RUSSIAN LIVING STANDARDS DURING THE INDUSTRIALIZATION ERA, 1885–1913*

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In this paper, I have examined the relative growth rates of personal consumption, government consumption, and national income in Russia from 1885–1913 and have contrasted them with the "European" model (derived from the U.K. and German experience). Two hypotheses of the conventional model of Russian industrialization were tested: the retarded growth of personal consumption and the accelerated growth of government consumption and investment (relative to the European model) and the growing Europeanization of Russian growth after 1906. The estimates of personal consumption and government consumption failed to sustain either hypothesis. In fact, the reverse hypotheses appear to be more plausible. The lack of data on investment prevented the testing of the investment hypothesis, but the limited evidence which is available does not point to an extraordinary growth of investment. As a final experiment, the combined growth rates of personal and government consumption were compared with a revision of Goldsmith's national income estimates. They were shown to provide strong support for the accuracy of the revision of Goldsmith's estimates.

I. INTRODUCTION

A substantial literature has been written on the economic development of Russia during the industrialization era, 1885–1914.[1] Conventional wisdom, as articulated by Alexander Gerschenkron, John McKay, and Theodore von Laue,[2] stresses that the Russian industrialization model was generally different from the European experience. The two unusual features singled out by this literature are the heavy participation of the state in domestic and international economic affairs and the prominent role of the foreign sector in Russia's economic development. According to Gerschenkron, the state served as a substitute for inadequate human capital resources and for deficient private demand and created in the process a top-heavy industrial structure. In the international sphere (emphasized by McKay), the state acted to attract foreign capital and entrepeneurial talent through conservative monetary and fiscal policies, state debt guarantees, and the

*The author would like to thank the National Science Foundation for its support of this project. My research was conducted at the Institut für osteuropäische Geschichte der Universität Tübingen and at the Staatsbibliotek Berlin. I would especially like to thank the staff of the Tübingen institute for their assistance. The earlier phases of this research were undertaken under the sponsorship of the Humboldt Foundation.

[1]See the author's survey entitled "Russian Industrialization and Economic Growth: Results and Perspectives of Western Research," *Jahrbücher für die Geschichte Osteuropas*, 25, 1977, 200–218. For a more comprehensive survey of both the Western and Soviet literatures, see M. E. Falkus, *The Industrialization of Russia, 1700–1914* (London and Basingstoke: MacMillan, 1972).

[2]Alexander Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge, Mass.: Harvard University Press, 1962); Essay 1: Gerschenkron, "The Early Phases of Industrialisation in Russia: Afterthoughts and Counterthoughts," in W. W. Rostow (ed.), *The Economics of Takeoff into Sustained Growth* (London and New York: St Martin's Press, 1963); John McKay, *Pioneers for Profit: Foreign Entrepeneurship and Russian Industrialization* (Chicago: University of Chicago Press, 1970); Theodore von Laue, *Sergei Witte and the Industrialization of Russia* (New York: Columbia University Press, 1963).

recruitment of direct foreign investment. Because of this state activity, the population (especially the rural population) paid for rapid industrialization in terms of retarded growth of personal consumption. Consumption was held back by burdensome direct and indirect taxes levied by the state to finance industrialization and general government activities.

The conventional model of Russian industrialization also emphasizes that, after the Revolution of 1905 and the ensuing agrarian reforms starting in 1906, there was a significant convergence toward the "European" model. The role of the state in domestic and international economic affairs was reduced, and indirect foreign investment replaced the direct investment of the preceding quarter century.[3] The hardships imposed by the state on the rural population in the form of oppressive land payments and indirect taxes were lessened, allowing private demand (aided by rising world agriculture prices) to replace state demand as the driving force behind industrialization. This Europeanization was supported by fundamental changes in agriculture. The increased freedom to withdraw from the commune (granted in 1906) removed a major obstacle to agricultural development. Although the rate of withdrawal from the *obshchina* was relatively slow,[4] an environment of private peasant agriculture was nevertheless created. Thus after 1906, the growth of personal consumption attained a more "normal" (European) relationship vis-a-vis the growth of government demand, investment, and GNP.

