nutter qualified his conclusions about the impressiveness of Soviet industrial performance and his qualifications were provocative. He suggested that Soviet industrial growth had been generated at great cost, that the product mix was not that which consumers would have preferred, and that the products were used for purposes that did not necessarily improve welfare for average Soviet citizens. While largely undeniable even at that time (and certainly so today), these arguments went against the grain of the conventional wisdom.

In **NUTTER**'s [1958] paper presenting early results, he made these points explicitly, arguing that Soviet industrial growth would not have been as rapid as it had been except that consumer wishes had been ignored, sectors like construction and services neglected, and emphasis placed on capital goods and armaments (**NUTTER** [1958, 411]). His comparisons of the plan period with Tsarist industrial growth, which put planning in an unfavorable light, similarly ran in the face of general beliefs of the time.

6. Current Issues and Implications

The NBER study opened a dispute that involved issues of method, data reliability, and ideology that have persisted to the present time. The ideological ground has shifted dramatically since 1960; the East European revolutions of 1989 and the repugnance of the socialist state revealed by them and *glasnost* in the Soviet Union, together with the revelations of just how poorly the systems of socialist central administration have performed, have consolidated a shift of ideological attitude away from socialism and toward private property and the market economy. This shift is not unique to Eastern Europe; much privatization has taken place elsewhere. The ideological debate is far from over, but the ground has surely shifted. Few would believe today that a system of central planning could generate high growth rates indefinitely.

The debate over method is also on a different footing, in a sense. After years of developments of increasingly sophisticated index number theory, the approach used in practice remains essentially the same as that used thirty years ago: linear indexes of output series, using quantity and value series of output. The CIA's most recent GNP estimates are based on a comprehensive measurement of output in a base year (1982) which is then moved through time by application of sectoral sample indexes (**DIRECTORATE OF INTELLIGENCE** [1991, 9]). This technique implies that the CIA measure is essentially a Laspeyres index for years subsequent to the base year and Paasche for the earlier years. This means that growth in years subsequent to the base year tends to be overstated and growth in prior years understated.²² In fact, the growth rates reported by the CIA correspond well to this pattern; there is a clear upward shift in the rates at 1982.²³ Given this bias, the CIA's estimates appear to overstate recent Soviet growth even without taking into account sources of upward bias which might arise from other causes.

²² Strictly speaking, the Laspeyres index overstates growth in capacity to produce the bundle of goods produced in the base year, while the Paasche understates that capacity. See **NUTTER** [1966 a], [1957 a]. The CIA technique in essence measures growth in terms of the base year bundle, which is 1982 GNP.

²³ For the five years prior to 1982, the annual increases are: 1977, 3.0%; 1978, 2.2%; 1979, 1.8%; 1980, 1.7%; and 1981, 1.3%. For the five years after 1982, they are: 1983, 2.4%; 1984, 2.8%; 1985, 2.1%; 1986, 2.7%; and 1987, 3.1% (**DIRECTORATE OF INTELLIGENCE** [1991, 61–62]).

These other causes arise, in part, from the continuing debate about the data themselves. As already noted, Grossman's work thirty years ago identified the fundamental causes of distortions in Soviet statistics. More biting criticisms have come recently from Soviet economists (see **ERICSON** [1990], [1988]). For example, one claims that falsification of output in sectors where price manipulation is least feasible runs from five to 25 percent. Unreported losses in rail transportation may range from 8 to 50 percent, and reported product may be overstated because of inclusion of additives or impurities. There are even claims of fictitious buildings and factories included in the output statistics.

In addition, value figures, long understood to be questionable because of hidden inflation, have come under new attack. The impact of hidden inflation in output series has almost surely grown as product line composition and products become more complex. But the Soviet critics argue that the value series for investment and capital goods, which generally have been accepted as accurate, are also subject to overstatement because of hidden inflation. If so, reported investment is not a real addition to a given real capital stock; evidently, errors introduced in this manner would cumulate over time, leading to significant overestimates of capital stock.²⁴

The CIA's most recent estimates discuss these possible sources of bias (**DIRECTORATE OF INTELLIGENCE** [1991, 29—38]). They note that upward biases in output series arising from the built-in incentives to exaggerate production would not affect rates of growth of output through time as long as the bias was consistent in some sense (Nove's famous "law of equal cheating"). If the Soviet critics are right, though, there may indeed be a gradual increase in the extent of overreporting, the result, for example, of the growing complexity of output. Against this the CIA analysts place what might be called the "Law of Offsetting Errors," arguing that an acknowledged upward bias in some parts of their estimates (machinery output and the machinery component of investment) is offset by a roughly equal downward bias in other parts (housing and education, health, and government services) (**DIRECTORATE OF INTELLIGENCE** [1991, iv — v]).

