

Economic Growth and Slowdown*

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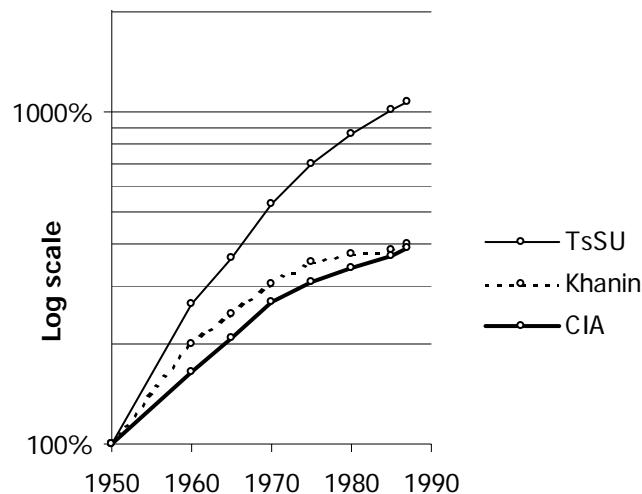
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Phases of economic development are rarely synchronised with the personal regimes of political leaders. At the beginning, the Soviet economy under Brezhnev was little different from the economy under his predecessor Khrushchev. At the end, the economy under Brezhnev shaded into the economy under Chernenko, then Andropov. If there was a significant break in the pattern of development it came half way through the Brezhnev years in the early or middle 1970s. We can say with some confidence that the economy that Brezhnev bequeathed to his successors was less dynamic than that which he and his prime minister Kosygin had taken over in 1964. In this chapter I will review the pattern of economic slowdown, its possible causes, and the measures taken to try to overcome it. I will conclude that the Soviet economy at the end of the Brezhnev years faced serious problems but was not yet a hopeless case.

Benchmarks of Economic Performance

Chart 1. Soviet Real National Income, 1950 to 1987: Alternative Estimates (per cent of 1950 on a logarithmic scale)



Source: as table 1.

To gauge the performance of the economy under Brezhnev we need figures. Which should we use? The Soviet economy was intrinsically difficult to measure. One problem was statistics were subordinated to economic management. Soviet production statistics, used at all levels as control variables and success indicators, provided a strong illustration of Goodhart's law: when an indicator is used to control behaviour, behavioural responses will cause that indicator to become distorted. Another problem lay in the structural features of the command

economy: excessive accumulation combined with pervasive limitations on the quality, variety, and availability of commodities made the relationship between production possibilities and welfare outcomes everywhere uncertain.

One result was that the measurement of Soviet economic performance became an arena of east-west competition. What began as a private research initiative of Abram Bergson became a national project of the United States to reconstruct the Soviet national income and product accounts under the auspices of the Central Intelligence Agency. As chart 1 illustrates, the American figures for Soviet gross national product (GNP) per head showed Soviet performance in a much less favourable light than the official Soviet figures. The figures themselves are reported in table 1. According to official estimates Soviet net material product in 1987 was 10.8 times the level of 1950, suggesting an annual average growth rate over the postwar period of 5.2 per cent, but the most recent estimates of the United States Central Intelligence Agency showed the achieved level of the Soviet GNP in 1987 as only 5.8 times the 1950 level, based on growth of only 3.8 per cent annually.

The American figures commanded widespread respect, but never full acceptance. Eventually, in the years of Soviet *perestroika* and early Russian transition they were subjected to an intense assault. Critics charged Bergson and his successors on two counts; the charges were separate but related to the same offense. The first was that they relied on the measure of things, not utilities.¹ The second was that they failed even in the measure of things, being excessively reliant on the flawed record of Soviet statistics.² From a guilty verdict on both counts followed the judgement that, measuring things rather than utilities, and exaggerating the measure of things, the Americans had overvalued Soviet national income in terms of both level and growth. In short the American figures, although much less favourable than the official record, were still too high.

When it came to detail, it was noteworthy that growth rates evoked less real divergence than size comparisons. When impassioned critics computed their own Soviet growth rates the figures that emerged were surprisingly similar to those under attack. One of their authors, for example, is Grigorii Khanin, one of the first of the domestic critics of Soviet official statistics to win a public hearing and probably the most

¹ Becker (1994), 291-5, summarises the most recent charges. Traditional critics of the Bergson methodology included Peter Wiles, whose many writings on the subject were synthesised in Wiles (1964), and Nove (1972), 381-8. For a more recent critical survey by an independent Russian scholar see Khanin (1993).

² On investment and machinery see Hanson (1984); on consumption, see Birman (1989). For a more general framing of such criticisms see Åslund (1990).

original of them.³ The most recent CIA estimate for annual average growth in Soviet real GNP from 1950 to 1987 and reported in table 1 was 3.8 per cent. The alternative figure offered by Grigorii Khanin for net material product growth over the same period was also 3.8 per cent (on GNP and other national income measures please see the note to the table). All, including Soviet official statisticians, agreed that the postwar period had witnessed a remarkable deceleration, already noticeable when Brezhnev and Kosygin took over the reins of government, and still more pronounced when Brezhnev died.

The various estimates distributed Soviet growth differently through time, with significant implications for an evaluation of the Brezhnev years. Consider table 1: did Soviet growth decline from a rapid 6 to 8 per cent in the 1960s to a more modest 4 to 6 per cent in the 1970s and a more sedate but still respectable 3.5 per cent in the early 1980s (the official figures)? Or was it a decline from nearly 5 per cent in the 1960s to a feeble less than 2 per cent in the late 1970s and early 1980s (the CIA)? Or from an already modest 4 per cent in the 1960s to a disastrous less than one per cent in the early 1980s (Khanin), indicating that by the end output per head was virtually stationary?

On size comparisons divergences were positively spectacular and somewhat discreditable to the profession of Sovietological economics. Contemporary estimates of Soviet real national income per head in the late 1980s, expressed as a percentage of United States incomes, are listed in table 2. These ranged from 57 to no more than 12 per cent. Only a small part of the gap between higher and lower estimates could be explained by technical factors such as differences of date (Soviet incomes probably rose somewhat between the early and late 1980s), currency basis (valuations in ruble prices could be expected to give lower figures than US or international dollar valuations) or adjustment for purchasing power parity (again, lack of PPP adjustment could be expected to result in a lower figure). Nor was it even the case that Soviet official figures headed the ranking; among the dollar comparisons at purchasing power parity western estimates were both highest and lowest. Most of the differences among non-Soviet sources were due to factors that could not be resolved by debate. Different authorities discounted differently for quality, variety, and availability, especially in consumer durables, machinery, and services, and then buttressed their estimates by reference to the unanswerable authorities of personal experience, intuition, and anecdote.

The lack of consensus among economists and their inability to come to a common view interacted disastrously with other tendencies which were strongly expressed at the time. These were the belief that in statistics there is one truth, a desire for statistics to encapsulate everything, an adherence to an absolute standard of statistical perfection, and preferences for intuition and experience over scholarship and transparency, and for low figures over high ones.

The belief that in statistics there is one truth was important because, when one particular figure was identified as true, it imputed

³ See Harrison (1993).

falsehood to all the others. This belief had its roots more perhaps in the east, where independent-minded social and economic observers found themselves engaged in a bitter struggle for the truth against official lies. In the west, statistical philosophies and institutions drew more upon traditions of pluralism and relativism which made of statistics no more than a prism through which the truth might be viewed, and which also allowed more than one angle on the truth.⁴

The desire for statistics to encapsulate everything was expressed when users of statistics demanded measures of national income that would take into account not only production possibilities and the potential to satisfy wants but also the actual welfare losses reflected in time spent standing in line, frustrated consumer purchases, the waste of resources in controversial national projects, and so on. In retrospect we see that these were all important determinants of welfare, and ought to be measured, but it may not be desirable to collapse every aspect of welfare into one measure.⁵ At best the change in national income can be regarded as measuring the change in economic welfare so long as trends in its context are held equal. When the context — including factors contributing to consumer frustration — is changing, it may be more realistic and more transparent to aim to measure separately national income on the basis of a given context, and trends in the context itself.

Adherence to an absolute standard of perfection was the traditional mark of Bergson's western critics. Undoubtedly, the adjusted factor cost standard (AFCS) which Bergson developed and the CIA inherited was a compromise. Soviet prevailing prices could not serve as a standard of opportunity cost because they were distorted by administered wage setting, the failure to price land and capital inputs, and the unequal incidence of indirect taxes and subsidies. The question became whether an accounting exercise could lead to the marginal costs and prices that would have emerged from a competitive market solution. To this a first answer is probably no, neither in theory nor in practice.⁶ AFCS was not a perfect solution. But if perfection was the standard to which statisticians must perform, there is probably not a

⁴ Becker (1994), 319-19, comments that critics of the CIA's size comparisons were bemused by the even-handed presentation of a higher figure based on dollar weights and a lower ruble-weighted figure for each year; they attacked the dollar-weighted ratios for understating 'the difficulty the Soviet Union would have had producing the American mix in that year', although the latter was best measured by ruble-weighted figures.

⁵ CIA figures were criticised for being excessively aggregated (taking *too much* into account), as well as for not trying to measure every aspect of welfare (taking *too little* into account). See Becker (1994), 317-18.

