A RAND NOTE

Final Resource Use for Consumption in the Soviet Union Through 2000

Heide Phillips Shockley

RAND

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Heide Phillips Shockley

Prepared for the
Under Secretary of Defense for Policy

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PREFACE

This work is part of an ongoing project on "Gorbachev's Allocative Choices" in RAND's International Economic Policy Program. The research was sponsored by the Under Secretary of Defense for Policy under the auspices of RAND's National Defense Research Institute, a federally funded research and development center supported by the Office of the Secretary of Defense and the Joint Chiefs of Staff. The project addresses the competing claims on Soviet resources exerted (1) by different sectors and end-users within the military, (2) between military and nonmilitary resource claimants, (3) among nonmilitary claimants, and (4) between all of the above and the Soviet empire. A companion RAND Report, R-3891-USDP, formulates alternative choices that the Soviet leadership may make among these competing claims and analyzes the consequences of these choices.

This Note estimates the range of potential resource claims that may be exerted in the next decade for consumption in the Soviet Union. The study separates consumption into five sectors: health, housing, education, food supply, and nonfood consumer goods and services. Because this work was completed sector by sector, some sectors contain more up-to-date histories and data than do others. The Note should be of interest to members of the U.S. defense and foreign policy communities concerned with evolving Soviet economic policy and reform.

SUMMARY

This Note is a supplement to Wolf et al., *Gorbachev's Allocative Choices: Constraints, Dilemmas, and Policy Directions*, RAND Report R-3891-USDP, forthcoming, which examines alternative resource allocation strategies available to the Soviet leadership until the year 2000. The Note specifically documents the range of resource demand for consumption over this time period. Demand for consumption has been divided into five sectors: health, housing, education, food supply, and nonfood consumer goods and services.

Because this research was completed over an 18-month period, most of the sector estimates are based on data available up to 1988. However, in light of the rapidly changing events in the Soviet Union and Eastern Europe, it may or may not be appropriate to use historical trends as predictors of future consumption, as these estimates do, rather than try to account for the latest policy shift.

The general procedure for deriving each sectoral estimate was to gather the most recent data for a baseline figure and then apply various growth rates based on historical trends as well as on recent policy statements to arrive at a range of possible resources that may be demanded by each sector through the year 2000. The estimate range for each sector is expressed as low, medium, and high point estimates for the years 1990, 1995, 2000, and, for two sectors, 2010.

Tables S.1 to S.4 below summarize these point estimates by year for each of the five sectors.

Table S.1

1987 CONSUMPTION BASELINE ESTIMATES
(In billions of 1982 rubles)

Sector	Baseline
Health	19
Housing	39
Education	30
Food	170
Nonfood consumer goods	190

Table S.2

1990 CONSUMPTION PROJECTIONS
(In billions of 1982 rubles)

Sector	Low	Medium	High
Health	22	23	26
Housing	46	55	61
Education	43	48	53
Food	193	199	211
Nonfood consumer goods	206	229	256

Table S.3

1995 CONSUMPTION PROJECTIONS
(In billions of 1982 rubles)

Sector	Low	Medium	High
Health	25	29	35
Housing	53	64	71
Education	46	56	68
Food	220	236	265
Nonfood consumer goods	244	303	375

Table S.4

2000 CONSUMPTION PROJECTIONS
(In billions of 1982 rubles)

Sector	Low	Medium	High
Health	28	35	47
Housing	62	75	83
Education	49	65	87
Food	239	264	308
Nonfood consumer goods	265	366	503

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CONTENTS

PREFACE iii

SUMMARY v

ACKNOWLEDGMENTS vii

TABLES xi

Section

I. INTRODUCTION 1

II. FINDINGS ON THE HEALTH CARE SECTOR 4

III. FINDINGS ON THE HOUSING SECTOR 12

IV. FINDINGS ON THE EDUCATION SECTOR 17

V. FINDINGS ON THE FOOD AND NONFOOD CONSUMER-GOODS SECTORS ... 23
- Overview 23
- Future Resource Demand for Food Supply 24
- Future Resource Demand for Nonfood Consumer Goods and Services 28
- Sensitivity of the Results 30

TABLES

S.1. 1987 consumption baseline estimates v
S.2. 1990 consumption projections vi
S.3. 1995 consumption projections vi
S.4. 2000 consumption projections vi
2.1. Soviet health expenditures 8
2.2. Constant ruble Soviet health expenditures 9
2.3. Breakdown of Soviet state health budget expenditures, 1985 9
2.4. Growth projections for total Soviet health expenditures 10
2.5. Projected breakdown of Soviet state health expenditures for the year 2000 at various growth levels 11
3.1. Housing investment expenditure estimates 14
3.2. Expenditure projections for housing, municipal services, and utilities 15
3.3. Expenditure projections for total housing consumption 16
4.1. Breakdown of Soviet state expenditures on education, 1985 20
4.2. Average historical growth rates for state educational expenditures 20
4.3. Projections for noninvestment state expenditures on education 21
4.4. Projections for capital investment state expenditures on education 21
4.5. Combined projections for total state expenditure on education 21
4.6. Estimate of private spending on education 22
4.7. Estimate of total annual resource demand for education 22
5.1. Population size and annual growth rate in the USSR, 1960–1985 25
5.2. Population projections for the USSR, 1990–2010 26
5.3. Soviet trends in the growth of per-capita food consumption 26
5.4. Estimates of Soviet per-capita food consumption 28
5.5. USSR resource demand for food, up to 2010 28
5.6. Soviet trends in the growth of per-capita consumption of nonfood consumer goods 29
5.7. Estimates of per-capita consumption of nonfood consumer goods 30
5.8. USSR resource demand for nonfood consumer goods, up to 2010 30

I. INTRODUCTION

The purpose of this Note is to serve as a supplement to Wolf et al., *Gorbachev's Allocative Choices: Constraints, Dilemmas, and Policy Directions*, RAND Report R-3891-USDP, forthcoming, which examines alternative resource allocation strategies available to Soviet leadership until the year 2000. The Note specifically documents the range of resource demand for consumption during this period.

This study uses a definition of consumption that differs slightly from the standard U.S. definition. Here, consumption is defined as final resource use on personal consumption plus final resource use on collective consumption, where personal consumption is composed of the sum of final resource use for food and nonfood consumer goods and services, and collective consumption is composed of the sum of final resource use for health, housing, and education. Comparing this definition with that of the United States is not straightforward, since some of the items included as consumption here would be included as investment (e.g., housing construction) or government spending (e.g., education) in the United States. However, like its U.S. counterpart, this definition is oriented to final use and is appropriate for the market system to which it is applied.

The Report discusses the role of consumption in the context of the full size of the economy and the trade-offs that will have to be made into the future. However, it is appropriate here to define "final resource use" so that it will be clear how the definition of consumption fits into our conception of the economy as a whole. Final resource use is defined as personal consumption plus collective consumption plus investment (not already included in other sectors) plus military spending minus the current account balance.

In estimating final resource use for consumption, adjusted sector-of-origin data have been used as proxies for final demand according to the following procedure: (1) food and nonfood consumer-goods production is used to reflect final demand for personal consumption; and (2) health, education, and housing output makes up final demand for collective consumption as well as for investment outlays in these sectors.

In accord with this procedure, final resource-use estimates have been made for each sector for 1985, 1987, 1990, 1995, 2000, and, for two sectors, 2010. These

estimates were derived by examining historical trends and current policy statements to arrive at ranges of resource uses that each of the consumption sectors will demand into the future. These ranges are presented for each sector and each year as high, medium, and low point estimates.