Both the critics[5] and supporters of the conventional Russian industrialization model agree that substantial costs were involved, especially during the period 1885–1905. These costs took the form of forced agricultural savings, a device used by the state to retard the growth of personal consumption and to accelerate the growth of government demand and industrial capital stock. The debate between the supporters and critics of the Russian model, therefore, is not over the existence of such costs, but over the ratio of costs to benefits. There is also agreement that the pace of *overall* economic development was less than satisfactory during the industrialization era: Despite the rapid growth of industry in the 1890s and after 1906, overall economic growth per capita was slow relative to Western European standards, due to the slow growth of productivity in agriculture and rapid population growth.[6] I shall attempt to point out at the end of this paper that Russian economic growth was likely more impressive by international standards than the literature has admitted to this point.

[3]Gerschenkron 1963; McKay 1970.

[4]For a comprehensive analysis of withdrawal rates by provinces from the *obshchina* after 1906, see I. V. Chernyshev, *Obshchina posle 9 noiabr 1906 g.* (Petrograd: Tipografiaa Bruker, 1917).

[5]Arcadius Kahan, "Government Policies and the Industrialization of Russia," *Journal of Economic History*, 27 (December 1967), 460–77; Haim Barkai, "The Macro-Economics of Tsarist Russia in the Industrialization Era," *Journal of Economic History*, 33 (June 1973), 339–71. For a critique of these positions, see: Paul Gregory and Joel Sailors, "Russian Monetary Policy and Industrialization, 1861–1913," *Journal of Economic History*, 36 (December 1976), 836–51.

[6]I have presented this position in an earlier paper. On this, see: Paul Gregory, "Economic Growth and Structural Change in Tsarist Russia: A Case of Modern Economic Growth?" *Soviet Studies*, 23 (January 1972), 418–34. The emphasis on the entire 1861–1913 era explains much of the pessimism concerning Russian *per capita* growth, as 1861–1885 was a period of slow output and high population growth. The various crisis theories (see footnote 14) concerning the late 19th century have contributed to the negative view of Russian growth.

This paper reports on my estimates of the growth of consumption in Russia between 1885 and 1913. This study is a component of the author's larger on-going project on Russian national income. The topic of Russian consumption should be of interest to economic historians for several reasons: First, it allows a test of the hypothesized characteristics of Russian industrialization and of its periodization into non-European (1885–1900) and European (1907–13) phases. By comparing the growth of consumption with the growth of national income, government spending, and industrial investment, one can gain insight into resource allocation patterns and the respective roles of private and public demand during the industrialization era. Second, a study of Russian consumption (both private and public) provides an alternate source of evidence on the aggregate growth of the Russian economy. The extant interpretations of the Russian model are based upon partial evidence (such as case studies of direct foreign investment by McKay) or upon industrial production indexes (for example, Gerschenkron's thesis of the industrialization spurt). The one study of Russian national income, by Raymond Goldsmith,[7] rests upon casual assumptions concerning the handicraft, service, and livestock sectors and there is evidence to question the general reliability of industrial production series prior to Varzar's studies for 1900 and 1908.[8] Thus estimates of the growth of personal consumption (to which I add estimates of government consumption) serve as the first check on Goldsmith's national income series, as private and public consumption accounted for almost 90 percent of Russian national income in 1913.[9]

II. The Estimates of Russian Consumption

My estimates of Russian consumption in 1913 prices are described in this section. They are provided in Table 1, and I can provide only a brief discussion of sources and estimation procedures in this paper. For the reader interested in the details of my calculations, I have prepared a lengthy mimeographed technical appendix, available upon request from the author. Even though the following description of my estimates is limited to the barest essentials, it may nevertheless prove too detailed for the general reader. If so, the reader should turn to my discussion of findings in the next section.