⁶ Kontorovich (1989), Rosefielde (1991), and Rosefielde and Pfouts (1995).

figure in the world that would pass the test. Whether the gross national or domestic product approximates sufficiently to a theoretical ideal is a problem everywhere, even in highly developed market economies. Everywhere taxes distort, resources are inadequately valued, and price-quality ratios exploit consumer ignorance. These problems are usually worse in low-income countries with many economic rigidities and poor statistical coverage. The Soviet Union was just such a country.

Lastly, I mention the preference for intuition over transparent scholarship, allied to the powerful belief that, even if all figures are suspect in some degree, then lower figures are more likely to be true than higher ones. Credibility was attached to figures more because they were lower, not so much because of their scholarly foundations.⁷ The result of this was a competition for credibility that could proceed only one direction — downwards. Not only were there many different figures for the Soviet income level. There were also many different western estimates of Soviet aggregate or industrial growth rates, and Bergson's were not the lowest. It became the tendency to use lower figures to cast unfavourable light on the higher ones. If the higher ones were sometimes more elaborate, and took into account a wider base of knowledge and reference, then this became the evidence to support the charge that they were *too* elaborate, *too* scholarly, *too* detached from the experience and intuition that supported lower estimates.⁸ Thus the discreditable disarray of professional opinion over income levels was also used to cast doubt on the best western estimates of growth rates too.

Today a consensus is reemerging. The Soviet period is becoming history, and the size of Soviet national income has become less charged with political controversy. The heat is being taken out of the measurement issue, but economists and now historians too still need national income figures. Maybe there can be more realism about what can be learnt from national income and less perfectionism about how it may be measured. If the common problems of poor countries with many distortions and market rigidities were writ large in the Soviet Union's statistical system, that does not make it wrong to try to compensate for the distortions and approximate more nearly to the truth. Our understanding of how to measure welfare, real growth, and inflation is improving; when the methodologies used in western studies to account for substitution of consumer products or of new industrial products are disassembled and scrutinised by modern standards we find that higher growth rates may be more, not less reliable.⁹ Here it is transparency, not intuition, that counts for credibility, and transparency was the outstanding virtue of the Bergson tradition.¹⁰

⁷ For examples see Becker (1994), 321.

⁸ Khanin (1993), 147.

⁹ For recent work on these lines see Allen (1998), Harrison (2000).

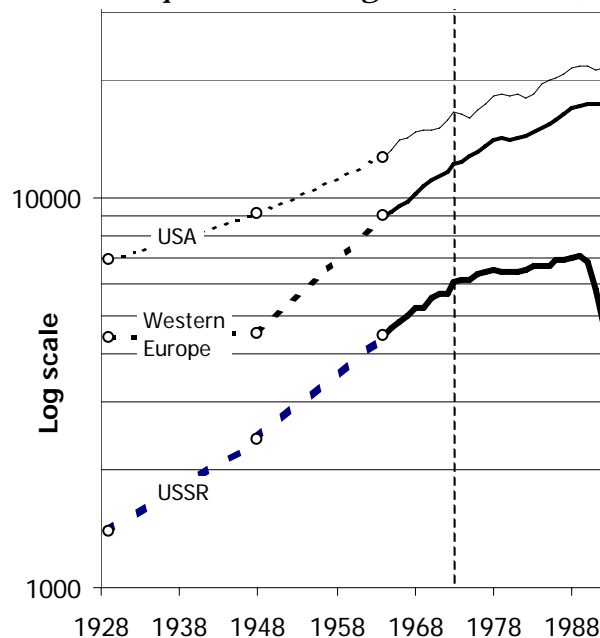
¹⁰ On intuition see also Gregory (1994), 9-12.

Finally, the merits of the Bergson-CIA tradition have been reasserted by adherents old and new (including at least one Russian).¹¹

In conclusion, the CIA figures will form the basis of my discussion. These figures are not perfect and can and should be criticised in order to improve them. This is especially urgent with regard to investment and the capital stock. But improvement will be incremental. New archival documentation and new methodologies will be brought to bear, and Russian scholars will direct the work. Eventually our picture of Soviet economic development may bear little relation to what we once thought we knew. But I am convinced that there will be a genetic inheritance of principles and methodology.

Soviet Economic Growth in the Brezhnev Years

Chart 2. Gross Domestic Product Per Head of the United States, Western Europe, and the USSR: 1928, 1948, and 1964 to 1992 (US dollars and 1990 prices, on a logarithmic scale)



Source: as table 3. On gross domestic product see the note to table 1. The vertical dotted line shows 1973.

The estimates we will use are illustrated in chart 2 and reported in table 3. These are gross domestic product (GDP) figures from Angus Maddison's dataset: CIA estimates calibrated in relation to the United States from Phase 6 of the International Comparisons Project with Soviet GDP per head at 31.4 per cent of the United States in 1990.¹² The

¹¹ Becker (1994), Harrison (1994), Wheatcroft and Davies (1994), Schroeder (1995), Bergson (1995), Kudrov (1995), Harrison (1996), Kudrov (1997), Maddison (1998), and Kontorovich (1999).

¹² Maddison (1995), 174, and (1998), 319.

Maddison dataset is therefore positioned at the lower end of the western estimates shown in table 2.

Chart 2 shows the whole Brezhnev period both annually and in long-run comparison. Soviet figures are compared with those of western Europe and the United States. We could think of the United States as the ultimate comparator, and western Europe as the proximate comparator. The United States set a more demanding benchmark in its high productivity level; this was the frontier of technology and living standards to which the Soviet economy aspired. Western Europe provided a competition which was less challenging in levels at each moment in time since western Europe was poorer than the United States, but more challenging in postwar growth rates since from 1948 onwards western Europe was also gradually catching up with the United States.

The long-run context shows that from 1928 until 1973 the Soviet economy was on a path that would catch up with the United States one day. This was in spite of a huge United States advantage: it did not suffer the severe capital losses inflicted on the Soviet economy first by Stalin through his policy of farm collectivisation, then by Hitler's war of aggression. However, in 1973, half way through the Brezhnev period, the process of catching up came to an abrupt end. This year is widely recognised as marking a downturn in the postwar growth of the whole global economy. But the growth rates of the Soviet Union and the central and east European socialist states turned down much more severely than those of western Europe or the United States.

Table 3 reveals that over the 18 years of Brezhnev's rule Soviet national income per head rose by roughly one half; however, three quarters of this improvement was won in the first half of the period, and only one quarter in the second half.

In the first half of the Brezhnev period income per head expanded at 3.5 per cent per annum, slightly less fast than over the previous 14 years which were still dominated by postwar recovery and a return to the prewar trend. In fact, all the slowdown of the early Brezhnev period could be explained simply by the gradual return to a slow underlying trend.¹³ The Soviet economy expanded more rapidly than the United States economy, though only by a small margin, and kept pace with western Europe large parts of which were also still recovering from wartime devastation. Thus in both 1964 and 1973 the Soviet economy stood at roughly half the output per head of western Europe and a little more than one third that of the United States. These were substantial gains over the 1929 figures of one third and one fifth respectively.

The pattern of the late Brezhnev period was quite different. Output per head stagnated, rising by less than one per cent per annum. The Soviet economy continued to keep pace with the United States economy, which also slowed down, but fell back sharply compared with western Europe. Absolute declines in output also became more frequent. This deceleration could no longer be explained by the

¹³ Harrison (1998).

exhaustion of postwar recovery possibilities: it was a new phenomenon with contemporaneous roots.

The growth rates of value added in industry and construction, agriculture, and the residue of the economy (transport, trade, and services) are shown separately in table 4. Each of these sectors grew more slowly after the mid-1970s than before. However, deceleration was most marked in industrial production, which had driven aggregate economic growth in the 1950s and 1960s but was virtually marking time by the 1980s. This table also shows the significant volatility of year-to-year agricultural production relative to a trend that was dismal and, by the end of the Brezhnev years, negative.

In this chapter I will not deal separately with agriculture. In the long sweep of Soviet history agriculture deserves much special attention.¹⁴ However, the outstanding feature of the agricultural system under Brezhnev was the extent to which it became more and more like the rest of the economy. The heritage of Stalinist discrimination against agriculture and the peasant was largely overcome. Agriculture was no longer exploited to foster industrialisation; on the contrary, it became a net recipient of government subsidies paid for by the rest of the economy. The special features of the collective farm were blurred, and the terms and conditions of employment of farm labour became more and more like those of any state employee. Thus agriculture could be viewed simply as a large sector in relative decline which responded badly, but not differently, to the pressures and constraints of the system as a whole.

Finally, table 5 reports trends in consumption. Over the Brezhnev years measured average consumption per head rose by some 70 per cent, but again three quarters of the total advance was recorded in the first half of this period, and only one quarter in the second half. As might be expected the growth of household durables consumption was particularly marked. The consumption of soft goods, and household services also rose rapidly, while food consumption rose more gradually. But outlays on 'communal services' such as health and education also rose relatively slowly, and more slowly in real terms than national income per head.

Paths of High Accumulation

Observers of the Soviet economy were driven to cross-country comparisons by two quite different traditions. One is the tradition of Stalin, who more than 80 years ago launched the Soviet economy on a drive 'to catch up and overtake' the advanced capitalist powers. His strategy was one of convergence on western levels of technology and living standards through forced high accumulation. High accumulation was secured by pouring resources into the building sites of 'socialist construction': the new factories, furnaces, mines, power stations, railways, schools, hospitals, and apartment blocks of each successive five-year plan. Stalin's instruments were planning and the compulsory

¹⁴ For a survey and further references see Harrison (1996).

mobilisation of resources: mass consumption was restricted and effort forced through a complex mixture of bribes, threats, and exhortations. The strategy of forced high accumulation was diffused to the other countries in central and eastern Europe and east Asia which adopted state-socialist institutions after World War II, and was also continued by Stalin's heirs.