It is important to mention what this Note does not attempt to do. Its purpose is not to provide a comprehensive study or analysis of the history and/or the future prospects of any one sector or consumption as a whole in the Soviet Union. The purpose is not even to highlight the trade-offs necessary among the various sectors of the economy; indeed, this is the purpose of the above-mentioned Report. Finally, the purpose is not to compare sector by sector the performance of Soviet consumption with that of another nation, for example, the United States. These objectives are worthwhile and have been and should continue to be pursued; however, they are not integral to the purpose of this study.

It is also necessary to briefly review some of the problems with using Soviet statistics as a data source, since virtually all of this analysis relies on them. Soviet statistics used for baseline estimates and as a guideline for estimating future growth rates are unreliable and tend to be systematically biased upward. This bias follows from the incentive structure induced by a centrally planned economy that focuses on quantitative production norms in evaluating the performance of producing units.

Another problem with using Soviet statistics is the extent to which hidden inflation is overlooked or underestimated by the usual procedures for deflating value data in current prices to arrive at estimates in constant prices. In an economic system based on administered prices, rather than market-based ones, hidden inflation can take the form of (1) diminished product quality for output evaluated at constant prices or (2) the attribution of higher prices to products whose invoiced description involves fictitious rather than actual upgrading of quality. Even worse, in many cases, documentation does not explicitly discuss whether current or constant prices are being reported. Throughout the consumption sectors included in this Note and also in the other sectors of the economy included in the main Report, an annual inflator/deflator of 5 percent was used for 1980–1990 and 2.5 percent for 1977–1979. The 5 percent annual rate has also been assumed for prospective inflation.[1]

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[1]Historically, other sources have applied a lower rate. However, we assume that these estimates do not fully account for the hidden inflation and, therefore, are too conservative. See Vladimir Kontorovich and Boris Rumer, "Inflation in the Soviet Investment Complex," *Report by Command Economies Research, Inc.*, May 1988, which

Finally, it should be clear from the full definition of "final resource use" that this demand may be met in various ways. Given a certain size of the GNP and a certain amount of this to be allocated to "consumption," two ways exist, by definition, to meet this demand. The first is to limit the size of the other sectors so that the sum does not exceed the final resource use produced domestically. The second is to import more goods and services from abroad than are exported, thereby allowing for more consumption than production. The relationship among the GNP estimates, the sectoral estimates, and the current account balance is discussed in more detail in the accompanying Report.

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estimates hidden inflation for investment at approximately 3 percent for 1977–1985. Also see the CIA publication, *Handbook of Economic Statistics*, 1987, p. 51, which estimates a consumer price index for the Soviet Union of 1.8 percent for 1975–1980 and 2.2 percent for 1980–1986. Our 5 percent assumption for prospective inflation is consistent with the CIA/DIA estimate for 1989 of 6 percent for retail prices. See CIA/DIA, "The Soviet Economy Stumbles Badly in 1989," April 20, 1990, presented to the Joint Economic Committee, Congress of the United States. This same report notes the inflation estimate made by GOSPLAN (Central Planning Commission of the USSR) of 5 percent reported and 5.5 percent repressed inflation. Thus, the assumption of 5 percent inflation is consistent with important recent estimates made by both U.S. and Soviet agencies. Our estimate is for prospective inflation, and given Soviet budget deficit problems combined with the political sensitivity of price increases and the government's perceived need for additional resources, a reduction in inflationary pressures is not a likely prospect.

II. FINDINGS ON THE HEALTH CARE SECTOR

As plans for implementation of Secretary General Mikhail Gorbachev's "perestroika," or restructuring of the Soviet economy, are being made, concerns are being expressed about the long-term effects of the decline in the health status of the Soviet people. Low labor productivity and high job absenteeism, which is partially responsible for the recent slower-than-planned growth of the economy, are largely attributable to the poor quality of health of the average Soviet citizen (as well as, of course, to the lack of incentives). As larger and larger demands are being made on a limited State budget, improving health care for the Soviet people may be taking paramount importance.

Soviet health statistics, previously unavailable for the period from the late 1960s through the early 1980s, show a significant decline in the health of the Soviet population; average life expectancy rates fell, and infant mortality rates, as well as crude death rates, rose during this period. The infant mortality rate rose from 26.2 deaths per thousand live births in 1971 to 35.6 deaths by 1976.[1] Average life expectancy at birth of Soviet males fell from 64.4 years in 1971–1972 to 62.5 years in 1978–1979.[2] Female life expectancy also declined during this time but not to the same extent. The reduction in life expectancy may be partly due to the effects of compositional shifts in the population. In the mid-1980s a trend of improvement began to reappear; however, these indicators have just recently regained their pre-decline levels. No other industrialized country in the postwar period has had a sustained falloff in even one of these indicators, according to Dr. Murray Feshbach of Georgetown University.

The direct financial losses from the forfeited man-hours resulting from the nation's declining health were estimated at the 18th Congress of Soviet Trade Unions at 90 billion rubles a year.[3] Growth projections have been reduced to reflect this as well as the resulting declining growth of the working-age population. With the current

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[1]Harry Nelson, "Soviet Goal: Resuscitate Health Care," *Los Angeles Times*, May 5, 1988, Part I, p. 1.

[2]Michael Ryan, "Life Expectancy and Mortality Data from the Soviet Union," *British Medical Journal*, May 28, 1988, p. 1514.

[3]Mark D'Anastasio, "Red Medicine: Soviet Health Care System, Despite Early Claims, Is Riddled by Failures," *Wall Street Journal*, August 18, 1987, p. 1.

reassessment of priorities, these statistics have dramatically increased official concern for the state of the health care system. This concern is manifested in a call for complete restructuring of as well as increased budgetary allocations to the Soviet health care system.

The initial evidence of the plan to revamp the health sector was the sudden dismissal of the Minister of Health, Sergei Burenkov, for "health reasons" in December 1986. Then in January 1987, Mikhail Gorbachev set the stage for the upcoming transition: "The social goals of the economy in the past few five year plan periods were obviously diluted, and there emerged a sort of deafness to social issues."[4]

Burenkov's replacement, Yevgeniy Chazov, a renowned cardiologist from the USSR Academy of Science, used Gorbachev's comments as a preface for several openly critical speeches on the quality of health care in the Soviet Union. Along with the critical remarks expected by a successor, suggestions were made for substantial changes in the structure and budgetary allocations of the health sector.

Closely following these public speeches, the Communist Party of the Soviet Union (CPSU) Central Committee and USSR Council of Ministers draft, "Basic Guidelines for the Development of Health Services for the Population and the Restructuring of Public Health in the USSR During the 12th 5-Year Plan Period and Through the Year 2000," was printed in full on the first three pages of *Pravda*. Although not nearly as critical as Chazov, the decree did call for specific areas of improvement and reorganization within the structure of the health system. After six full weeks of discussion, the draft became law in November 1987.

As interpreted by Chazov in several subsequent interviews, the plans for change include: (1) continued emphasis on preventive medicine; (2) qualitative rather than quantitative indexes as performance measures for doctors and support staff; (3) increased technological capabilities of hospitals and other medical facilities; (4) health-system decentralization in order to minimize inefficiencies as well as remove unnecessary bureaucracies; (5) an increased role for self-financing as well as fee-for-service medical establishments; and, finally, (6) increased budgetary allocations to the health sector.

The initiative for improving preventive health care was implemented in 1984 by Minister Burenkov. Campaigns were begun to reduce alcohol consumption, smoking,

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[4]Mikhail Gorbachev, from his speech to the Plenum of the Party's Central Committee, January 1987.

and obesity and to increase exercise participation. Despite these early efforts, according to the "Basic Guidelines" draft, two-thirds of the population were not involved in "systematic physical culture and sport," up to 30 percent were overweight, and more than 25 percent smoked. Drunkenness and alcoholism were widespread. Chazov has blamed the ineffectiveness of these efforts on the inefficient structure of the entire health system and the lack of worker motivation as well as workplace managers failing to implement preventive measures. He has set a goal of annual physical checkups for "every man, woman, and child" by 1995.