For the estimation of personal consumption expenditures, I do not have enough data to construct annual time series; instead a series of benchmark observations are supplied. These benchmarks were selected on grounds of data availability and to capture significant events throughout the 1885–1913 period. First, it is important to have a benchmark prior to the industrialization spurt of the

[7]Raymond Goldsmith, "The Economic Growth of Tsarist Russia, 1860–1913," *Economic Development and Cultural Change*, 9 (April 1961), 441–75.

[8]For a discussion of industry statistics during this period, see L. Rozovsky, "Perepisi russkoi promyshlennosti 1900–1908," Akademiia nauk SSSR, *Ocherki po istorii statistiki SSSR, sbornik treti* (Moscow: Gosstatizdat, 1960), 58–85. This period witnessed attempts by the Ministers of Finance, in particular by Sergei Witte, to bring about a reform of the official industrial statistics gathered by the Ministry of the Interior. Failing this, the Ministry of Finance then began to collect its own industrial statistics, the major effort being the noted 1900 and 1908 censuses under the direction of V. E. Varzar.

[9]Paul Gregory, "1913 Russian National Income—Some Insights into Russian Economic Development," *Quarterly Journal of Economics*, 90 (August 1976), 445–459.

TABLE 1

PERSONAL CONSUMPTION EXPENDITURES AND GOVERNMENT EXPENDITURES FOR GOODS AND SERVICES, RUSSIAN EMPIRE, 1913 PRICES (MILLION RUBLES)

	1885	1891	1894	1896	1900	1903	1907	1910	1913
A: Personal Consumption Expenditures									
1. Retail sales	2,637	2,986	3,827	4,594	5,608	5,901	5,321	6,312	7,141
2. Housing rents									
Urban	466	522	518	550	591	702	808	876	1,035
Rural	171	207	213	235	234	278	348	395	430
3. Services	364	425	444	478	504	549	650	736	799
4. Retained agricultural products (including forestry, hunting, fishing)	2,755	2,400	3,912	4,096	4,444	4,705	4,494	5,658	6,726
5. Military subsistence	74	52	95	107	97	105	129	159	175
Total Personal Consumption	6,467	6,592	9,009	10,060	11,478	12,240	11,750	14,136	16,306
B: Government Expenditures (Goods and Services)									
1. Imperial Government	566	718	795	873	991	1,147	1,139	1,293	1,707
2. Local Government	145	180	217	250	294	375	370	475	643
Total Government	711	898	1,012	1,123	1,285	1,522	1,509	1,768	2,350
B & C: Personal Consumption Plus Government	7,178	7,490	10,021	11,183	12,763	13,762	13,259	15,904	18,656

1890s and one for 1900, on the eve of the world depression. Second, one would like to capture the impacts of the civil unrest of 1905 and the revival of industrial growth thereafter upon consumption growth. The year 1913 was chosen as the terminal year because it represents the last year of "normal" economic activity prior to the First World War and because alternate national income calculations are available for 1913.[10] My discussion in this paper will focus upon three subperiods: 1885–1900, 1900–07 and 1907–13, as well as upon the entire 1885–1913 period. The use of single-year benchmarks can lead to difficulties in the Russian case, where significant annual fluctuations in agricultural output and investment expenditures were the order of the day. However, I believe the initial and terminal years of this study are representative of average activity. In any case, at the end of this paper, I provide an alternate calculation using 5-year averages to smooth out annual fluctuations.

My estimates of Russian personal consumption expenditures in 1913 prices are reported in Panel A of Table 1. I shall attempt to provide a feel for their reliability in the following discussion. My own judgment is that these estimates will stand up favorably to the historical series of most European countries, and this is the appropriate measuring rod for assessing their reliability. Contrary to popular notions, tsarist statistics compare favorably in coverage and reliability

[10]Gregory 1976; M. E. Falkus, "Russia's National Income, 1913: A Reevaluation," *Economica*, NS 35 (February 1968), 52–73.

with those of other European countries for this period, the major exceptions being the weak industrial statistics prior to 1900, especially for small-scale industry, and the sketchy population statistics prior to 1897.[11] The statistics-gathering apparatus was quite large, the agricultural surveys conducted by the *zemstvos* were of high quality, and the pervasive system of indirect and direct taxation and government monopolies led to a massive production of official statistical data. Moreover, an astonishing amount of data is available on the Russian railroads.[12] It is my contention that Russian historical statistics, while by no means excellent, are nonetheless adequate to support a study of this sort, especially when contrasted with the historical statistics of other countries.