Another tradition that prompts us towards cross-country comparisons is that of western growth economics. In the traditional western story international convergence should come about without being forced, through an automatic market mechanism. Suppose that globalisation is making all countries more alike in both supply and demand characteristics. In supply, all firms have access to the same technology. In demand, all consumers increasingly prefer the same goods and services. With a lower ratio of capital to labour, poorer countries have a higher marginal product of capital; they should accumulate more and grow faster than richer, more capital-abundant countries. Eventually, all countries should converge on the same path of income per head. However, global experience suggests that convergence is at best conditional; even among market economies, if it happens at all, it depends on policies with regard to investment and trade, and tends to come about through a process of regionalisation.¹⁵

The state-socialist economies were not the only ones to attempt convergence on the west through high accumulation. Led by Japan, several Asian market economies took the route of convergence through high accumulation based on a market system. Table 6 shows comparative figures for three large economies (the state-socialist USSR and China, and market-based Japan,) and twelve small economies (five state-socialist economies in central and eastern Europe, and seven market economies in east Asia) over a period beginning just before and ending just after the Brezhnev years. The starting point of Japan and the smaller east-Asian market economies in 1960 was behind that of the USSR and eastern Europe, although ahead of China, but they grew more rapidly, and their growth advantage over eastern Europe increased through time. After 1973 China began to catch up, but from a position even further behind than in 1960.

As the table shows the east Asian market economies encouraged not only saving and investment, but also integration into the world economy through export promotion. A differentiating factor in the east Asian newcomers' strategy most easily captured with figures lay in their foreign trade ratios ('openness' in table 6), which we can take as an indicator of openness to information and ideas as well as to commodities and competition. However, size mattered: a large economy like Japan's could gain more from internal trade, competition, and specialisation, than small ones which needed to open up more to the international economy.

Allowing for the advantages of size, openness to international trade was still important even for large economies (if, say, we compare the openness of Japan with that of the USSR or China) because it

¹⁵ Levine and Renelt (1992).

accelerated the globalisation of technology and preferences and the convergence of income levels. It allowed poorer countries to exploit their higher marginal product of capital and lower marginal product of labour to encourage inward foreign investment and the outward migration of labour. And it allowed poorer countries to exploit their comparative advantage in labour-intensive products, raising demand and labour incomes towards the level of the richer countries. Thus their policy of seclusion is one candidate for the factor that condemned the state-socialist economies to relative stagnation. Committed to an inward-looking development strategy, the Soviet Union and its postwar east European allies pinned everything on the advantages of high accumulation, but were unable to gain from the equalising influences of competitive trade and capital flows.

Paul Krugman was first to offer a comparison between state socialism and east Asia. His intention in doing so was to downgrade the east Asian ‘miracle’ by showing the similarities — two regions growing rapidly on the basis of high accumulation and the mobilisation of resources, with little overall factor productivity growth, their growth doomed by diminishing returns to end in exhaustion.¹⁶ Whether or not this disparaged the east Asian achievement remains to be seen. Until recently the east Asian economies had probably been doing better relative to state socialism than Krugman suggested — or was it rather that state socialism had really been doing much worse? More recently Easterly and Fischer concluded from a wider cross-country comparison that between 1960 and 1989, after correcting for the tendency of small, poor countries’ growth performance to show greater variance, ‘the Soviet economic performance conditional upon investment and human capital accumulation was the worst in the world’.¹⁷

In short, the path of high accumulation did not lead to convergence on its own. When combined with an outward-looking orientation to the global economy it brought rapid growth, while returns diminished slowly. When combined with noncompetitive institutions, barriers to information, and seclusion from the world economy, the acceleration of growth bought by high accumulation was relatively short-lived. Diminishing returns placed an invisible glass ceiling on the relative productivity of Soviet and CEE economies. On the other hand their role should not be overstated. The time series tell us that returns were

¹⁶ Krugman (1994). The diminishing-returns story is a familiar one, summarised by Bergson (1989), especially chapters 6 and 7. Other stories may also be told, such as that of a constraint on the elasticity of substitution of capital for labour; see most recently Easterly and Fischer (1995). The latter fits the evidence of the growth series well superficially, but has implausible implications for the rate of return on Soviet capital before Brezhnev. For an attempted reconciliation with interesting data on a slowdown in Soviet inventiveness in the mid-1970s, see Kontorovich (1986a). The whole field of Soviet growth economics was surveyed authoritatively before the fall by Ofer (1987).

¹⁷ Easterly and Fischer (1995), 346.

diminishing — but there was no reason for them to become negative. In the Soviet case measured growth was slowing, the underlying ‘natural’ growth rate to which the Soviet path was converging was always slow, and trends worsened after 1973. However, post-1989 collapse cannot be read back into the statistical record of the past.¹⁸

A Background to Economic Reform

In the Brezhnev years economic institutions were subject to continual reorganisation. But in a sense this was nothing new. We could think of it as one phase in a stream of reorganisations which had been going on since the first tumultuous years of the Stalin era. The underlying dynamic was that of trial-and-error: Soviet institutions were constantly being invented and reinvented in the light of experience. Individuals and organisations made mistakes, plans clashed with realities, incentives failed, and the resulting tensions drove leaders to search for institutional improvement.¹⁹

The leaders who followed Stalin shared a strong belief in the soundness of the basic Soviet institutions established under the late dictator: an entrenched governing party, state ownership of land and nonagricultural capital, collectivised farming, centralised planning of most production and intermediate consumption, state provision of housing and basic amenities. They believed that individual leaders had built bureaucratic empires and abused power; it was easier for them to portray the excesses of the Stalin regime as ‘crimes’ for which individuals, even Stalin, bore personal responsibility than as ‘mistakes’ that might be attributed to the system itself. Khrushchev’s reforms were consistent with this analysis. He vilified Stalin for his use of terror to rule the party and state while defending his economic policies of forced high accumulation. He rooted out a minority of old-time Stalinist conservatives formed in the tradition of personal dictatorship: first Beriya, then Malenkov, Molotov, Kaganovich, and so on; he sought initially, at least, to collectivise political authority. He retained the services of the basic core of Stalin’s military-industrial leaders, but attempted to break up their empires and disperse their powers from Moscow to the provinces by transforming the system of limited coordination of relatively self-sufficient production-branch ministries into a system of limited coordination of relatively self-sufficient territorial units, the ‘councils of national economy’ (*sovnarkhozy*) of 1957.

By 1964 the Soviet leadership’s confidence in this diagnosis and prescription had been undermined. One important factor undermining

¹⁸ For discussion of the relationship between decay under Brezhnev and collapse under Gorbachev see Dallin (1992), Ellman and Kontorovich (1992), Treml and Ellman (1993), Becker (1994), Schroeder (1995), Brown (1997), Ellman and Kontorovich (1998), and Harrison (2001).

¹⁹ Nove (1992), Davies (1998).

confidence was the severe decline in Soviet national income growth (for the official figures on which they relied see table 1). Without criticising the Stalinist strategy, they came to believe that its effectiveness had reached natural limits. It was no longer possible for the economy to continue rapid growth by mobilising resources. In the past the economy had grown primarily through big new capital-widening projects of job creation in industry and construction and the movement of millions of workers from low-productivity rural labour to higher-productivity employment in the urban sector, a pattern that came to be known as ‘extensive’ growth. However, the economy was running short of reserves of rural and unskilled labour. Khrushchev’s successors did not criticise Stalin for pursuing extensive growth in the 1930s, but they did criticise Khrushchev for trying to sustain extensive growth by periodic ‘campaigning’ to mobilise resources in the 1950s and early 1960s.

If the Soviet economy was to catch up with western Europe and the United States in the foreseeable future, its growth had to be maintained at the rates of the 1950s; it became accepted that this could be achieved only by shifting the economy to a new pattern of ‘intensive’ growth. This meant improving the efficiency of use of existing resources rather than continually mobilising new resources; capital-deepening investment to raise the productivity of existing production and distribution facilities instead of capital-widening investment in new facilities; raising the growth rate of human capital relative to that of physical capital through education, training, and skilling; reallocating scarce labour from lower- to higher-productivity employment but out of unskilled work in industry rather than out of agriculture.

In all this there proved to be a degree of illusion. One misperception was that the growth rates of the 1950s represented the natural growth rate of a state-socialist economy, provided that the right institutions could be devised, or that they were indefinitely sustainable by any means at all. In reality the high growth rates of the Soviet economy in the 1950s were largely a continuation of postwar recovery: although the Soviet economy had largely repaired its damaged production facilities and regained its prewar output level by the end of the 1940s, it was not until the 1970s that it regained the path marked out by extrapolating its prewar growth. This idea was originally proposed by the Hungarian economist Ferenc Jánosy, who argued that the great European postwar boom was largely a return to what he called the prewar ‘trendline’.²⁰ What was being perceived at the time as retardation was merely the end of a prolonged postwar recovery phase. The widespread failure to understand this point, he believed, had led policy makers in both socialist and market economies into misperceptions and mistakes. Believing that the continuing recovery was a new permanent peacetime trend, their long-range plans became overambitious; they then treated the unexpected slowdown, when the trendline was finally approached, with an exaggerated sense of failure.