Previously, indexes of health care were based on quantity, and, as expected, quality suffered. For example, the Soviet Union has 1.2 million doctors and 13 hospital beds per thousand people, statistics which seemingly put the United States to shame. However, in recent competence tests given to medical school graduates, approximately 40 percent were described as "completely lacking in practical skills."[5] Doctors at the neighborhood polyclinics where 80 percent of the population receives its health services are required to see eight patients per hour, which comes down to seven-and-a-half minutes per patient for diagnosis and treatment. Furthermore, most of that time is spent filling out required paperwork in longhand since preprinted forms are in short supply.[6] Efforts are being made to de-emphasize quantity of patients served and instead use more qualitative performance measures. For example, the planned health-sector reform includes ten new indexes that, when viewed together, should give an objective picture of the quality of care the patient receives.

Another qualitative change included in the restructuring plan is an effort to increase the technological capabilities of hospitals along with other medical facilities. Historically, technical equipment has comprised only 10–12 percent of the initial cost of a hospital; for comparison, the figure is 30–40 percent in the United States.[7] In Chazov's words, "In the passion for building new hospitals, we have spent money on bricks and concrete, and not on treating our patients properly and quickly."[8]

Steps to decentralize the health sector are an integral part of the new plan. Approval has been given to allow regional authorities (1) to receive a fixed budget that is

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[5]Nelson, "Soviet Goal," p. 18.

[6]Libor Roucek and Mary Kearney, "The Soviet Health-Care System Under Mikhail Gorbachev," *The Medical Journal of Australia*, August 3, 1987, p. 129.

[7]Nelson, "Soviet Goal," p. 16.

[8]Ibid.

dependent upon the size of the local population and (2) to decide where and how to spend the money on a self-accounting, profit-and-loss basis. Chazov hopes that "the medical institutions will now have a direct economic interest in both the quality of treatment and disease prevention, because they will have to pay for neglected cases out of their own pockets."[9] In addition to this new "self-financing" method for distribution of funds, many bureaucratic agencies are being combined and out-of-date hospitals and research institutions shut down in order to diminish inefficient use of health care funds.

Finally, the establishment of fee-for-service, or private, polyclinics and hospitals is being encouraged. Twenty private polyclinics and one hospital have recently opened in Moscow; the plan is to expand nationwide. The goal is to increase the private portion of health care expenditure from 0.4 percent to 2 percent by the year 2000.[10] The purpose is twofold. First, private health care has always been available, but informally and illegally; "thanking" doctors and nurses with monetary gifts for routine care is common. By allowing private practice, Gorbachev is trying to legalize and institutionalize participation in the second economy. It is questionable whether doctors will be willing to participate to the extent Soviet officials would like, since profits previously untaxed will be taxed at an 80 percent rate. Also underlying the call for increasing private health care is the premise that by making people pay, their willingness to take steps to better their health will increase.

Plans for many of the proposed changes have already been approved for implementation by Soviet officials, but unless budgetary allocations are increased significantly it is questionable whether the plans will become actions. The principal explanation for the diminished state of the health care system over the last 20 years is lack of money. The portion of the Soviet national income allocated to health care went from 4.1 percent in 1970 to 4.0 percent in 1987. If current funding levels continue, it will drop to 3.9 percent by 1990.[11] Although modest absolute increases have been realized, recent history dictates a trend for decreasing health-sector funding. However, with all the public criticism and resulting effort involved in restructuring, expenditure levels probably will begin to increase; the more interesting question seems to be by how much.

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[9]Martin Walker, "Strains in the Welfare State," *World Press Review*, October 1987, p. 25.

[10]Anthony Astrachan, "The Kremlin Tries Fee-for-Service Medicine," *Medical Economics*, May 2, 1988, p. 54.

[11]Walker, "Strains in the Welfare State," p. 25.

General consensus exists among Western experts regarding current (1985) Soviet expenditure on health care, as shown in Table 2.1, in current rubles. Table 2.2 shows these same figures after conversion to 1982 rubles using a 5 percent annual deflator for 1981–1985 and 2.5 percent for 1970–1980. It is important to note that the breakdown of expenditures, shown in Table 2.3, includes "sanitary prophylactic establishments and measures" (or environmental health programs), "day nurseries" (or child care), and "physical culture" (or physical fitness) expenditures along with "curative prophylactic establishments" (or personal medical services). So for comparison purposes, the figures must be adjusted some.

Obviously, when projecting future expenditure levels, using recent historical trends will lead to very different results from those obtained using the growth goals set forth in the restructuring plans. This is illustrated in Table 2.4. The 1985 baseline (in 1982 rubles) that these rates are applied to is the 19.5 billion ruble figure from Table

Table 2.1

SOVIET HEALTH EXPENDITURES
(In current rubles)

Category	1970	1985	1985 as Percentage of 1970
State health budget (billion rubles)[a]	9.3	17.6	190
Health share of state budget (percent)[b]	6.0	4.6	77
Nonbudgetary sources (billion rubles)[c]	2.5	5.0	196
Total expenditures (billion rubles)[a]	11.8	22.6	191
Health expenditure per capita (rubles)	48.0	81.0	169
Health expenditure share of national income (percent)	4.1	4.0	95

[a]Michael Ryan, "Funding for the Soviet Health Services," *British Medical Journal*, September 12, 1987, p. 652.

[b]Christopher Davis, "Developments in the Health Sector of the Soviet Economy," *Gorbachev's Economic Plans*, Vol. II, November 23, 1987, p. 317.

[c]Results from subtracting the state health budget from total expenditures.

Table 2.2

CONSTANT RUBLE SOVIET HEALTH EXPENDITURES
(In 1982 rubles)[a]

Category	1970	1985	1985 as Percentage of 1970
State health budget (billion rubles)	13.1	15.2	116
Health share of state budget (percent)	6.0	4.6	77
Nonbudgetary sources (billion rubles)	3.5	4.3	123
Total expenditures (billion rubles)	16.6	19.5	117
Health expenditure per capita (rubles)	67.5	70.0	104
Health expenditure share of national income (percent)	4.1	4.0	95

[a]Derived from figures in Table 2.1.

Table 2.3

BREAKDOWN OF SOVIET STATE HEALTH BUDGET EXPENDITURES, 1985

Category	Expenditure	
	In Millions of 1982 Rubles	As Percent
Total expenditures	15,213	100.0
Capital allocations	976	6.4
Curative prophylactic establishments	13,142	86.4
Sanitary prophylactic establishments	580	3.8
Physical culture	102	0.7
Day nurseries	214	1.4
Residual	198	1.3

SOURCES: Ryan, "Funding for the Soviet Health Services," p. 653, except for day nurseries, which are taken from "USSR State Budget 1981–1985: Statistical Handbook," *JPRS* [Joint Publications Research Service, Department of Commerce] *Report: Soviet Union Economic Affairs*, April 28, 1988, pp. 17, 19.

2.2.[12] The 15-year historical estimate is found by projecting the 1970–1985 growth onto the 1986–2000 period.[13] This figure is very low—reflecting minimal real growth—and probably unrealistically so. Alternatively, Health Minister Chazov has repeatedly pledged a tripling of the budget by the year 2000, which would average out to a 7.5 percent nominal annual growth rate or a 2.5 percent real annual growth rate. Normally, figures drawn from policy statements such as this would be considered near the high end of the plausible range. However, current expenditure increases indicate that this level may not be unlikely. Estimates of the expenditures necessary to bring the Soviets up to current world standards call for as much as a fivefold expansion, requiring an 11 percent nominal annual growth rate or a 6 percent annual real growth rate.[14] The projected resource demand, using these various growth rates, is shown in Table 2.4.