Housing is alleged to be underestimated because its contribution to growth is measured by the growth of living space with no adjustment for quality improvement. The three service sectors are alleged to be underestimated because they are measured by labor inputs with no adjustment for productivity increases. Of course, the claimed sources of underestimation might be questioned by others; some might argue that housing quality and service sector labor productivity have declined, rather than increased. On the basis of sensitivity tests (**DIRECTORATE OF INTELLIGENCE** [1991, 47 and Table 15]), the CIA concludes that their estimates of GNP growth rates over the 1951 —87 period may be exaggerated by a maximum of 0.3 percentage points (instead of an annual growth rate of 3.8%, one of 3.5%). But this overall estimate is based

²⁴ Ironically, this implies that estimates of Soviet productivity are biased downward, other relevant things the same.

on a calculation in which it is assumed that housing growth is underestimated by as much as 3.0% per year and that the three service sectors are underestimated by 1.0—2.0% per year. Thus the debate is far from closed.

The new and more radical uncertainties about the magnitude and growth of Soviet GNP and its components raise many issues. Increased uncertainty about the validity of the basic data cast serious doubt on the usefulness of elaborate statistical methods for analyzing Soviet performance. The robustness of econometric estimates of productivity, of consumption, of investment, and of many other measures of economic performance is called into serious question by these uncertainties. It may be better to analyze the system on the basis of recent developments in economic theory, including the new institutional economics, than to invest substantial resources in sophisticated numerical analyses. The insights of property rights theory, transaction costs analysis, and the problems of agency, among others, could well provide better understanding of the properties of the economic system and forecasts of its performance than technically sophisticated quantitative analyses based on these deeply defective data.

For example, the recent criticism of the Soviet data provides new evidence of the deep-rooted presence of agency costs²⁵ in the Soviet system and the difficulties of monitoring performance in that system. One rationale for the puzzling Soviet practice of maintaining unchanged product prices over long periods is that the practice reduces monitoring costs.²⁶ In this context, prices serve to convert output streams to quantities that may be used to evaluate managerial performance; constant prices are preferred because one element of variability is thereby eliminated.

But even where prices are, for this reason, not extensively manipulated, physical output can be misrepresented. Soviet critics now allege that the problem of output overstatement is worst in exactly in those sectors that are least open to manipulation of prices (**ERICSON** [1988, 22]), suggesting high agency costs in those sectors. The residual, post-monitoring agency cost in sectors where prices are relatively easy to manipulate must be significantly greater. There is no obvious way to measure these losses, but their presence, and possible increase over time, is surely one cause of poor and deteriorating (measured) economic performance.

Problems of agency cost become more serious as the system becomes more complex. As technology becomes more complex, monitoring becomes more costly as products and their interrelationships become more complex. Physical output measures become useless, and recourse to value measures becomes imperative. Far from solving the problems of central planning, as was once believed, the age of the computer and all that goes with it have greatly increased

²⁵ Agency costs in the Soviet system are discussed in **MOORE** [1981].

²⁶ Of course, the sheer practical problem of adjusting prices is another explanation for this phenomenon. According to Ericson, the State Price Committee can review only 200,000 of the total of 24—25 million industrial prices each year (**ERICSON** [1990, 69]).

the costs of operating such a system because computers and the technology they represent are also increasingly important products of the economy. The political decision taken in the Soviet Union to seek radical reform may reflect a recognition that these costs had become greater than the returns from maintaining the centralized system.