²⁰ Jánosy (1971); for recent empirical investigation of this idea see Crafts and Mills (1996), Harrison (1998), and Good and Ma (1999).

If this analysis is correct, it follows that the problem of the Soviet economy in the 1960s was not one of declining growth, or that the Soviet economy's growth rate was falling increasingly below its potential. The underlying problem was more intractable: the rapid growth rates of the 1950s were temporary and bound to fall regardless of policies. The underlying natural growth rate of the Soviet economy that would increasingly dominate actual growth was relatively slow, probably too slow to allow the Soviet economy to catch up with the United States within a lifetime.

However, this is mostly hindsight. At the time, there were convincing arguments to suggest that the Soviet economy of the late Khrushchev years was underperforming, and that institutional reforms could maintain and sustain higher growth rates than those being achieved at the time. Thus the early years of the Brezhnev-Kosygin leadership were a time of new hopes based on genuine institutional innovations. To give Khrushchev due credit it should be added that the reforms pursued in the Soviet Union by his successors were based on public discussions, local experiments, and east European precedents dating from his last years in power. The task of national implementation, however, was undertaken by the new prime minister Kosygin.

Reform Concepts

The reform of the Soviet economic mechanism under Brezhnev and Kosygin was driven by an attempt to alter the basic functioning of the Soviet production enterprise. Under the institutional arrangements inherited from Stalin, planners commanded firms to produce output, but had no automatic system for detecting inefficient production and so were unable to impose penalties for producing inefficiently unless the inefficiency was so flagrant as to be positively attention-seeking.

Planners' fundamental problem was their overloading with tasks: assigning plans to producers that would correspond with their true capacities, monitoring not only their fulfilment but also the efficiency with which they were fulfilled, and detecting violations. They set most ministries' and firms' production targets using the gross value of output in plan prices because industrial products were too numerous and variegated in quality and assortment to allow more than a handful of key basic products to be controlled from Moscow in physical units, but they could not prevent firms from bargaining plan prices upwards through the introduction of 'new' products so as to meet the plan more easily. In addition, since planners aimed to set production targets to as to use firms' production capacity fully, those firms that revealed surplus capacity by producing above planners' expectations were initially rewarded with praise and bonuses, then penalised by being set a more demanding target in all future plans. Thus high productivity was taxed and inefficiency was not penalised. Moreover, firms that hoarded resources in secret and established hidden reserves of machinery, materials, and labour were positively rewarded because they could now fulfil planners' assignments with less effort.

In a similar vein, firms that made profits saw their profits taken by the state budget as tax revenue. Firms that made losses saw their losses automatically compensated by subsidies from the state budget. In a market economy, profits are a signal to invest, and persistent losses end in insolvency and closure of the firm. In the Soviet economy it was the other way around: if persistent losses attracted attention, they were most likely taken to signal the need to strengthen the firm through new investment, but this was just as likely to reward poor management.

Finally, planners could attempt to control firms' inefficient behaviour only by inventing ever more numerous performance indicators, ever closer monitoring of firms' decisions and auditing of their accounts, and threatening ever harsher punishment for violations. But as experience showed, the more numerous the controls, the harder it was to set them consistently, monitor them continuously, enforce them effectively, and credibly threaten minor violators with severe punishment.

This was the pattern that conserved low productivity, inhibited resource-saving and rewarded firms' accumulation of excess reserves. The core of the reform process launched in 1965 was measures to realign firms' incentives so that planners and producers could coexist with greater harmony than under continual monitoring with traditional rewards and penalties. It was intended to delegate significant control rights to producers. If reforms were successful, planners could safely hand management over to managers without constant monitoring. Indeed, the trend of the Brezhnev period would be to reduce both the frequency of monitoring and the severity of punishments of plan violations for managers and workers alike. A parallel intention was to update and enlarge the concept of the Soviet 'firm' from a single-plant enterprise to an integrated multi-plant corporation that could internalise the coordination of the stages of production, distribution, research, and development, and innovation, generate its own finance, borrow from state credit institutions on its own responsibility, and become financially self-reliant, ceasing the drain of subsidies on the state budget.

Some proponents of economic reforms in eastern Europe in the early 1960s favoured a kind of 'market socialism' that would free prices partially or completely and eliminate most direct controls on output, establishing a quasi-market for state investment and leaving other regulation to conventional fiscal and monetary policy. However, Soviet orthodoxy was more conservative than this. Rather, official schemes favoured an arrangement in which some parts of the economy including allocations to investment and defence should continue to be administered directly, while others should be guided by an incentive system still controlled by government. Planners would continue to fix broad output targets and ministries would assign them to firms, but detailed supply planning of intermediate transactions from above was to be replaced by market subcontracting between producers; this was to start with materials, components, and semi-manufactures, and extend eventually to capital goods. The main purpose was to encourage firms to fulfill plans efficiently, i.e. to use resources efficiently within firms and reach efficient decisions in new inter-firm markets.

Controls on firms' gross output and bonuses for gross-output plan fulfilment were therefore to give way to controls on sales value (so as not to reward the production of unsaleable output) and value added (so as not to reward excessive consumption of non-labour inputs). Plan assignments were to be guaranteed over longer periods with greater stability so as to protect firms from having the gains to higher performance instantly taxed away in higher targets; firms that volunteered for higher targets were to be rewarded not only with immediate bonuses but also with guarantees against inflated future targets. Firms were to be subject to fewer controls, with direct controls on the supply and use of inputs replaced by incentive funds based on the surplus of revenues over costs. To make revenues and costs representative of management performance, not just of accidents in the history of administrative price-fixing, wholesale prices were to be reformed. Finally, households were to be left free to allocate labour in the labour market and purchasing power in a retail market from which shortages were to be cleared by increased supplies, subject to prices and wages fixed from the centre and local efficiency-based incentives fixed by their immediate employers.

Effectively the enterprise would be handed over to insider stakeholders. What about the balance between the different insider interests, in particular the relationship between managers and workers? Across eastern Europe there was wide variation; in Poland, Czechoslovakia, and of course Yugoslavia, various schemes for managerial power-sharing with the workers were envisaged at various stages. In east Germany, Hungary, and the USSR, on the other hand, reform proposals aimed to enhance managers' prerogatives over the workforce, and to redistribute previously shared costs of poor management so that profit-oriented managers would lose from poor decisions and be motivated to raise profitability by reallocating workers, rather than to raise output regardless of cost by hiring additional workers. Workers would be motivated to stop shirking and seek higher-income, higher-productivity jobs as living standards rose and the cost of shirking increased. But no provision was made to punish persistent loss-makers by firing redundant workers or liquidating the firm; the obligation laid on employers to reemploy redundant workers in other capacities was reaffirmed in 1967.

What kind of efficiency improvements could be expected? Efficiency could be thought of as two-dimensional. Greater *productive efficiency* could be achieved if firms were forced to share in the social costs and benefits of their own behaviour; this was expected to eliminate the tendencies to hoard resources and produce below capacity. Greater *allocative efficiency* could be achieved if firms used inputs and capacities more efficiently: planners could cut back on resources for heavy industry and accumulation and raise the status of consumers; increased supplies to the retail market could eliminate queues, shortages, and waiting time. Gains could also be thought of as static and dynamic. A *static* (i.e. once-for-all) gain in total output would be registered if managers shifted resources from lower- to higher-productivity uses and if workers increased effort. A *dynamic* gain would be registered in higher output growth if inventions were

stimulated and if managers sought out and adopted them at a higher rate.²¹

This concept of economic reform was conservative, not radical. Far from presaging a revival of the market economy or a return to capitalism, as some western observers mistakenly concluded, it was intended to strengthen public ownership and make centralised plans more effective. It departed substantially from Stalinist orthodoxy in recognising that incentive problems are inherent in hierarchical organisations. It was ready to draw radical conclusions from capitalist experience by studying large-scale, financially self-reliant western corporations and analysing how they allocated resources internally, raised productivity, delegated authority, and achieved compatibility of the various incentives facing shareholders, managers, and workers. But all this was designed to reinforce the basic institutions of the Soviet command economy: state ownership and control, the system of central planning and ministerial guidance, and the dominant role of the communist party. Thus side by side with elements of decentralisation, the Kosygin reform restored traditional instruments of centralisation and created new ones. The production-branch ministries with their headquarters in Moscow were reestablished, consigning to oblivion the regional *sovnarkhozy* created in 1957 by Khrushchev. New state committees were created to oversee the new inter-firm subcontracting system (*Gossnab*), the wholesale price reform (*Gostsen*), and the hoped-for acceleration of industrial innovation (*Gostekhnika*).

Initial Outcomes and Counterreforms

The main lines of economic reform were announced by prime minister Kosygin in September 1965.²² These reforms were pursued vigorously at first, with implementation of a wholesale price reform in 1966-7; subsequently they ran into increasing problems, and were tacitly shelved in the early 1970s. Measures to permit the formation of large-scale multi-plant socialist corporations (the ‘state production associations’ and ‘science-production associations’) were not enacted until 1973. There was one more attempt at a system overhaul in a major decree of July 1979 to ‘improve planning and strengthen the economic mechanism’. Beneath the surface, what had begun as a serious if still conservative project of ‘reform’ degenerated into a stream of piecemeal ‘reforms’ that Gertrude Schroeder came to characterise as a ‘treadmill’ — a cycle that was at the same time exhausting, never-ending, self-perpetuating, and pointless.