Retained Agricultural Products

The two principal components of the consumption series are deflated retail sales and deflated retained agricultural products (farm consumption in kind), and the reliability of my consumption series hinges upon the reliability of these two series. The details of the estimation of farm consumption in kind have been described in another paper.[13] Its principal component, retained food grains, is estimated from net production and transport data, and it is my judgement that the estimated figures may be downward biased. My estimates show, however, a relatively rapid growth of farm consumption in kind; so I hesitate to make this argument. The deflation of farm consumption in kind should not introduce major measurement errors as farm prices for this period are reported in considerable detail.

The rates of growth of retained agricultural products (Table 1, row A.4) are higher than one would expect from previous investigations of the agriculture sector.[14] For the period 1885–1913, retained agricultural products grew at an annual rate of 3.2 percent, well above the growth of the rural population (at 1.4 percent per annum).[15] It is thus necessary to devote a few words to the derivation of farm consumption in kind and to the possible sources of measurement error in my estimates.

In a word, retained farm consumption grew rapidly because of the rapid growth of retained grains. Retained grains are calculated, as noted above, by subtracting grain marketings outside the village from net production. If either marketings or net production are estimated incorrectly, then retained grains will be improperly measured. On the production side, I rely heavily for the early

[11] A substantial amount of literature on tsarist statistics has been published by Soviet scholars. The reader is referred to Akademiia nauk SSSR, *Ocherki po istorii statistiki SSSR, sbornik I–VII* (Moscow: Statistika, 1955–1972), and to A. I. Gozulov, *Istoriia otechestvennoi statistiki* (Moscow: Gosstatizdat, 1957).

[12] The annual statistical yearbook of the Ministry of Transportation entitled *Statisticheski sbornik ministerstva putei soobshcheniia* consists of just under 150 volumes and covers almost every detail of rail and water transport during this period.

[13] Paul Gregory, "Grain Marketings and Peasant Consumption, Russia, 1885–1913" *Explorations in Economic History*, in press.

[14] In fact, some authorities have argued that peasant *per capita* consumption of grains even declined during the second half of the 19th century. For a survey of evidence in support of this agrarian crisis theory, see James Simms, "The Crisis in Russian Agriculture at the End of the 19th Century," *Slavic Review*, 36, 3 (September 1977), 377–98.

[15] These population figures are for the 50 European provinces.

period on internal Ministry of Interior estimates of *net* grain production.[16] These figures, when combined with official net figures for the early 20th century, indicate an approximately 10 percent increase in the ratio of net to gross production for major grains between 1885–90 and 1906–13. As other studies of grain production have dealt with gross rather than net production,[17] this change in net to gross ratios explains my higher estimates. Moreover, I have chosen not to adjust these growth rates downward for improving coverage. The adjustments used by others (such as Goldsmith) are so small anyway that this does not appear to be an important matter. Even if one were to make unrealistically high adjustments for improved coverage (and no evidence for such an improvement exists), one must still conclude that the growth of retained grains was high.

Errors in the estimation of grain marketings outside the village could also lead to errors in estimation. For my marketings data, I rely upon the detailed rail and water transport data provided by the Ministry of Transportation.[18] I believe such grain shipments data to be quite accurate; so the major potential source of error is my implicit assumption that grain transported by other means (road transport) grew at the same rate as rail and water shipments. I believe this assumption to be a conservative one, for I would expect the share of road transport to decline over time with the development of the rail network.