Finally, the ongoing criticism of Soviet statistics raises the question of the quality of information available to the Soviet leadership and bureaucracy. In all of the criticism, it is rarely if ever claimed that the Soviets maintain two sets of books, one for external consumption and one for internal use. Of course, Gosplan experts are well aware of the shortcomings of the statistics they use, and they no doubt have much more detailed information than is published. However, the causes of the distortions and shortcomings of Soviet statistics are inherent in the system; even though planners might understand that they are biased and fraught with error, they cannot eliminate that error. The enormous complexity of the economy only adds to their problems. The entire system is based on a fundamentally flawed information system; it is Hayek's information problem writ large.

The planners who work to develop the plans undoubtedly do what they can, within the limits of the resources available to them, to correct or allow for the errors that the data contain. Decision-making by the leaders, however, must rest on a much more restricted set of data; time constraints imply reliance on condensations of the enormous quantities of (flawed) information generated by the statistical system. Not only is much information necessarily lost in the condensation process, but the incentives of those who condense it and report it to the leadership inevitably introduce additional distortions. Thus the statistical basis for decision-making at the top levels of the Soviet hierarchy must be very weak. One can speculate that it was only the highly visible signs of distress in Soviet society, and perhaps the freeing of tongues resulting from *glasnost*, that led the Soviet leadership to embark on serious economic reforms.

Zusammenfassung

Kürzliche Schätzungen des Bruttosozialproduktes in der (ehemaligen) UdSSR haben erhebliche Zweifel an der Validität früherer Outputmessungen aufkommen lassen. In diesem Beitrag werden Forschungsergebnisse des 'National Bureau of Economic Research' (NBER) aus den 50er Jahren diskutiert. Die Ergebnisse des NBER widersprachen der damals weit verbreiteten Meinung, das sowjetische zentrale Planungssystem sei in der Lage, für die absehbare Zukunft hohe Wachstumsraten zu garantieren. Es hat sich herausgestellt, daß selbst die pessimistischen Prognosen immer noch zu optimistisch waren. Eine Analyse von Anreizstrukturen wäre bei der Auswertung der statistischen Outputmaße hilfreich.

(Es sei darauf hingewiesen, daß dieser Aufsatz vor dem versuchten Staatsstreich im August 1991 und dem nachfolgenden Zerfall der früheren Sowjetunion geschrieben wurde.)

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Measuring Soviet Economic Growth: Old Problems and New Complications

Comment

by

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John H. MOORE's [1992] paper deals with two issues. First, he examines the work of the late American economist G. Warren Nutter (1923—1979) on long-term Soviet economic growth, and, second, he articulates the relevance of Nutter's findings for the understanding of current developments, when the Soviet economy is undergoing complete overhaul.

1. Nutter's Calculations of the Soviet Growth Rates

According to **NUTTER'S** [1958] study, in the pre-World War I period (1870— 1913), Tsarist Russia's, per annum, economic growth rate was 6.6 percent, while the comparable US growth rate, for the same period, was 5.1 percent (p. 80). The 1913— 1955 period showed a 5.7 percent growth rate per annum for the Soviet Union and 3.7 percent for the U.S. Nutter's results displeased many 'establishment' academic economists; they were skeptical about Nutter's methods, the selection of data, and the interpretation of the material. There were a number of reasons for such skepticism, if not outright hostility, to Nutter's work. Most of them have been forgotten by now, but could be briefly mentioned since Moore's paper does not do so.

First, at the end of 1949, Joseph A. **SCHUMPETER** [1950, 417], in his presidential address to the American Economic Association, called "The March into Socialism," argued that the capitalist order tends to destroy itself in the course of time and that centralist socialism is its heir apparent. Schumpeter did not say how long it would take for the capitalist order to crumble. He did not advocate centralist socialism, but he did predict its advent. For Schumpeter, capitalism, with its innovations and the process of 'creative destruction', was likely to destroy itself, almost willy-nilly (**SCHUMPETER** [1950, 416]). At the end of his address, the audience gave him a standing ovation; many supposedly heard what they normatively believed in. This Schumpeterian message lingered in the academic minds for quite some time.