Table 2.5 shows the projected breakdown of state health expenditures at each growth rate in the year 2000 based on the proportional breakdown reported for 1985 expenditures.[15] As previously mentioned, investment in medical technology will probably grow faster than is reflected here; however, there is no indication of which

Table 2.4

GROWTH PROJECTIONS FOR TOTAL SOVIET HEALTH EXPENDITURES
(In billions of 1982 rubles)

Growth Rate	1990	1995	2000
15-year historical	—	—	22.6
Low (2.5% annual)	22.1	25.0	28.2
Med (4.0% annual)	23.7	28.9	35.1
High (6.0% annual)	26.1	34.9	46.7

[12]To arrive at a baseline estimate for 1987, it is assumed that no real growth has occurred in health-related expenditures over the 1985–1987 period. Hence, consumption of health services in 1987 is assumed to be 19 billion 1982 rubles.

[13]That is, total real expenditures in 1985 were 116 percent of total real expenditures in 1970. Applying this trend for 1986–2000, 116 percent of 19.5 billion 1982 rubles is 22.6 billion 1982 rubles (shown in Table 2.4).

[14]Aaron Trehub, "More Glasnost on Soviet Health Issues," *Radio Free Europe/Radio Liberty* (RFE/RL), October 12, 1987, p. 2.

[15]Total state health expenditures in 1985 were 15.2 billion 1982 rubles and total health expenditures were 19.5 billion 1982 rubles (derived from Table 3.2). Hence, the proportion of state to total is 15.2/19.5 = 78 percent.

category will, as a counterpart, not grow as fast. Therefore, to present a sensible projected breakdown, the 1985 percentages were used.

Whether funds for the health sector will increase depends on how well Minister Chazov can turn words into action. So far, he seems to have the cooperation of Gorbachev; he recently won approval for an additional 6 billion rubles to be allocated over the next two years.[16] In addition, at the 19th Party Conference held in late June, he announced plans to double state health care expenditures in the next five-year plan (1991–1995).[17] Still, uprooting bureaucracies can be an extremely lengthy process, one that might be beyond the scope of Minister Chazov's stay in office.

Table 2.5

PROJECTED BREAKDOWN OF SOVIET STATE HEALTH EXPENDITURES FOR THE YEAR 2000 AT VARIOUS GROWTH LEVELS
(In billions of 1982 rubles)

Category	Percentage of Total[a]	Growth Level		
		2.5%	4%	6%
Total state expenditure for health care	100.0	22.0	27.4	36.6
Union budget	5.4	1.2	1.5	2.0
Republic budgets, total	82.5	18.2	22.6	30.0
Republic budgets				
Wages and wage supplements	52.2	11.5	14.3	19.0
Expenditures for meals	7.8	1.7	2.1	2.8
Medicines and bandages	8.6	1.9	2.4	3.1
Equipment and inventory acquisition	3.4	0.7	0.9	1.2
Capital investment	5.6	1.2	1.5	2.0
Building repair	2.9	0.6	0.8	1.1
"Soft" inventory and uniform acquisition	2.0	0.4	0.6	0.7
Unaccounted for	12.1	2.7	3.3	4.4

[a]"USSR State Budget 1981–1985," *JPRS Report*, pp. 17, 19.

[16]Nelson, "Soviet Goal," p. 1.

[17]"Chazov, Yakovlev Speak," FBIS[Foreign Broadcast Information Service]-SOV[Soviet]-88-126, June 30, 1988, p. 8.

III. FINDINGS ON THE HOUSING SECTOR

Nearly all the literature, both internal and external, on the recent Soviet economic performance acknowledges that housing, and the quality thereof, needs to be given high, if not the highest, priority. An ambitious and rhetorical goal was set in April 1986 at a CPSU Party Conference to provide "a separate apartment or flat for every family by the year 2000."

Statistics on Soviet housing are alarming. Of urban families, at least 20 percent share kitchen and toilet facilities with other families, and 5 percent live in factory dormitories. Young married couples are forced to live with their in-laws for years and sometimes decades before they are allowed a place of their own. For comparison, there are approximately two rooms for every person in the United States but only one room for every two people in the Soviet Union.[1]

The quality of housing is no more promising. Of 1983 urban housing, 32 percent had no hot water, 9 percent had no water, 11 percent had no sewage facilities, and 23 percent had no gas.[2] Soviet newspapers are filled with complaints about floors that ripple, walls that buckle, railings that come off in the hand, and so forth. Estimates of the cost to the state annually to repair these problems run about 500 million rubles. At least this much is paid annually to moonlighters by private citizens for faster and higher quality service than that available from the state.[3]

Poor quality housing in the Soviet Union is rooted in a policy that has plagued other sectors of the economy; namely, the emphasis on quantitative, rather than qualitative, measures of progress and growth. For example, construction enterprises have been evaluated solely on whether the job is completed on time. Understandably, this leads to a rushed, low-quality finished product.

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[1]Richard Schifter, "U.S.-Soviet Quality of Life: A Comparison," Department of State Bulletin, September 1985, p. 70.

[2]Ibid.

[3]Aaron Trehub, "Social and Economic Rights in the Soviet Union: Work, Health Care, Social Security, and Housing," Radio Liberty Research Bulletin, December 29, 1986, p. 36.

Although some changes have been made in other sectors to increase the use of qualitative performance measures, it is not clear that this has been done in the housing sector. In fact, there has been criticism that the goal of a separate apartment or flat for every family is a purely quantitative goal; a suggestion has been made by a senior research fellow at GOSPLAN research institute, E. Gontmakher, that a more appropriate goal might be a separate room for every person.[4]

Nevertheless, it seems as though plans are being based on square-meter-type goals. Estimates are that 2.4 billion square meters, or 36 million apartments, must be built during 1986–2000 to fulfill the official goal of a separate apartment for every family by 2000.[5] However, E. Gontmakher asserts that the official requirement estimate is too low to meet this goal; his calculations estimate that 40 million apartments (or 2.7 billion square meters) will be required.[6] On the other hand, based on the 1980–1985 historical annual growth rate of 1.5 percent, only 1.9 billion square meters will be built.[7] These estimates coincide respectively with the medium, high, and low categories in the tables below.

Translating the square-meter requirements into projected expenditures requires a cost-per-square-meter estimate. In 1985, this figure was 249 in 1984 constant rubles. Using a 5 percent annual deflator, this figure translates to 225 in 1982 constant rubles. Using the real annual-cost growth rate experienced from 1980–1985 of 4.4 percent, the projected cost per square meter for 1990 is 279 rubles per square meter. Assuming that the annual-cost growth rate will level off in 1991–2000 to between the average rate of 3.8 percent for 1960–1985 and 4.4 percent for 1980–1985, the projections for 1995 and 2000 of 339 and 412 rubles per square meter were made using a 4.0 percent growth rate

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[4]"Researcher Queries CPSU Housing Program," RFE/RL Daily Report No. 144, August 2, 1988, p. 4.

[5]"Supreme Soviet Session—Housing Problem Discussed," Telegraph Agency of the Soviet Union, May 25, 1988.

[6]"Researcher Queries CPSU Housing Program," RFE/RL, p. 5, provides the 40 million apartment figure. The 2.7 billion square meters was derived using the average apartment size (2.4 billion square meters/36 million apartments = 66.7 square meters per apartment).