²¹ On Soviet institutional obstacles to innovation see Berliner (1976); Dearden, Ickes, and Samuelson (1990).

²² This account of the reform process relies heavily on Schroeder (1969), Schroeder (1972), Schroeder (1979), Schroeder (1982), Berliner (1983), Hanson (1983), Bornstein (1985), Brus (1986), Kornai (1986), Kontorovich (1986b), and Kontorovich (1988). For an excellent summary see also Gregory and Stuart (1990), 433-61.

Casual observation might suggest a link between the abandonment of economic reform and the slowdown of Soviet economic growth in the early 1970s. This would almost certainly be a mistake. There is no strong evidence that economic reform made growth rates in the late 1960s higher than they would otherwise have been (indeed Khanin's figures suggest a slowdown), or that cancellation of the reform contributed to slowdown. A case could just as easily be made for the opposite: that economic reform was damaging to economic growth, and that counterreforms were growth-promoting. But the truth is that there is no evidence either way.

The fundamental problem of the economic reform can be seen most easily in the issue of prices. In a market economy competitive self-interested producers will allocate resources efficiently when outputs and inputs are priced at their marginal social costs. If prices diverge arbitrarily then producers will allocate resources wrongly — they will use too much of resources that are scarce but undervalued and not enough of others that are abundant but overpriced, and they will underproduce commodities that are undervalued, or the inputs of which are overpriced, while overproducing others. In the Soviet economy wholesale prices were usually fixed by average variable production costs plus a markup to cover overheads early in the life of the product cycle. This did not just neglect many factors which might properly enter into the determination of marginal costs such as technological or locational disadvantages. In addition, the tens of thousands of centrally administered wholesale prices of commodities currently in production at a given moment actually reflected the production costs of previous years with a varying lag and a relationship to current costs which depended arbitrarily on the period when the product had been introduced and the history of input prices since that date.

The Soviet authorities of the 1960s did not want flexible prices that would actively equate supplies with demands and take resource allocation out of the hands of planners altogether. They wanted administered prices that would encourage producers to fulfil government objectives at least cost. The economy of 1965 had inherited a structure of administered wholesale prices last reformed in 1949, and that reform had been largely reversed in the intervening years. If producers were to be encouraged to demand, produce, and supply efficiently the resources envisaged in government plans, a wholesale price reform was urgently needed, and such a reform was implemented in 1966-7. However, a government prices committee following an administrative formula was incapable of delivering a full set of the tens of thousands of marginal costs that would allocate resources to satisfy the plan efficiently even for one year at a time.

Consequently the first result of relaxing direct controls on producers was that allocative efficiency was often worsened, since managers were temporarily freed to respond to a pattern of prices and costs that was still to a large extent accidental. Some products that Soviet society needed were not produced because they were underpriced relative to social marginal cost, and producing them would have reduced enterprises profits and incentive funds. Planners were

forced to resume direct control of management decisions in order to correct such consequences. As a result, the old supply planning system continued to be kept in being, while the contracts that firms made among themselves proved ineffective and could not be enforced. New incentives had to be cancelled because the distribution of profits and losses continued to be uncorrelated with producer performance for several reasons: because the relationship between prices and costs continued to be arbitrary, because planners overrode profit-maximising inter-firm contracts and continued to prevent producers from maximising profits in the interests of maintaining production, and because firms, discovering that still the plan was more powerful than the market, continued to hoard resources and place the ease of fulfilment of output quotas before efficiency.

The result was a cycle of reforms and counterreforms. In the reform phase new incentives were imposed to encourage efficient behaviour. Unforeseen producer responses meant that allocative efficiency was often worsened. In the counterreform phase controls were reimposed to correct the consequences. Meanwhile the original problems had not been solved, so calls for reform were soon heard once more. Some consequences of the reform phase endured, for example rationalisation measures to popularise new management techniques and administrative methodologies such as systems analysis and linear programming, and these may have led to some static gains in particular branches of the economy. But some enduring consequences may have been negative, for example a growing loss of confidence in the basic institutions of centralised planning. There is evidence that increasingly planners sought to secure 100 per cent plan fulfilment by lowering plans rather than demanding increased effort; this became known as 'fulfilling the plan with the plan' (as opposed to with production). However, reductions in plans may have simply encouraged reductions in performance.²³

Perhaps related to this loss of confidence was an increased toleration of sideline economic activity and the resort to unofficial markets to reallocate state products in ways not prescribed in government plans. The American economist James R. Millar called this the 'Little Deal'. The Big Deal had been Vera Dunham's term for Stalin's pact with the new Soviet labour aristocracy to give them access to a middle-class lifestyle through piece-rates, bonuses, and the supply of household durables in return for their production effort and political loyalty.²⁴ The Little Deal was Brezhnev's pact with the urban population to permit private trading and the private use of state-owned facilities as long as it was discreet and kept within limits set by the most important government priorities.²⁵ This shadow economy sometimes usefully reallocated resources from less to more efficient uses. Through

²³ Schroeder (1985).

²⁴ Dunham (1976).

²⁵ Millar (1985).

the activities of thieves and private traders, households could secure the commodities they desired, and factories could also obtain the materials and supplies necessary to fulfil their plans. But it also tended to undermine work discipline, public morality, and the legitimacy of state property. In particular, it tended to draw ministerial officials and enterprise managers into a web of bribery and corrupt relationships with a growing underworld of economic criminality.²⁶

Labour and Consumption

The reform dilemmas of the Soviet economy were particularly acute in the labour market. In a well-functioning market economy both productive and allocative efficiency are promoted by labour market slack. Profit-maximising firms are motivated to put workers in low-productivity jobs back in the pool of unemployment from which they may be reemployed at higher productivity to the advantage of both worker and employer. Workers in work are motivated to work hard both by the employer's incentive system and also by the fear of unemployment. The costs of this system are those of maintaining a permanent labour reserve at society's expense, the general insecurity associated with its existence, and the danger that macroeconomic coordination failures may cause unemployment to vary persistently either above or below its the natural rate.

In place of the sticks and carrots of the capitalist market economy, the instruments for control over labour in the Soviet economy were limited. For reasons already outlined there was a permanent state of labour shortage, with vacancies exceeding the number of workers available. Once hired, workers had job security, both in law and in practice. The law guaranteed them the right to work according to their skill, and gave them protection against forced redundancy without an offer of alternative employment within the firm. legal rights are not always honoured, but in practice Soviet enterprises were never closed by their parent ministries on grounds of depreciation of assets or technological obsolescence, or because labour costs prevented the creation of surplus revenues. Production ministries needed all their enterprises to fulfil ministerial plans for output; the output plan was more important than the profit plan, so ministries did not gain from closing inefficient or overstaffed capacity.

Consequently, it was very difficult to displace workers who were in some sense surplus to requirements, for example unskilled workers whose jobs could be automated, craft workers whose skills were obsolete, workers whose plant was depreciated or obsolete. Such workers tended to be retained by firms as a reserve to spread the labour of meeting output assignments and reducing the effort involved in doing so.

In the Stalin era productive efficiency was stimulated by both sticks and carrots. Positive inducements to effort took the form of material rewards and privileges. A negative stimulus was the threat to punish

²⁶ Grossman (1977), Grossman (1998).

shirking by firing or forced labour. (Firing, although an ineffective threat against most workers under conditions of a general labour shortage, was a powerful threat against managers and officials who would also lose a privileged lifestyle and career chances.) However, such methods could do little to improve allocative efficiency, especially because both firing and forced labour both usually transferred workers from higher- to lower-productivity employment.

If the Soviet economy was to make a successful transition to intensive growth it was essential to tackle the problem of redundant labour. By definition, intensive growth meant improving the efficiency of use of existing resources, including the labour already employed in existing facilities, rather continually mobilising new labour into new facilities. The difficulty was that, while planners could guess at the extent of inefficient labour utilisation and true labour redundancy, they could not generally detect it without mounting a comprehensive watch on every factory, workshop, and machine which was beyond their means. Instead, they sought to establish new incentives to persuade firms to reveal their labour reserves and give them up for reemployment elsewhere.

The most famous of these began as an experiment at the Shchekino chemical works. From 1967 this factory was allowed to reduce its workforce by voluntary means while retaining its former wage funds, which would then be divided among the smaller workforce, as long as the factory continued to meet its output assignments; as a result, the remaining workers would gain substantial productivity-related wage increases. Within 3 years the workforce was reduced by roughly 15 per cent, output per worker had more than doubled, and average real incomes and profit norms had both increased substantially. The experiment was declared a success and officially redesignated the 'Shchekino system'. Propagated through Soviet industry, by the early 1980s it was said to be in operation to a greater or lesser extent in 11,000 enterprises with 21 million employees, and to have reduced job creation in industry under the tenth five-year plan by nearly one million, or 5 per cent of the industrial workforce.²⁷

In practice, gains to both the firm and the macroeconomy were much less than this implies, and may have been no more than temporary. The problem lay in the planners' commitment to protect the wage fund of enterprises that went over the Shchekino system as long as they fulfilled the output plan. This commitment was typically time-inconsistent: once enterprises had acted upon it, it became optimal for planners to break it. This is what appears to have happened at Shchekino: continual rule changes allowed ministers to withhold benefits and planners to confiscate savings. Once the firm had given up its labour reserve, it was expected to continue to perform indefinitely at its new peak of labour productivity. During the 1970s, plan fulfilment deteriorated, bonuses were cancelled, morale fell, effort slackened, and

²⁷ Rutland (1984).

employee turnover rose. In the early 1980s the plant was reported impoverished and failing.²⁸

More generally, the best strategy for managers under pressure was to adopt the scheme partially, so the firm could show nominal compliance while workers displaced in one part of the firm could continue to be held in reserve elsewhere. Thus reports of success and the popularisation of the Shchekino system were not to be taken seriously: once the prestige of the authorities had been pinned to it, it was impossible to abandon but was bureaucratised; everyone signed up to it but nobody really practised it.