Second, Nutter presented his first research findings on long-term Soviet growth rates at the end of December 1957 (p. 76), at the annual meeting of the American Economic Association. It is worth noting here that earlier in the year the Soviet Union had launched the Sputnik, and this event shook America virtually to the core. This technological feat was a tangible manifestation of the technological creativity of the Soviet centralist socialism; they expected more and greater technological wonders in the future. Many thought that the Soviet Union was soon likely to emerge as the new 'horn of plenty' for mankind. According to Moore, Donald Hodgman, the discussant of Nutter's paper, virtually dismissed Nutter's figures and argued that 8 percent per annum would be "not unreasonable as a basis for extrapolation" (p. 76) for the future. Nutter was cautious about the Soviet data (p. 75) and raised the issue of the systematic distortion and political motivation that lay behind Soviet statistics. He stressed three major defects in the available Soviet data: the selectivity of the published data; the ambiguity of definitions used; and the Soviet practice of over-reporting of output in the quantitative-output planning system. However, these warnings probably fell on the deaf ears of the mainstream American academic economists, with a tiny exception. Peter Wiles, for instance, asserted that Soviet industrial production increased at an annual rate of ten percent (p. 77).

There was probably a third reason, also not mentioned by Moore, about the almost euphoric stance towards the future prospects of the Soviet economy. The older academic economists recalled with horror the sufferings of the American people during the Great Depression and were therefore a bit apprehensive about the future. Many of them were not quite aware of the fact that the New Deal had laid foundations for the capitalist welfare state in America and that Full Employment Act of 1946 had eliminated the basic vestiges of the 'laissez-faire' system. But memories die hard, and, at a safe distance from the Soviet Union, many still felt that 'socialism' has showed a better performance than 'capitalism'. In the American academic halls in general and in the economics classrooms in particular 'socialism' was popular, as described by the then young William F. **BUCKLEY** [1951, 240ff.], who recorded his youthful impression at Yale University in the widely-read book, *God and Man at Yale*.

One could also add a fourth reason, which colored the negative attitude towards Nutter's skepticism by the economics profession. In the 1960's, the economics profession, world-wide, was engaged in the so-called "convergence debate." Some leading American economists, such as John Kenneth **GALBRAITH** [1966], stated in the fall of 1966 that "there are strong convergent tendencies as between industrial societies ... despite their very different billing as capitalist or socialist or communist." This was the so-called "convergence through industrialization" thesis. In the Soviet Union, convergence meant coexistence, be it peaceful, hostile, or competitive. The salient feature of Moscow's coexistence concept at the time was that the Soviet Union would eventually win the economic race with America. Since capitalism supposedly

suffered from high unemployment, low growth rates, poverty, and growing technological obsolescence, it was bound to collapse eventually, as Marx predicted. In contrast to a milieu of capitalist decay, the Soviet economic system, while still far behind capitalist countries in just about every measurable way, offered hope and had special wellsprings of dynamism that would permit it to achieve miracles.¹ In essence, Khrushchev's "We Will Bury You" dictum sums up convergence on Soviet terms at that time.

These were the four factors which might explain why the American economics profession was so critical of Nutter's findings. By the mid-1960's, retardation of the Soviet economic growth was obvious, but, as Moore indicated, the slowdown "did little or nothing to alter the conventional wisdom" (p. 78). On the contrary, Nutter's work continued to generate a storm of criticism (p. 78). The economics profession's belief that the Soviet quantitative-output planning could generate sustained high economic growth rates was abandoned only slowly and reluctantly (p.78).

2. Unintended Consequences of the Soviet Centralist Economy

Warren Nutter's research findings were no doubt sobering to the economics profession and government officials. However, in the long-run, his major contribution, often not appreciated at the time, was his suggestion about the "more fundamental weakness, the inherent inefficiencies of the Soviet economic system" (p. 77). Moore does not articulate these inefficiencies in his paper. Instead, he devotes considerable space to the discussion of the advantages and disadvantages of the Laspeyres and Paasche's indices and the resulting differences in the Soviet growth rates. He admits that precise calculations are beyond professional means (p. 81). Yet, the inherent inefficiencies of the Soviet economic system are a legion. For instance, unintended consequences of the quantitative-output planning are well-known to the Soviet experts, but journalists, politicians, and economic theorists forever wonder why the Soviet nail factories have a tendency to produce only big nails! For decades, the Soviet investment planners had to allocate real capital resources without the benefit of the interest rate because of Marxian eschatology. The *How Much to Invest? Where to Invest? How to Invest?* questions were handled by bureaucratic fiat for decades. The *Marxian Theory of Expanded Reproduction* led to numerous unfinished investment projects. The Russian country-side today is dotted with such "investment ruins", as the Germans call it. Repressed inflation, various colored (i.e., unofficial) markets, "waiting purchasing power", compensation trade among firms, subsidies, and meaningless prices, all are evidence of the flaws of the Soviet economy, which would have surfaced sooner or later.