[7]Michael V. Alexeev, "Soviet Residential Housing: Will the 'Acute Problem' Be Solved?" Gorbachev's Economic Plans, Vol. 2, U.S. Government Printing Office, Washington, D.C., pp. 288–289.

for 1991–2000.[8] This leads to the estimated high, medium, and low housing investment cost in billions of 1982 rubles shown in Table 3.1.[9]

A baseline estimate for 1987 housing investment was estimated to be 28 billion 1982 rubles. This estimate was derived using a cost per square meter of 245 1982 rubles and 114 million square meters of construction.

It is unlikely that either the low or high figures will be within the plausible range. Given that 1986 and 1987 growth levels are significantly higher than the low 1.5 percent growth rate, the trend is definitely higher than the low estimate. Since the official plan is the medium estimate, it is unlikely that the high estimate will be viable. However, the targets needed to achieve the medium estimate were exceeded in 1986 and 1987, so an expenditure level somewhat higher than the medium projections may be possible.[10]

Obviously, serious trade-offs in other sectors of the economy will occur if the state is to meet these ambitious goals. As in other sectors, the government is hoping to encourage private housing expenditure to share in obtaining this goal. In 1985, 18 percent of the new dwellings built were funded privately (either by enterprises or private

Table 3.1

HOUSING INVESTMENT EXPENDITURE ESTIMATES
(In billions of 1982 rubles)

Level	1990	1995	2000
Low	35.4	43.1	52.3
Medium	44.6	54.2	65.9
High	50.2	61.0	74.2

[8]Ibid.

[9]These estimates were derived for each year by multiplying the appropriate cost per square meter by the expected number of square meters that would be constructed that year if that scenario held. The expected number of square meters for any year was calculated as just the total number of square meters projected under that scenario over the 15-year period divided by 15. In other words, these calculations assume that construction will be constant over all 15 years. For example, to derive the low 1990 figure, we divided 1.9 billion square meters by 15, which gives 0.127 billion square meters to be constructed that particular year. We then multiplied this number by 279, the appropriate cost per square meter, resulting in the expected housing investment expenditure in 1990 under the "low" scenario of 35.4 billion 1982 rubles.

[10]John Tedstrom, "USSR Economic Performance in the First Half of 1988: A Midterm Report for the Twelfth Five-Year Plan," RL Report, July 22, 1988.

persons). Plans are to increase this figure to one-third by 2000.[11] The state hopes to do this by making credit more readily available from state banks. Also, enterprises are being encouraged to issue mortgage loans and even subsidize their workers' housing needs as a benefit for good performance.

Additionally, in the movement toward price reform, plans have been made to increase the rent paid for state-owned apartments in an attempt to reduce the annual subsidy the state budget pays to cover expenditures above revenues. This may elicit strong resistance, however, since rents have been fixed in the Soviet Union since 1928.

In addition to the expenditure on housing investment in 1985, the state spent 13.6 billion current rubles, or 11.7 billion 1982 rubles, on housing, municipal services, and utilities.[12] Unfortunately, a breakdown of what this category includes is not provided in the state budget. Based on an 18.9 percent nominal growth rate for the period 1981–1985 over 1976–1980 (corresponding to a real growth rate of –8 percent over this period), future resource demand projections are shown in Table 3.2.[13] There is no indication that there will be a departure from this trend, so no basis exists for assigning any high, medium, or low growth levels in this part of the housing sector.

Combining Tables 3.1 and 3.2, Table 3.3 shows the total housing-service expenditure projections.

Although these estimates are very rough, the trend does seem to indicate that, at least quantitatively, progress is being made toward fulfilling the investment goals set for

Table 3.2

EXPENDITURE PROJECTIONS FOR HOUSING, MUNICIPAL SERVICES, AND UTILITIES
(In billions of 1982 rubles)

Year	Expenditure
1990	10.8
1995	10.0
2000	9.2

[11]"Supreme Soviet Session," Telegraph Agency of the Soviet Union.

[12]Adding 11 billion 1982 rubles for housing, municipal services, and utilities to the 28 billion 1982 rubles invested in housing construction results in a total expenditure estimate for 1987 of 39 billion 1982 rubles.

[13]"USSR State Budget 1981–1985," *JPRS Report*, p. 10.

Table 3.3

EXPENDITURE PROJECTIONS FOR
TOTAL HOUSING CONSUMPTION
(In billions of 1982 rubles)

Level	1990	1995	2000
Low	46.2	53.1	61.5
Medium	55.4	64.2	75.1
High	61.0	71.0	83.4

the housing sector. In 1986, 1987, and the first half of 1988, preliminary progress reports suggest that goals have been met and exceeded, unlike in other sectors of the economy. This is at least one indication that the housing sector is receiving high priority in the plans of perestroika.

IV. FINDINGS ON THE EDUCATION SECTOR

Among the examples of domestic reform cited by Gorbachev and other top Soviet officials, education is one of the most frequently mentioned. Most notably, Gorbachev concluded at the 27th CPSU Congress that "the pace and depth of the implementation of the measures stipulated by the 1984 school reform still cannot satisfy us."[1] It is true that the Politburo and the Central Party have paid significant attention to the Soviet educational system. However, unlike housing and health reform, for the most part recent educational reform has involved rethinking ideals and restructuring the system rather than substantially increasing resource allocations.

In 1984, the CPSU made a resolution, the General Education and Vocational School Reform, to modify the educational system. Implementation began in 1985. The resolution principally required the central ministry to determine ways to improve secondary and vocational schools. However, change, even here, was slow. In February 1987, the "Plenum Resolution of the CPSU Central Committee on the Progress of Restructuring Secondary and Higher Education and the Party's Tasks for Carrying This Out" was released. It set more specific guidelines for improving secondary, higher education, and vocational schools and plans to expedite progress.

A year later, in February 1988, another Plenum was held to discuss the progress of the educational reform. The meeting opened with a lengthy report by Yegor Ligachev on the inadequacy and inappropriateness of the reforms set forth in 1984 and 1985. Ligachev listed several reasons for the failure to bring forth significant improvement.

> First, the evolutionary nature of the reform was contrary to the revolutionary nature of the restructuring of society begun by the party. The reform was based on the idea that the public education system needs only some modification. The reforms did not take into account the fact that for some time the content of school work and its scientific, pedagogical, cadre, material and technical back-up, its management and planning principles have required radical updating.[2]

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[1]"Ligachev Sets New Education Guidelines," *Pravda*, February 18, 1988, pp. 1–4.

[2]Barry Holland, "Education: Reforming the Reforms," *Soviet Analyst*, March 9, 1988, p. 3.

He also criticized the previous reforms for requiring general-educational schools to include basic mass vocational training in their curriculum. Furthermore, he argued that by requiring a large percentage of eighth-grade students to go directly on to vocational/technical schools, the reforms reduced by 15 percent the number of students entering general higher education. He expressed his view that "present day social and economic reality," where demands on the level and quality of personnel/training, especially technical training, are increasing, necessitates the more general approach with the objective of providing a solid basis for any further studies.[3]

Last, he denounced the reforms for failing to establish a "program of profound democratization of the public education system"; he asserted that teachers, students, parents, and local educational authorities should be involved in determining appropriate curriculum instead of the central ministry, which had failed to implement a focused direction for the reforms.

On face value, it is somewhat surprising that Yegor Ligachev, known for his cautious approach to perestroika, has been advocating rapid reform in the Soviet educational system. However, he explicitly states that his proposed reforms are intended to strengthen the role of communist ideology in schools. He reasons that schools "should not be uniform in the primitive sense of typification and standardization" (a reference to previous guidelines on curriculum and teaching procedures implemented by the educational bureaucracy, which did not take into account large variation in educational circumstances across the nation). He continues, "Everyone deserves the opportunity to make an independent assessment of reality—and make a critical evaluation as well. In this situation, the ideals and values of socialism can be established not by implantation but by the free will of an individual mind."[4] It seems that his propositions for educational reforms actually coincide with his determination to move carefully in other areas, most notably those that attempt to deviate from the traditional socialist framework.