From the Brezhnev years there is evidence that positive rewards were generally failing to act as incentives to higher effort. Of nearly 3,000 Brezhnev-era emigrants surveyed by Gregory (1987), three quarters reported the impression that average productivity was falling (although it was not); of these, three fifths listed inadequate incentives as the most important reason for productivity problems, and also that their own real living standards had been in decline over the past five years.²⁹ From the same sample Millar and Clayton found 41 per cent very or somewhat dissatisfied with their former overall standard of living in the Soviet Union; this figure could be compared with 19 per cent reporting similar life dissatisfaction in the annual Eurobarometer Survey, which covers roughly 1,000 people per country per year in western Europe, between 1975 and 1991.³⁰ Of course the Soviet survey was of emigrants who might be expected to show relative dissatisfaction. However, more recent research by Blanchflower and Freeman confirms that achieved levels of job satisfaction and general happiness in central and eastern Europe remained low by west European standards.³¹

The Soviet Economy after Brezhnev: a Hopeless Case?

When Gorbachev came to power in 1985 he claimed to have inherited a 'pre-crisis situation'. Hindsight proved him right. However the evidence available to him at the time was thoroughly ambiguous, raising the possibility that he was right by accident.

Had an overwhelming economic disaster become inevitable by the early 1980s? Almost certainly not. At the end of the Brezhnev years most Soviet citizens lived adequately and there was relatively full or overfull employment. The economy was still just growing, although its sluggishness was certainly alarming. Government spending and

²⁸ Knorr (1986), Arnot (1988).

²⁹ Gregory (1987).

³⁰ Millar and Clayton (1987); Di Tella, MacCulloch, and Oswald (1997).

³¹ Blanchflower and Freeman (1997).

revenues were under control; there was a small, well-concealed budget deficit which tended to be monetised in the absence of an organised market in government securities, but the inflationary impact remained small.³² A domestic monetary overhang had been growing slowly over many years; a substantial proportion of personal saving deposits, now amounting to roughly two-thirds of the value of annual retail purchases, represented forced saving. Apart from this the Soviet Union's internal and external debts were not a worry. There was a growing gap between state prices and the higher unregulated prices in the collective-farm markets where private produce was legally traded, and this gap was steadily raising the profitability of illegally transferring resources from the state to the private sector. The spread of official corruption and a shadow economy were sources of acute concern.³³

Alarm bells were already ringing in the Kremlin when Brezhnev died, and Chernenko and Andropov both took determined steps to correct the crisis by traditional means, intensifying centralisation, work discipline, and the policing of state property.³⁴ Moreover, the statistical evidence (tables 3 to 5) shows that these measures paid off: in 1983 the growth slowdown stopped. Thus the situation that Chernenko and Andropov passed on to Gorbachev was no worse than that which they had inherited from Brezhnev, and in some respects better. The Soviet economy was not already a lost cause; indeed Gorbachev's intention in declaring an emergency was not to predict a crisis but to galvanise the efforts necessary to avert one, and he clearly believed that this was still possible. That a crisis resulted, and proved terminal, does not mean that collapse was already inevitable.

³² Ofer (1989), 124. Until 1986 the financial deficit of the Soviet state budget was running at approximately 4 per cent of total budget spending according to CIA Directorate of Intelligence (1988). For a relatively sombre view of Brezhnev-era public finance see Birman (1980).

³³ Figures on personal saving, and on relative prices in official and collective-farm retail trade are to be found in TsSU (1986) and Goskomstat (1989). For new research on the monetary overhang see Kim (1999).

³⁴ Kontorovich (1986b).

Table 1. Soviet National Income, 1950 to 1987: Alternative Annual Average Growth Rates (per cent)

	Net material product based on moving weights:		Gross national product at 1982 factor cost: US Central Intelligence Agency
	TsSU- Goskomstat USSR	Grigorii Khanin	
1950-1987	5.8	3.8	3.8
1950-1960	10.2	7.2	5.2
1960-1965	6.5	4.4	4.8
1965-1970	7.7	4.1	4.9
1970-1975	5.7	3.2	3.0
1975-1980	4.2	1.0	1.9
1980-1985	3.5	0.6	1.8
1985-1987	3.0	2.0	2.7

Note:

National income can be measured in different ways. On the whole these differences are unimportant for present purposes of this chapter. This note is included to avoid confusion in the event that the figures provided are used for other purposes.

Western studies measure Soviet national income as GNP or GDP. The gross domestic product (GDP) is the value of all final goods and services produced by the factors of production in the economy, “domestic” because at home and “gross” because including replacement capital. The gross national product (GNP) is the same plus income from factor services abroad and remitted home, a distinction that was unimportant for the Soviet Union; in other words Soviet GDP and GNP are interchangeable. National income at “factor cost” means that goods and services are valued as closely as possible to the incomes generated for the factors of production; this requires subtraction of indirect taxes from and addition of subsidies to the prices at which goods and services were officially exchanged.

The Soviet Union measured its own national income as the net material product, “material” because it counted the value of all final goods produced, including intermediate but not final services, “net” because excluding replacement capital. The net material product was measured at official or “established” prices, not at factor cost.

Sources: Goskomstat (1987); Khanin (1988); CIA (1990a).

Table 2. Soviet National Income Per Head: Alternative Size Comparisons in the 1980s (per cent of the United States)

	Year	Currency	Adjusted for purchasing power?	National income per head
CIA (A)	1989	\$US	✓	57
Bolotin (IMEMO)	1986	\$INT	✓	56
Goskomstat USSR	1988	\$US	✓	55
Ehrlich (A)	1980	..	✓	51
Summers and Heston (PWT4)	1985	\$INT	✓	50
Campbell (World Bank) (A)	1980	\$US	✓	48
Marer (World Bank)	1980	\$INT	✓	47
Martynov (Goskomstat) (A)	1985	\$INT	✓	37
Martynov (Goskomstat) (B)	1985	\$INT	✓	36
Campbell (World Bank) (B)	1980	\$US	✗	35
Ehrlich (B)	1980	..	✗	34
CIA (B)	1989	rubles	✓	34
Åslund	1986	..	✓	33
Summers and Heston (PWT5.5)	1985	\$INT	✓	30
Belkin (A)	1987	rubles	✓	24
Belkin (B)	1987	rubles	✓	12

Note: National income is measured as GNP or GDP unless otherwise stated below; for definitions see the note to table 1. \$US are United States dollars valued at current prices or exchange rates. \$INT are international dollars valued at purchasing power of 1980. In some cases aggregate figures are adjusted to a per capita basis from population figures for the appropriate year.

Sources:

Åslund (1990), 43; Åslund does not specify a currency for his figure, but a PPP concept is implicit.

Belkin: cited by Rosefielde (1991), 606; Rosefielde states that Belkin uses current ruble values, although he denominates Belkin's figures in dollars.

Bolotin: IMEMO (1987), 150 (net material product).

Campbell (1985), iii (A), table 9 (B).

CIA (1990b), 38.

Ehrlich (1991), 880; the method of physical indicators used gives results in percentages of the base country, but not in currency units.

Goskomstat (1989), 680 (net material product).

Marer (1985), 86.

Martynov (1990), 15; (A) involves bilateral comparisons through Poland, and (B) through Hungary.

Summers and Heston (1988), data disks for the Penn World Table 4, and (1991) for the Penn World Table 5.5

*Table 3. Soviet Gross Domestic Product Per Head, 1929 to 1992,
Selected Years (dollars at 1990 international prices and per cent)*

	GDP per head, dollars	Annual average change in GDP per head over previous year, per cent	GDP per head, per cent	
			of USA	of Euro-12
1929	1386	..	20	32
1948	2402	2.9	26	54
1964	4430	3.9	35	49
1973	6058	3.5	36	49
1982	6544	0.9	36	45
1989	7078	1.1	32	41
1964	4430	3.9	35	49
1965	4626	4.4	35	50
1966	4796	3.7	34	51
1967	4955	3.3	35	51
1968	5194	4.8	35	51
1969	5218	0.5	35	49
1970	5569	6.7	37	50
1971	5663	1.7	37	50
1972	5640	-0.4	36	48
1973	6058	7.4	36	49
1974	6175	1.9	38	50
1975	6136	-0.6	38	48
1976	6366	3.8	38	48
1977	6459	1.5	37	48
1978	6565	1.6	36	47
1979	6480	-1.3	35	46
1980	6437	-0.7	35	45
1981	6442	0.1	35	45
1982	6544	1.6	36	45
1983	6692	2.2	36	45
1984	6715	0.4	34	44
1985	6715	0.0	33	43
1986	6924	3.1	34	43
1987	6943	0.3	33	42
1988	7032	1.3	33	42
1989	7078	0.7	32	41
1990	6871	-2.9	31	40
1991	5793	-15.7	27	33
1992	4671	-19.4	22	27

Source: Maddison (1995), 196-7, 200-1, 212. On GDP see the note to table 1. The Euro-12 are Austria, Belgium, Denmark, Finland, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, and the United Kingdom.