In Moore's view, the ideological positions of the American economics profession at the time (p. 86) seem to have colored its assessment of the Soviet

¹ For an analysis of the relevant literature, see N. W. BALABKINS [1968].

economy. He writes that “The belief that socialism would work, or that it should be made to work because of the virtues claimed for it, was strong in academics” (p. 86). Many believed that socialism was not only more just than capitalism, but also that it avoided capitalism’s perceived deficiencies.

Moore does not discuss why the economics profession was so “hooked” on socialism. The intriguing question is: didn’t the economics profession know the difference between the “laissez-faire” capitalism of the Marxian era and the contemporary capitalist welfare state? It is often forgotten that the foundations of the capitalist welfare state were laid in the 1880’s by the German *Verein für Sozialpolitik*, Gustav Schmoller and Bismark. However, didn’t Moore overstate his case because the majority of American economists worked within a capitalist welfare system with considerable emphasis on policies for macro stability?

3. Moore’s Call for the Return to “Basic Economics”

Moore expressed serious doubts about the usefulness of elaborate statistical methods that were used for analyzing Soviet economic performance (p. 89). He also shares Nutter’s misgivings about the nature of the Soviet statistical data, arguing that it may be better to analyze the system on the basis of basic economics than to invest substantial resources in sophisticated numerical analyses (p. 89). In addition to the above-mentioned deficiencies of the Soviet economic system, Moore alludes to the high agency costs in the Soviet Union (p. 89), which makes it costly to monitor the performance of the economy in absence of meaningful prices. Also, the quality of information to Soviet leadership and government bureaucracy is poor; the Soviet Union has had a fundamentally flawed information system (p. 90). But if Moore wants to evaluate the performance of the Soviet economy on the basis of basic economics, why didn’t he refer to Warren **NUTTER**’s [1969] work, *The Strange World of Ivan Ivanov*? That volume provides solid “grassroots” data and information on the daily realities of the Soviet life.

Moore’s suggestion for the use of “Basic Economics” is lacking in precision as to what exactly it would accomplish. However, could it be that Moore had in mind a given social order as a future focus of analysis? If so, then the economics profession will be compelled to analyze simultaneously the political, institutional, and economic dimensions of a given society. Such a broad-based method of economic analysis will call for a considerable expertise on the part of economists in what is known as ‘contiguous fields of economics.’ Joseph A. Schumpeter, Gunnar Myrdal, F. Hayek, and L. Mises called for such a broad method of analysis, but it fell on deaf ears of the economics profession hooked on the Euclidian geometry and arcane mathematics. And yet, the ‘Velvet Revolution’ in Central and Eastern Europe after 1989 calls precisely for such broad-based methods. The American Economics Association has 40,000 members, but probably 300 economists know something about non-market econom

ics. As the 'Velvet Revolution' unfolds, many American economists in their forties and fifties are complaining that in their graduate training they never had a course on how to create a market economy. For the past two years, scores of conferences have been held in Europe and the Americas on how to implement *Perestroika* and the English and American-trained economists forever wonder how to pull out of the *ceteris paribus* cage the institutional and political elements of a given social order.

In England, where economics was born, so to speak, the existence of parliamentary democracy was always taken for granted and could, for that reason, be assumed as given. But that was not the case elsewhere. Neither could one take the privately-owned means of production for granted, as was the case in England or America. But, at the present time, Perestroika economists are working with the above-mentioned three dimensions. When Russia has created a new social order with a multi-party democracy, when privately-owned means of production become the order of the day, and when market forces coordinate the economic activities of the Russian society, and welfare laws provide a safety net for the weak, poor, and unemployed, only then will it be permissible to relegate the political and institutional factors into the *ceteris paribus* cage, as the Anglo-Saxons have done for almost two centuries. Thereafter, the economics profession can return to its traditional method of isolating economic variables.