Besides criticizing the content and implementation of the reforms, Ligachev also blamed lack of progress on the reduction in state education expenditures as a percentage of the state budget. In 1970, education expenditures were 11 percent of the state budget and by 1986 had fallen to 8 percent. He called for increasing revenues to the education sector, especially in capital investments, and projected that capital investments would

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[3]Felicity Barringer, "Soviet Schools Sharply Faulted by Top Official," *New York Times*, February 18, 1988, p. 1.

[4]Ibid.

have to double in 1990–2000 in order to create enough room for the 28 million incoming students expected then.[5] Curiously, he also called for students to begin purchasing their own textbooks, evidence of a move toward some sort of self-financing. In sum, Ligachev was suggesting that educational priority could no longer simply be dictated by the "remainder principle."

Probably as a result of this Plenum, in March 1988 the three education ministries (the Ministry of Education, the Ministry of Higher and Secondary Specialized Education, and the USSR State Committee for Vocational and Technical Education) were abolished. A single entity, the USSR State Committee for Public Education, was formed in their place with Gennadiy Yagodin as chairman. Shortly after taking office, Yagodin delineated the major task of the new committee: to pursue a "single policy" in instruction and upbringing of the younger generation. He affirmed Ligachev's goal that all students be provided a fundamental knowledge. He deemed this necessary for keeping up with the rapidly changing state of technology in the workplace.

Since then, no major resolutions on education have been issued. And during the discussion on reorganizing the educational system, no reiteration of Ligachev's call for increased expenditures has been made. Therefore, there is only limited basis for projecting education expenditures other than by using the historical trend. The breakdown of educational expenditures in the state budget for 1985, in current and in 1982 constant rubles, is shown in Table 4.1. The 1982 constant figures were derived using an annual 5 percent inflation rate.[6]

Table 4.2 shows the average annual growth rates for the period 1981–1985 over that from 1976–1980. The source does not report whether these numbers are current or constant figures; thus, we would have to assume they do not account for price changes.

Combining the information from Table 4.2 and Ligachev's remarks on investment increase, we assume that the low, medium, and high real growth rates for projected annual resource allocation to education are 1, 3, and 5 percent, respectively, for noncapital allocations and 3, 5, and 7 percent, respectively, for capital resource allocation. The high growth rate (7 percent) for the capital investment portion reflects

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[5]Holland, "Education: Reforming the Reforms," p. 4.

[6]A 1987 benchmark of 30 billion 1982 rubles was assumed because of the recent experience of negative real growth rates, reflecting a 1 billion ruble real reduction over the period 1986–1987. The call for increased expenditures has only been recent and so this assumption is likely to be quite valid.

Table 4.1

BREAKDOWN OF SOVIET STATE EXPENDITURES ON EDUCATION, 1985
(In billions of rubles)

Category	1985 Current	1982 Constant
Total expenditure	35.98	31.08
Capital investment	2.29	1.98
Noncapital expenditure	33.69	29.10
Public education and the upbringing of children and adolescents	20.16	17.41
Cultural work and popular education	1.66	1.43
Training of personnel	9.55	8.25
Periodicals, television, art, and radio	2.32	2.00

SOURCE: "USSR State Budget 1981–1985," *JPRS Report*, pp. 10–14.

Table 4.2

AVERAGE HISTORICAL GROWTH RATES FOR STATE EDUCATIONAL EXPENDITURES

Category	Nominal	Real
Total expenditure	3.72	–1.28
Capital investment	1.74	–3.26
Noninvestment expenditure	3.90	–1.10

SOURCE: "USSR State Budget 1981–1985," *JPRS Report*, pp. 10–14.

Ligachev's statement of "doubling" capital investment by 1995; after that, we assume growth will return to the same level (1, 3, and 5 percent) held by the noncapital investment portion of the education sector. These projections are shown in Tables 4.3 through 4.5.

Note that the projections in Table 4.5 do not account for private spending on education. The two largest categories of private spending are bribes paid for entrance into institutions and fees paid for private tutoring. Individual bribes have been estimated into the 10,000 ruble range; however, there is no specific estimate of how this might aggregate across individuals. In 1987, N. M. Blinov, speaking at a roundtable on

Table 4.3

PROJECTIONS FOR NONINVESTMENT STATE EXPENDITURES ON EDUCATION
(In billions of 1982 rubles)

Annual Growth	1990	1995	2000
Low (1%)	30.5	32.1	33.8
Medium (3%)	33.7	39.1	45.3
High (5%)	37.1	47.4	60.5

Table 4.4

PROJECTIONS FOR CAPITAL INVESTMENT STATE EXPENDITURES ON EDUCATION
(In billions of 1982 rubles)

Annual Growth	1990	1995	2000
Low[a]	2.30	2.66	2.80
Medium[b]	2.52	3.23	3.74
High[c]	2.77	3.89	4.96

[a]Calculated as 3 percent annual growth until 1995 and 1 percent thereafter.
[b]Calculated as 5 percent annual growth until 1995 and 3 percent thereafter.
[c]Calculated as 7 percent annual growth until 1995 and 5 percent thereafter.

Table 4.5

COMBINED PROJECTIONS FOR TOTAL STATE EXPENDITURE ON EDUCATION
(In billions of 1982 rubles)

Annual Growth	1990	1995	2000
Low	32.8	34.8	36.6
Medium	36.2	42.3	49.0
High	39.9	51.3	65.5

education, estimated annual private spending on tutoring at 2 billion rubles.[7] For this purpose, the size of private spending on education will be estimated at one-third the state's total expenditures. If we assume that private-sector spending will grow

[7]These figures are drawn from correspondence with Gregory Grossman, August 31, 1989.

proportionally with the state's expenditure (namely, remain at one-third), we can estimate the future resources demanded for private educational expenditure (Table 4.6). Finally, Tables 4.5 and 4.6 are combined to estimate the range of total resource allocations to the education sector (shown in Table 4.7).

The educational sector is receiving significant attention by top Soviet officials and tends to be one sector where Soviet officials are concentrating on reform. However, reform to this point is oriented more toward structure and organization of the system rather than increasing state expenditure for that sector.

Table 4.6

ESTIMATE OF PRIVATE SPENDING ON EDUCATION
(In billions of 1982 rubles)

Annual Growth	1990	1995	2000
Low	10.9	11.6	12.2
Medium	12.1	14.1	16.3
High	13.3	17.1	21.8

Table 4.7

ESTIMATE OF TOTAL ANNUAL RESOURCE DEMAND FOR EDUCATION
(In billions of 1982 rubles)

Annual Growth	1990	1995	2000
Low	43.7	46.4	48.8
Medium	48.3	56.4	65.3
High	53.2	68.4	87.3

V. FINDINGS ON THE FOOD AND NONFOOD CONSUMER-GOODS SECTORS

OVERVIEW

Amid the confusion and lack of substantive results from Gorbachev's perestroika, the Soviet people, in greater and greater numbers, are beginning to suspect that the economic reforms are not going to deliver all that they had been promised—at least not any time soon. In fact, Abel Aganbegyan, Gorbachev's leading economic adviser, recently reported to Reuter's news service: "I think [the Soviet people] can and will have to wait for two to three years [for better supplies of food and consumer goods]." [1]

Since early 1988, doubt has been building among Soviet citizens about the prospects of any tangible results from Gorbachev's economic reforms. The promise of shorter queues and increased availability and quality of food products and consumer goods, made by Gorbachev at the onset of perestroika, is not holding true. In fact, many Soviet citizens complain that the situation is getting worse. To illustrate this fact, a *Time Magazine* correspondent set out in January 1989 to see what a Soviet consumer experiences while shopping for a rather simple list: beef, apples, carrots, sugar, laundry soap, and toothpaste. It took her 3 hours and 10 minutes, going to over five different stores, and she had to forgo the sugar. Given this story, it is easy to see why the Soviet people are frustrated.