Table 4. Soviet Output by Sector of Origin: Annual Average Growth at 1982 Factor Cost (change over previous period, per cent)

	Industry and construction	Agriculture	Trade, transport, communications, and services
1950	..	..	..
1964	8.2	2.9	4.7
1973	5.7	2.9	5.0
1982	2.5	-1.1	2.9
1987	2.6	1.1	2.2
1964	..	..	..
1965	6.3	3.9	6.5
1966	5.0	4.2	5.2
1967	7.5	-0.7	5.9
1968	5.8	6.7	5.5
1969	5.0	-6.4	4.4
1970	6.3	14.3	4.9
1971	4.8	-2.3	4.6
1972	4.5	-8.9	3.8
1973	5.9	18.9	4.4
1974	6.0	-3.8	4.4
1975	5.2	-12.5	4.0
1976	2.7	11.5	3.1
1977	2.4	2.4	2.2
1978	1.8	3.5	2.9
1979	1.0	-8.3	2.8
1980	1.3	-6.9	3.3
1981	1.1	-2.4	2.5
1982	0.7	8.9	1.4
1983	2.6	5.9	2.3
1984	2.6	-2.1	2.2
1985	2.1	-3.8	2.1
1986	2.9	10.3	2.1
1987	3.0	-4.0	2.5

Source: CIA (1990a), 54-7. On "factor cost" see the note to table 1.

Table 5. Soviet Consumption Per Head: 1950-1987: Annual Average Growth at 1982 Established Prices (change over previous period, per cent)

	Food	Soft goods	Durables	Household services	Communal services	Total
1950	..	..	...	..	..	..
1964	2.7	5.3	10.5	4.6	2.9	3.6
1973	3.1	5.4	10.0	5.0	2.6	4.1
1982	1.1	2.3	5.1	3.0	1.3	1.9
1987	-1.8	1.7	5.5	2.6	1.0	0.6
1964	..	..	...	..	..	..
1965	3.0	5.7	10.0	6.3	4.1	4.3
1966	3.4	7.7	11.3	5.0	3.4	4.8
1967	4.9	7.8	9.2	6.1	2.5	5.5
1968	4.5	7.8	10.2	5.8	3.5	5.4
1969	5.0	6.5	6.1	4.9	2.9	5.1
1970	3.3	6.1	10.6	4.6	3.2	4.4
1971	2.3	3.5	11.9	4.2	1.9	3.3
1972	0.3	1.5	13.5	4.5	0.9	1.9
1973	1.3	2.1	7.1	3.9	1.2	2.2
1974	3.5	2.5	7.3	4.8	2.1	3.6
1975	3.1	3.8	8.5	4.3	1.5	3.6
1976	0.5	3.6	5.6	3.3	1.6	2.0
1977	0.9	2.5	7.9	0.8	1.0	1.9
1978	-0.2	1.8	3.3	3.1	1.6	1.1
1979	2.0	3.0	3.6	3.3	1.2	2.4
1980	1.6	2.9	6.3	3.3	0.6	2.4
1981	-0.1	2.0	6.2	2.6	0.1	1.3
1982	-1.4	-1.6	-2.6	1.7	1.9	-0.9
1983	1.4	0.6	1.7	2.2	0.3	1.2
1984	1.6	2.4	4.5	2.4	1.1	2.1
1985	-3.2	3.1	5.2	2.5	1.0	0.1
1986	-7.7	2.2	10.6	2.5	0.5	-1.4
1987	-0.9	0.4	5.5	3.5	2.0	1.1

Source: CIA (1990a), 90-3. Household services are housing, utilities, transportation, communications, repair and personal care, and recreation. Communal services are education and health. On "established prices" see the note to table 1.

Table 6. Economic Growth Under State Socialism and East Asian Capitalism: a Comparison, 1960-87 (per cent)

	Initial GDP per head, % of US	Real GDP per head growth, % per year	Investment, % of GDP	Openness (gross trade), % of GDP
(A) 1960-73				
USSR	35	3.4	39	6
Japan	30	8.5	32	20
CEE-5	29	3.9	28	41
East Asia-7	13	5.8	17	93
China	8	2.3	16	7
(B) 1973-87				
Japan	61	2.7	34	25
USSR	36	1.0	39	14
CEE-5	31	1.4	30	56
East Asia-7	20	5.1	25	126
China	7	5.1	21	16

Notes and sources:

Countries and country groups are ranked by GDP per head in the initial year of each period. GDPs (growth rates and US relatives) for USSR, China, and CEE-5 are calculated from Maddison (1995), appendix D; all other figures are calculated from the Penn World Table 5.6 (<http://www.nber.org>). Central and East European-5 are the state-socialist economies of Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia; East Asia-7 are the market economies of Indonesia, Hong Kong, Korean Republic, Malaysia, Singapore, Taiwan, and Thailand. Country figures are at current international prices or chain index numbers and international prices. Regional averages are computed as unweighted means of country figures. GDP shares are annual averages over the period shown. On GDP see the note to table 1.

References

- Allen, Robert C. (1998), 'The standard of living in the Soviet Union, 1928-1940', *Journal of Economic History*, 58(4), 1063-89
- Arnot, Bob (1988), *Controlling Soviet labour*, London and Basingstoke
- Åslund, Anders (1990), 'How small is Soviet national income?', in Rowen, H.S., and Wolf, C., eds (1990), *The impoverished superpower: perestroika and the Soviet military burden*, San Francisco, CA, 13-62
- Becker, Abraham C. (1994), 'Intelligence fiasco or reasoned accounting?: CIA estimates of Soviet GNP', *Post-Soviet Affairs*, 10(4), 291-329
- Bergson, Abram (1989), *Planning and performance in socialist economies: the USSR and eastern Europe*, Boston, MA: Unwin Hyman
- Bergson, Abram (1995), 'Neoclassical norms and the valuation of national income in the Soviet Union: comment', *Journal of Comparative Economics*, 21(3), 390-3
- Berliner, Joseph S. (1976), *The innovation decision in Soviet industry*, Cambridge, MA: MIT Press
- Berliner, Joseph S. (1983), 'Planning and management', in Bergson, Abram, and Levine, Herbert S., eds, *The Soviet economy: towards the year 2000*, London, 350-59
- Birman, Igor (1980), 'The financial crisis in the USSR', *Soviet Studies*, 32(1), 84-105
- Birman, Igor (1989), *Personal consumption in the USSR and the USA*, London
- Blanchflower, David G., and Freeman, Richard B. (1997), 'The attitudinal legacy of communist labor relations', *Industrial and Labor Relations Review*, 50(3), 438-59
- Bornstein, Morris (1985), 'Improving the Soviet economic mechanism', *Soviet Studies*, 37(1), 1-30
- Brown, Archie (1997), *The Gorbachev factor*, Oxford: Oxford University Press
- Brus, Włodzimierz (1986), '1950 to 1953: the peak of Stalinism', '1953 to 1956: the "thaw" and the "new course"', '1956 to 1965: in search of balanced development', and '1966 to 1975: normalization and conflict', in Kaser, Michael, ed., *The economic history of eastern Europe 1919-75*, vol 3, *Institutional change within a planned economy*, Oxford: Oxford University Press, 3-249
- Campbell, Robert W. (1985), 'The conversion of national income data of the USSR to concepts of the system of national accounts in dollars and estimation of growth rate', Staff Working Papers, no. 777, The World Bank, Washington DC
- Central Intelligence Agency (CIA) (1988), *USSR: sharply higher budget deficits threaten perestroika* (SOV-88-10043), Washington, DC
- Central Intelligence Agency (CIA) (1990a), *Measures of Soviet gross national product in 1982 prices*, Washington, DC