Professor Moore deserves credit for bringing to light an American pioneer in the field of Soviet studies of the 1950's who raised questions which are now being dealt with in the on-going process of the 'Velvet Revolution' in Central Europe and the 'Perestroika' process in the now defunct Soviet Union.

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Measuring Soviet Economic Growth: Old Problems and New Complications

Comment

by

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1. The history of the studies of Soviet economic growth has been one long debate on the issues of method, data reliability and ideology. Examining Warren Nutter's case, Professor John **MOORE** [1992] shows how difficult it is to challenge the orthodox views in this extremely politically sensitive field of economic science. Arrived at in the late 1950s, **NUTTER**'s [1958] conclusions as to the slowing-down of Soviet growth contradicted those of the CIA (not to mention the USSR's Goskomstat estimates) and disagreed with the general academic understanding of the Soviet system's potential. However, real Soviet economic growth appeared to be very similar to Nutter's predictions, with the U.S. performance being significantly more stable than Soviet. Perhaps Nutter was successful mainly because he avoided the traditional approach of dealing with the pure quantitative characteristics of the Soviet economy and paid more attention than his colleagues to its systemic distortions. In this respect, **MOORE**'S [1992, 891] thesis that "it may be better to analyze the system on the basis of basic economics than to invest substantial resources in sophisticated numerical analyses," seems to be very promising and needs further discussion.

It seems useful to focus on two related issues: structural changes and Perestroika reforms. Both of these factors make quantitative measures less helpful in understanding the dynamics of the Soviet economy.

2. Scientific advance and its applications to production are the driving force of modern economic growth: they assure sustained growth in per capita income and make for permanent structural change. Interstate quantitative growth comparisons are thus more useful when the economic systems compared have the same quality of growth. In this sense, the aggregate figures of Soviet economic growth contain not only hidden inflation, as Moore points out, but also hidden technological and structural weaknesses of the system. Thus, Nutter's sample of industries in which newer industries and the military sector were not included was very controversial.

There is no doubt that the Soviet economy grew after 1928. The question under discussion here is whether the rate of this growth was 85 times (official

estimates) or 6 to 7 times in alternative calculations of **KHANIN** and **SELIUNIN** [1987], widely referred to in the recent Western literature. In any case, these growth rates were higher than those in the U.S.A. (**OFER** [1987]). It is also clear that the Soviet economy partly fulfilled its basic aim to “overtake and surpass” the U.S. level of industrial output, if the mining and steel industries are in question. These sectors, however, continued to be among the main contributors to Soviet economic growth even during the last three decades, when the United States were focusing more and more upon the development of high-tech industries and thus preparing for the information age. Thus it can be said that different sectors were playing the leading role in supporting economic growth in these countries. So while on the level of aggregate GNP comparisons the Soviet Union was closing the gap with the United States, this did not reflect the emergence and widening of the technological U.S.-Soviet gap. The most striking example here is the case of Soviet computer hardware and software industries with their extremely bureaucratic regulation and their focus on imitation rather than innovation.

The shortcomings of the centrally planned economic system mentioned above were closely connected with yet another structural problem: the high proportion of military production within industry and especially in the high-tech sectors. In fact, it is still very difficult to say whether the Soviet military economy is integrated into the general civilian economy or vice versa. In the late 1980s, according to some recent estimates by independent Soviet economists (official statistics on this subject are still unavailable), up to 60—80 % of the output from such industries, as machine building, chemical and metallurgy went to the military. Thus, neglecting the military component of Soviet GNP (though Moore is right to stress the complexity attending its calculation), may distort the whole picture of the nation’s economic performance. Along with the increasing role of technological changes in the development of industrialized countries, the negative impact of military economy on nation’s productivity and technologies’ diffusion is rapidly growing. Not surprisingly, the industry in which the technological change plays a much greater role than in the evolution of other sectors of the economy, and which has the largest weight in Soviet GNP, appeared to be the major source of the declines in its growth since 1960.