As the people's patience dwindles, this lack of tangible improvement in the quality of life for the average Soviet citizen is seen both inside the USSR and in the West as a possible threat to the success of Gorbachev and the reforms he has already initiated. Aggravating the problem is the poor performance in 1988 of the Soviet agricultural sector. Moreover, this performance comes after very good harvests in 1986 and 1987.

Early in Gorbachev's leadership, the usual statements of increased food and consumer-goods production were repeatedly made. However, no results were seen. It seems that other political and economic priorities were taking precedence. With the onset of debureaucratization, decentralization, and self-financing, confusion arose about incentives and procedures, which probably worsened the situation.

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[1]Leyla Ertugrul, "USSR: Soviet People Will Have to Wait for More Goods, Economist Says," Reuter's, June 29, 1989.

Starting in early 1988, about the time the Soviet people began to complain, some interesting and possibly long-reaching reforms were instituted. For example, Gorbachev initiated a program to allow leasing of land to individuals to farm. The farmers would be allowed to keep some of their profits. Entrepeneurs would be allowed to open private for-profit businesses. At the same time, capital investments were allocated away from farms toward other sectors involved in the transportation, storage, processing, and distribution stages of food production in hopes of correcting many of the inefficiencies inherent in a centrally planned system. On the consumer-goods side, Gorbachev instructed resources to be placed into updating old capital stock and increasing technology. He emphasized the need for an improvement in quality, not just quantity.

As the unrest continued, the Soviet leaders realized that these long-term investments would not produce any benefits soon. To appease the Soviet people they took three actions. First, they restricted all exports of Soviet goods by East European tourists. Then they went on a 6 to 15 billion ruble spending spree in the West for everything from boots and ladies' hosiery to wristwatches and VCRs.

The final action, and perhaps the one with the most far-reaching effects, was the announcement made in March 1989 to convert military plants into consumer-goods and food-processing plants. Plans are to convert 40 percent of the defense industry's plants into civilian production this year (1989) and to increase this to 60 percent by 1995. Questions remain about the political overtones of this action, but combined with other actions and statements, there is no doubt that the Soviet leadership feels the need to provide both quick and long-range results in the food and nonfood sectors.

FUTURE RESOURCE DEMAND FOR FOOD SUPPLY

To estimate the future resource demand to provide food to the Soviet people, a simple methodology was employed. The estimates are based on two factors: (1) the expected future population and (2) future growth rates in per-capita consumption of food. The future levels of both of these factors are uncertain. The purpose of this exercise is to predict the plausible range of total resource demand, given the uncertainties surrounding the two factors. To fully account for these uncertainties, the methodology estimates the possible ranges for each factor and then combines them to obtain the range for total resource demand. The exact process will become clearer as we proceed.

The first uncertain factor is the size of the future population. A summary of recent trends in Soviet population growth is shown in Table 5.1. Table 5.2 projects the size of the future population until the year 2010 at low (0.6 percent), medium (0.8 percent), and high (1.0 percent) annual growth rates. These growth rates were chosen within the context of recent historical rates, with emphasis on the recent worldwide trend of declining population growth in industrialized nations. The low rate takes into consideration Mikhail Bernstam's estimates for future Soviet population growth.[2]

The second uncertain factor is the future level of consumption per capita. The baseline for 1985 consumption per capita was estimated by dividing total food consumption in 1977 (in 1977 prices) by the 1977 population. The total consumption was 149,183 million rubles (21 percent direct agricultural consumption and 79 percent processed foods consumption). Dividing by the 259.4 million population gives a 1977

Table 5.1

POPULATION SIZE AND ANNUAL GROWTH RATE IN THE USSR, 1960–1985

Year	Pop. Size (In millions)
1960	214.3
1970	242.8
1975	254.8
1980	266.4
1985	278.9

Years	Average Annual Growth Rate (Percent)
1960-70	1.25
1971-75	0.96
1976-80	0.89
1981-85	0.92

SOURCE: Alan P. Pollard (ed.), *USSR Facts and Figures Annual,* Vol. 12, 1988, p. 99.

[2]Mikhail Bernstam of The Hoover Institution estimates the growth of the USSR population over the period 1979–1999 to be a 0.62 percent natural annual increase.

Table 5.2

POPULATION PROJECTIONS FOR THE USSR, 1990–2010

Growth Rate	1990	1995	2000	2010
Low (0.6%)	287.4	296.1	305.1	323.9
Medium (0.8%)	290.2	302.0	314.3	340.4
High (1.0%)	293.1	308.1	323.8	357.7

consumption per capita of 575 rubles.[3] This figure inflates to 682 rubles for 1977 consumption per capita in 1982 prices.[4] Table 5.3 shows the recent real growth in per-capita food consumption.

By applying the appropriate historical growth-rate estimates to the 1977 value of 682 1982 rubles, the 1985 baseline for consumption per capita, in 1982 prices, is 734 rubles.

Table 5.3

SOVIET TRENDS IN THE GROWTH OF PER-CAPITA FOOD CONSUMPTION

Years	Average Annual Real Growth Rate (In percent)
1951–1960	3.4
1961–1970	3.0
1971–1979	1.4
1980–1985	1.6

SOURCES: Gertrude Schroeder, "Consumption," in *The Soviet Economy: Toward the Year 2000*, 1983, p. 312, except for the 1980–1985 rate, which was derived from Pollard, *USSR Facts and Figures Annual.*

[3]Data are from Dimitri Gallik, Meredith Heinemeier, Barry Kostinsky, Vladimir Treml, and Albina Tretyakova, *Construction of a 1977 Soviet Input-Output Table*, published by the USSR Input-Output Branch, Center for International Research, Bureau of Census, Department of Commerce, January 1984, p. 5.

[4]As with previous sectors, a 5 percent annual inflation rate was assumed for 1981–1982. A lower annual inflation rate of 2.5 percent is assumed for 1977–1980.

Multiplying the 1985 population (278.9 million) by the estimated consumption per capita (734 1982 rubles) yields an estimate for 1985 food consumption of 204.7 billion 1982 rubles. However, this estimate is approximately 35 billion rubles more than the recently released CIA estimate for 1985 food consumption of 169 billion 1982 rubles.[5]

This discrepancy highlights the uncertainty involved when using Soviet statistics to make historical estimates. Of course, this makes the process of estimating into the future very difficult. For several reasons (documented in the footnote below), this study will assume the CIA estimate as its baseline.[6]

The next step is to project food consumption into the future. Several uncertain and interrelated factors will determine how fast this estimate may grow. Many of them will depend on the decisions made by the Soviet leadership, including those that affect the structure of the entire underlying agro-industrial complex, incentive systems, prices and subsidy levels, and the growth of nontraditional enterprises engaging in food production. Possibly less important factors, but more predictable ones, are the historical growth rates presented in Table 5.3, the official Soviet plan as outlined in the food program of 11 percent growth for 1985–1990, and the tendency for necessities to consume a smaller proportion of one's income as income rises (Engel's Law).