- Central Intelligence Agency (CIA) (1990b), *Handbook of economic statistics, 1989*, Washington, DC
- Crafts, Nicholas F.R., and Mills, Terence C. (1996), 'Europe's golden age: an econometric investigation of changing trend rates of growth', in van Ark, Bart, and Crafts, Nicholas F.R., eds, *Quantitative aspects of Europe's postwar growth*, Cambridge, 415-31
- Dallin, Alexander (1992), 'Causes of the collapse of the USSR', *Post-Soviet Affairs*, 8(4), 279-302
- Davies, R.W. (1998), *Soviet economic development from Lenin to Khrushchev*, Cambridge
- Dearden, James, Ickes, Barry W., and Samuelson, Larry (1990), 'To innovate or not to innovate: incentives and innovation in hierarchies', *American Economic Review*, 80(5), 1105-24
- Di Tella, Rafael, MacCulloch, Robert J., and Oswald, Andrew J. (1997), 'The macroeconomics of happiness', University of Oxford, Institute of Economics and Statistics, and London School of Economics, Centre for Economic Performance, The Labour Market Consequences of Technical and Structural Change, Discussion Paper Series, no. 19
- Dunham, Vera S. (1976), *In Stalin's time: middle-class values in Soviet fiction*, Cambridge
- Easterly, William, and Fischer, Stanley (1995), 'The Soviet economic decline', *World Bank Economic Review*, 9, 341-71
- Ehrlich, Éva (1991), 'Contest between countries: 1937-1986', *Soviet Studies*, 43, 875-896
- Ellman, Michael, and Kontorovich, Vladimir (1992), eds, *The disintegration of the Soviet economic system*, London: Routledge
- Ellman, Michael, and Kontorovich, Vladimir (1998), *The destruction of the Soviet economic system: an insiders' history*, London: M.E. Sharpe
- Good, David F., and Ma, Tongshu (1999), 'The economic growth of Central and Eastern Europe: a comparative perspective, 1870-1989', *European Review of Economic History*, 3(2), 103-38
- Goskomstat SSSR (1987), *Narodnoe khoziaistvo SSSR za 70 let*, Moscow
- Goskomstat SSSR (1989), *Narodnoe khoziaistvo SSSR v 1988 godu*, Moscow
- Gregory, Paul R. (1987), 'Productivity, slack, and time theft in the Soviet economy', in Millar, James R., ed., *Politics, work, and daily life in the USSR: a survey of former Soviet citizens*, Cambridge: Cambridge University Press, 241-75
- Grossman, Gregory (1977), 'The "second economy" of the USSR', *Problems of Communism*, 26, 25-40
- Grossman, Gregory (1998), 'Subverted sovereignty: historic role of the Soviet underground', in Cohen, Stephen S., Schwartz, Andrew, and Zysman, John, eds, *The tunnel at the end of the light: privatization, business networks, and economic transformation in Russia*, Berkeley, CA: University of California, International and Area Studies Research Series no. 100, 24-50

- Hanson, Philip (1983), 'Success indicators revisited: the July 1979 decree on planning and management', *Soviet Studies*, 35(1), 1-13
- Hanson, Philip (1984), 'The CIA, the TsSU and the real growth of Soviet investment', *Soviet Studies*, 36(4), 571-81
- Harrison, Mark (1993), 'Soviet economic growth since 1928: the alternative statistics of G.I. Khanin', *Europe-Asia Studies*, 45(1), 141-67
- Harrison, Mark (1996), 'Soviet agriculture and industrialization', in Mathias, Peter, and Davis, John A., eds, *The nature of industrialization*, vol. 4, *Agriculture and industrialization: from the eighteenth century to the present day*, Oxford
- Harrison, Mark (1998), 'Trends in Soviet labour productivity, 1928-1985: war, postwar recovery, and slowdown', *European Review of Economic History*, 2(2), 171-200
- Harrison, Mark (2000), 'Soviet industrial production, 1928 to 1950: real growth and hidden inflation', *Journal of Comparative Economics*, 28(1), 134-55
- Harrison, Mark (2001), 'Coercion, compliance, and the collapse of the Soviet command economy', University of Warwick, Department of Economics
- Institut mirovoi ekonomiki i mezhdunarodnykh otnoshenii (IMEMO) (1987), 'Sovetskii soiuz v mirovoi ekonomiki (1917-1987 gg.)', *Mirovaia ekonomika i mezhdunarodnye otnoshenii*, no. 11, 145-57
- Jánosy, Ferenc (1971), *The end of the economic miracle: appearance and reality in economic development*, White Plains, NY
- Khanin, Grigorii I. (1988), 'Ekonomicheskii rost: al'ternativnaia otsenka', *Kommunist*, no. 17, 83-90
- Khanin, Grigorii I. (1993), *Sovetskii ekonomicheskii rost: analiz zapadnykh otsenok*, Novosibirsk
- Kim, Byung-Yeon (1999), 'Income, savings, and monetary overhang of Soviet households', *Journal of Comparative Economics*, 27(4), 644-68
- Knorr, Henry (1986), 'Shchekino: another look', *Soviet Studies*, 38(2), 141-69
- Kontorovich, Vladimir (1986a), 'Soviet growth slowdown: econometric vs direct evidence', *American Economic Association Papers and Proceedings*, 181-5
- Kontorovich, Vladimir (1986b), 'Discipline and growth in the Soviet economy', *Problems of Communism*, 34(6), 18-31
- Kontorovich, Vladimir (1988), 'Lessons of the 1965 Soviet economic reform', *Soviet Studies*, 40(2), 308-316
- Kontorovich, Vladimir (1989), 'Inflation in the Soviet investment and capital stock series', *Soviet Studies*, 41(2), 18-30
- Kontorovich, Vladimir (1993), 'The economic fallacy', *The National Interest*, 31, 35-45
- Kontorovich, Vladimir (1999), 'Economists, Soviet growth slowdown, and the collapse', Haverford College, Department of Economics
- Kornai, János (1986), 'The Hungarian reform process: visions, hopes, and reality', *Journal of Economic Literature*, 24(4), 1687-1737
- Krugman, Paul (1994), 'The myth of Asia's miracle', *Foreign Affairs*, 73, 62-78

- Kudrov, V.M. (1995), 'Sovetskii ekonomicheskii rost: ofitsial'nye dannye i al'ternativnye otsenki', *Voprosy ekonomiki*, no. 10, 1-13
- Kudrov, V.M. (1997), *Sovetskaia ekonomika v retrospektive. Opyt pereosmysleniia*, Moscow
- Levine, Ross, and Renelt, David (1992), 'A sensitivity analysis of cross-country growth regressions', *American Economic Review*, 82, 942-63
- Maddison, Angus (1995), *Monitoring the world economy, 1820-1992*, Paris: OECD
- Maddison, Angus (1998), 'Measuring the performance of a communist command economy: an assessment of the CIA estimates for the USSR', *Review of Income and Wealth*, 44(3), 307-23
- Marer, Paul (1985), *Dollar GNPs of the USSR and eastern Europe*, London
- Martynov, V. (1990), 'SSSR i SShA po materialam mezhdunarodnykh sopostavlenii OON i SEV', *Vestnik statistiki*, no. 9, 10-15
- Millar, James R. (1985), 'The Little Deal: Brezhnev's contribution to acquisitive socialism', *Slavic Review*, 44(4), 694-706
- Millar, James, R., and Clayton, Elizabeth (1987), 'Quality of life: subjective measures of relative satisfaction', in Millar, James R., ed., *Politics, work, and daily life in the USSR: a survey of former Soviet citizens*, Cambridge: Cambridge University Press, 31-60
- Nove, Alec (1992), *An economic history of the USSR, 1917-1991*, 4th edition, Harmondsworth
- Ofer, Gur (1987), 'Soviet economic growth: 1928-1985', *Journal of Economic Literature*, 25(4), 1767-1833
- Ofer, Gur (1989), 'Budget deficit, market disequilibrium, and Soviet economic reforms', *Soviet economy*, 5(2), 107-61
- Rosefielde, Steven (1991), 'The illusion of material progress: the analytics of Soviet economic growth revisited', *Soviet Studies*, 43(4), 597-611
- Rosefielde, Steven, and Pfouts, R.W. (1995), 'Neoclassical norms and the valuation of national income in the Soviet Union and its post-communist successor states', *Journal of Comparative Economics*, 21(3), 375-89
- Rutland, Peter (1984), 'The Shchekino method and the struggle to raise labour productivity in Soviet industry', *Soviet Studies*, 36(3), 345-65
- Schroeder, Gertrude E. (1969), 'The 1966-67 Soviet industrial price reform: a study in complications', *Soviet Studies*, 20(4), 462-77
- Schroeder, Gertrude E. (1972), 'The "reform" of the supply system in Soviet industry', *Soviet Studies*, 24(1), 97-119
- Schroeder, Gertrude E. (1979), 'The Soviet economy on a treadmill of "reforms"', in U.S. Congress, Joint Economic Committee, *Soviet economy in a time of change*, vol. 1, Washington, DC, 312-40
- Schroeder, Gertrude E. (1982), 'Soviet economic "reform" decrees: more steps on the treadmill', in U.S. Congress, Joint Economic Committee, *Soviet economy in the 1980s: problems and prospects*, Part 1, Washington, DC, 65-88
- Schroeder, Gertrude E. (1985), 'The slowdown in Soviet industry, 1976-1982', *Soviet Economy*, 1(1), 42-74

- Schroeder, Gertrude E. (1995), 'Reflections on economic Sovietology', *Post-Soviet Affairs*, 11(3), 197-234
- Summers, R., and Heston, A. (1988), 'A new set of international comparisons of real product and price levels: estimates for 130 countries, 1950-1985', *Review of Income and Wealth*, 34, 1-25
- Summers, R., and Heston, A. (1991), 'The Penn World Table (Mark 5): an expanded set of international comparisons, 1950-1988', *Quarterly Journal of Economics*, 106, 327-68
- Treml, Vladimir G., and Ellman, Michael (1993), 'Debate: why did the Soviet economic system collapse?', *Radio Free Europe/Radio Liberty Research Report*, 2(23), 53-8
- Tsentrāl'noe Statisticheskoe Upravlenie SSSR (TsSU) (1986), *Narodnoe khoziaistvo SSSR v 1985 godu*, Moscow
- White, Stephen (1990), *Gorbachev in power*, Cambridge: Cambridge University Press
- Wiles, Peter J.D. (1964), 'The theory of international comparisons of economic volume', in Degras, Jane, and Nove, Alec, eds, *Soviet planning: essays in honour of Naum Jasny*, Oxford, 77-115