When these structural imbalances, which have been deepening during the last decades, are taken into account, along with the “command economy’s” emphasis on quantitative measures of enterprises’ performance and the high monopolization rate in all industrial activities, it becomes clear that this system had a limited future. Hence, Nutter’s discussions of an irreversible slowdown in growth patterns are especially interesting: they were made in the late 1950s at the time of the “golden age” of the centrally planned economic system, when Soviet output was growing at the average annual rate of 9 %. The explanation of the following steady decline in the Soviet growth rates still needs further research into the fundamentals of the “command economy” (**SCHMELEV** and

POPOV (1989]). Moore does not give his own detailed interpretation of this phenomenon, but he is certainly right to stress that a recovery from the decline in the 1970—1988 period is most unlikely without a radical restructuring of the system.

3. Reforming an economic system with the aim of improving its output trends may proceed under one of two popular scenarios: either by changing the industrial structure or by the creation of a new institutional structure. Both these ways have been attempted in the U.S.S.R. since 1985, but acceleration of growth rates appeared to be incompatible with Perestroika.

During the first three years of Perestroika, the new Soviet leaders, very much concerned with the country's negative growth since the late 1970s, were working hard under the slogan of "acceleration of social and economic development." They also recognized well enough the necessity of changing the model of Soviet economic growth from an extensive to an intensive one. In practice, this meant the forced modernization of the whole economy, with top priority being given to the information technologies sectors. However, because the understanding of economic growth remained technocratic and mainly quantitative, the reformers relied heavily on traditional policy instruments. 1) Massive investments from the classical Soviet source — the state budget — and 2) creation of new institutions without changes in the system of property rights. Not surprisingly, these restructuring policies failed. They were also undermined by a growing budget deficit resulting from declining oil prices, the anti-alcohol campaign and continuing subsidies to state-owned enterprises. Consequently, this attempt to accelerate economic growth made a major contribution to the severe financial crisis instead.

Also, as Moore emphasizes, the statistical basis for decision-making at the top levels of the Soviet hierarchy was very weak; even Gorbachov recognized this in the late 1980s. Today, however, Moore's conclusion that the Soviet leaders literally might not know what they are doing, does not seem to be completely accurate. It is possible to argue that all the main political forces in the U.S.S.R. now have a clear vision of the paths to economic stabilization and achievement of high growth rates.

Several possible scenarios of the Soviet future development (neglecting that of the reconstruction of the "command economy") are worth mentioning in this respect. The history of the nation presents two such models: the period of rapid industrialization at the end of the 19th century and the NEP years in the 1920s, which was the period of highest growth rates after the 1917 Revolution —18% per annum (**SCHMELEV** and **POPOV** [1989]). Rapid growth in both of these periods was the result of deep economic reforms and it seems more promising to use these years for historical comparisons of the Soviet growth than, as in Nutter's case, choosing periods beginning with 1870 or 1913 for this purpose. Taking into account the interrelation between Russia's turbulent history and its economic growth, discussed by Moore, it might be more efficient to compare

Soviet economic growth with the periods mentioned. But the conclusions from such comparisons should be made with regard to the technological changes that have taken place during this century.

Another set of growth scenarios that has been discussed during the last few years in the Soviet Union comes from postwar history. The main three such scenarios are those derived from the postwar renewal of West Germany and Japan, the rapid growth of the Newly Industrializing Countries, and, of course, the U.S. case. Each of these scenarios, having its own advantages and disadvantages, if implemented in the Soviet Union, will require the creation of a totally new system of industrial organization. As for today, new economic institutions in Russia are being formed, in general, in closer relation to the U.S. model. In any case, however, the former statistical gaps confronting Soviet reformers have now been replaced in significance by their poor understanding of the transaction costs that will play an essential role when the new institutional environment and new institutions of governance are emerging. The application of the New Institutional Economics to the analysis of non-Western and non-capitalist economies (**WILLIAMSON** [1990]) therefore has a very good future. The need for such a push in research is especially clear after the August Revolution of 1991: the emergence (or re-emergence) of Russian capitalism seems to be rapidly taking place. Due to historical and cultural traditions, this capitalism in Russia is very likely to become a bureaucratic one, which in itself could be of interest from the perspective of the New Institutional Economics.

In conclusion, it is possible to assume that the transition to a market economy in Russia may be a much more painful and longer process than in the former socialist countries of Eastern Europe, and that during this period the major issue concerning studies of Russian economic growth is likely to be the qualitative aspects of the process. Moore's discussions of the evolution of studies of the subject in the U.S. are very helpful in this respect and hopefully will encourage further research in this direction.

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