Using the above factors as guidelines, the following real annual growth rates have been used to project the range of future per-capita consumption of food: through 1995, low (2 percent), medium (2.5 percent), and high (3.5 percent); and from 1995–2010, low (1.0 percent), medium (1.5 percent), and high (2.0 percent). Using these growth rates, Table 5.4 shows the range of consumption-per-capital levels expected for the relevant time period. Finally, Table 5.5 combines the per-capita-consumption estimates from Table 5.4 with the population estimates from Table 5.2 to provide a range of total resource demand for Soviet food consumption up to the year 2010. The two tables were combined as follows: in each year, the low, medium, and high population estimates were multiplied by the low, medium, and high estimates, respectively, for per-capita consumption.

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[5]CIA table, "Soviet GNP by End Use" (at factor cost), provided to RAND, March 2, 1989.

[6]For 1987, the CIA baseline estimate is 170.9 billion 1982 rubles. There were four main reasons for choosing the lower, CIA number: (1) it is more current; (2) it is consistent with estimates for other sectors; (3) the higher estimate was derived by combining several uncertain factors (consumption-per-capita data and population size); and (4) estimates of the Soviet GNP are lower than the sum of the individual sectors, an indication that many of the sectoral estimates are biased upward, so the lower estimate is more likely to be true.

Table 5.4

ESTIMATES OF SOVIET PER-CAPITA FOOD CONSUMPTION
(In 1982 rubles)

Annual Growth Rate	1990	1995	2000	2010
Low	670	743	784	866
Medium	687	781	840	975
High	721	860	951	1159

Table 5.5

USSR RESOURCE DEMAND FOR FOOD, UP TO 2010
(In billions of 1982 rubles)

Annual Growth Rate	1990	1995	2000	2010
Low	193	220	239	280
Medium	199	236	264	332
High	211	265	308	415

FUTURE RESOURCE DEMAND FOR NONFOOD CONSUMER GOODS AND SERVICES

Estimates for nonfood consumer goods and services in the Soviet Union were calculated using the same methodology that was used for the food sector. More explicitly, projected estimates for nonfood consumption of goods and services were multiplied by the same population estimates in order to obtain the estimates for total resource demand.

The population projections are shown in Table 5.2 above. Table 5.6 shows the historical real growth rates of consumption per capita for nonfood consumer goods. Notice that these growth rates do not explicitly refer to services.

To project estimates for consumption per capita, a baseline estimate for 1985 was needed. Once again, a 1977 point estimate was made and compared with the 1989 CIA estimates. The total 1977 consumption of nonfood consumer goods and services, in 1977

Table 5.6

SOVIET TRENDS IN THE GROWTH OF PER-CAPITA CONSUMPTION OF NONFOOD CONSUMER GOODS
(In percent)

Years	Average Soft Goods	Annual Real Durables	Growth Rates Weighted Average[a]
1951–1960	6.9	14.2	9.3
1961–1970	4.4	6.8	5.2
1971–1979	2.9	7.6	4.5
1980–1985	3.0	6.5	4.2

SOURCES: Schroeder, "Consumption," p. 312, for 1951-1980 rates. The 1980-1985 rate was derived from Pollard, *USSR Facts and Figures Annual.*

[a]The weighted averages were calculated using 2/3 soft goods and 1/3 durables for each time period. This was the approximate ratio using the 1977 point estimates (Gallik et al., "Construction of a 1977 Soviet Input-Output Table") and also the 1985 official Soviet breakdown (Pollard, *USSR Facts and Figures Annual*).

prices, was 122.9 billion rubles.[7] Dividing this by the 1977 population of 259.4 million yields a nonfood 1977 consumption per capita of 474 rubles in 1977 prices. This inflates to 562 rubles in 1982 prices.[8] Using the appropriate weighted average growth rates from Table 5.6 gives a 1985 baseline of 696 rubles for consumption per capita (in constant 1982 prices). Multiplying this baseline by the 1985 population of 278.9 million yields a 1985 baseline for total resource demand of 194 billion 1982 rubles.

The comparable CIA estimate for 1985 expenditures is 198 billion 1982 rubles. This is composed of 46 billion (23 percent) 1982 rubles for soft goods, 26 billion (13 percent) 1982 rubles for durables, and 126 billion (64 percent) 1982 rubles for consumer services. We have lowered the 1985 baseline estimate to 174 billion rubles (by about 10 percent) to account for the probable double counting between the consumer-services component of this category (nonfood consumer goods and services) and the other sectors (especially the food sector).[9]

Considering the historical growth rates from Table 5.6 and the recent policy statements of the Soviet leadership, which emphasize the importance of providing higher

[7]Gallik et al., "Construction of a 1977 Soviet Input-Output Table."

[8]Again, a 5 percent annual inflation rate for 1981–1982 and a 2.5 percent annual inflation rate for 1977–1980 were used.

[9]Using the appropriate growth rates, then, the 1987 baseline figure in 1982 rubles is 190 billion and our 1985 baseline for consumption per capita is estimated to be 624 1982 rubles (174 billion rubles / 278.9 million people).

quality and more consumer goods to the Soviet people, real per-capita-consumption growth rates of 2.8, 4.8, and 7 percent have been chosen as the low, medium, and high estimates, respectively, to illustrate the possible range for 1985–1995. After 1995, these rates are projected to fall off to 1, 3, and 5 percent, respectively, for 1996–2010. These projections are shown in Table 5.7 below.

Table 5.8 illustrates the results of combining Tables 5.2 and 5.7 to estimate total resource demand for nonfood consumer goods. As for the food sector, the low, medium, and high population projections are multiplied by the low, medium, and high consumption-per-capita projections, respectively, to yield the total estimates.

SENSITIVITY OF THE RESULTS

Because of the variation and uncertainty in the baseline estimates upon which these projects were based, some additional data were pieced together in the hopes of confirming the validity of the original estimates. Unfortunately, the available data were fragmented and often self-contradictory, so it was impossible to do this with absolute certainty. Still, enough of the pieces fit together to be confident that the estimates are at least "in the ballpark."

Table 5.7

ESTIMATES OF PER-CAPITA CONSUMPTION OF NONFOOD CONSUMER GOODS
(In 1982 rubles)

Annual Growth Rate	1990	1995	2000	2010
Low	716	825	867	958
Medium	789	1004	1164	1564
High	875	1217	1553	2530

Table 5.8

USSR RESOURCE DEMAND FOR NONFOOD CONSUMER GOODS, UP TO 2010
(In billions of 1982 rubles)

Annual Growth Rate	1990	1995	2000	2010
Low	206	244	264	310
Medium	229	303	365	532
High	256	375	502	905

The level of retail commodity sales of state and cooperative trade, including the food service industry, for food in 1985 was 145.2 billion 1982 rubles and for nonfood consumer goods was 151.6 billion 1982 rubles. Notice that the former number is 15 percent smaller than the calculated point estimate for the food sector, and the latter number is 20 percent smaller than the estimate for the nonfood consumer-goods sector. Presumably, these residuals represent the sale of goods through consumer cooperatives and other means; their sizes, especially relative to each other, seem reasonable.

A recent update of goals for consumer goods mandated at least 113 billion current rubles (approximately 100 billion 1982 rubles) of output in light industry (stated as 17.8 percent above the expected 1990 level of 95.9 billion rubles) and 209 billion current rubles (approximately 185 billion 1982 rubles) for other nonfood consumer goods (stated as 38 percent above the expected 1990 level of 151.4 billion rubles). Together these total 284 billion 1982 rubles for 1995. This figure falls in the low to middle range of the estimates made here and does not include cooperative and other nontraditional sources that the estimates attempt to include. In sum, although these extra data points do not confirm with any certainty the validity of the estimates, they do confirm that the estimates are reasonable.