My data of grain net output and marketings reveal a fairly constant ratio of marketings to net output between 1885 and 1913. I lack data on the marketings of non-grain agricultural products (where agriculture is defined to include forestry, hunting, and fishing) to deduct from net output. I thus proceed by assuming that marketings grew at the same rate as the output of these non-grain products.[19] I would doubt that major errors are introduced by this assumption, and I find that the other retained products (technical products, meat, dairy products) grew at a slower pace (2.4 percent per annum, 1885–1913) than retained grains.

Retail Sales

My retail sales estimates are based upon Dikhtiar's study.[20] Dikhtiar's figures are drawn from Strumilin's[21] work on trade turnover (wholesale and retail) for 1885–1913; so a word on the Strumilin data is in order. The Strumilin series is based upon trade turnover data reported to tax authorities. In this period, trade and industrial establishments were ordered in five *razriady*, according to size and type of establishment. A complete description of the various *razriady* is supplied by Dikhtiar, and summary statistics of tax revenues broken down by *razriady* are to be found in the *Yearbook of the Ministry of Finance* (*Ezhegodnik ministerstva*

[16]These estimates were prepared by M. Kuhn, a contemporary authority on grain statistics, and are published in *Bulletin Russe de Statistique financiere et de Legislation*, 5th edition, 1898, 222–31.

[17]Goldsmith (1961) uses gross grain production in his national income series. My use of a net grain series is a basic element in my revision of the Goldsmith series reported in Table 2.

[18]See footnote 12.

[19]The technical crop output index is taken directly from Goldsmith 1961, Tables 2 and 3. The output of dairy products is assumed to grow at the same rate as the stock of "large horned animals;" the output of meat is assumed to grow at the same rate as total livestock herds. Other omitted items are assumed to grow at the same rate as the included items.

[20]G. A. Dikhtiar, *Vnutrenniaia torgovlia v dorevoliutsionnoi Rossii* (Moscow: Nauka, 1960), 73.

[21]S. G. Strumilin, *Statistiko-ekonomicheskie ocherki* (Moscow: Gosstatizdat, 1958), 680.

finansov) series and in various special publications.[22] A supplementary tax was levied along with a basic "patent" tax and varied with the annual turnover and profits of the establishment. In the case of the first three *razriady*, trade turnover had to be reported to the tax authorities.[23] Reported trade turnover figures form the basis of Strumilin's trade estimates, which he calculated by netting out non-trade establishments (primarily credit institutions). The supplementary tax was levied on the first three *razriady*; small or nonprofitable establishments were, in certain cases, exempted, as were other establishments already subject to an excise tax. A 3 percent tax on enterprise profits was levied on trade corporations; thus the sales of corporate trade establishments had to be estimated by Strumilin using coefficients of profits to turnover. The major exemption from indirect taxes was the state spirit monopoly. The system of supplementary taxation was extremely complicated, and 50 pages of text are required in the official Ministry of Finance publication to describe the system.[24]

Dikhtiar estimates retail trade volume from the Strumilin series by excluding wholesale trade establishments. The tax data are not detailed enough to segregate wholesale and retail trade with great precision, but Dikhtiar maintains that his estimates will be reasonably accurate. State sales of spirits need not be estimated from tax data, as such data were reported regularly by the Ministry of Finance.[25] Total retail sales are then the sum of sales of retail establishments (estimated from tax data) and of spirit sales by the state monopoly. Dikhtiar's figures cover only the period 1899–1913. I backcast them to 1885 by duplicating the process by which Dikhtiar derived retail trade from total trade turnover for the 1899–1913 period.[26]

Retail sales accounted for 38 percent of 1913 national income,[27] thus it is important to have some evaluation of the accuracy of the Dikhtiar–Strumilin estimates. Strumilin himself writes that his own figures must be regarded as "approximative".[28] Two major sources of measurement errors must be considered. Significant tax evasion would result in an under-reporting of sales, and all wholesale sales may not be netted out from trade turnover. In the former case, two countervailing forces should be present: the enterprise's desire to avoid paying the tax versus the desire of the state to collect it. Fines for violations of these tax regulations were not inconsequential, and this should have provided an incentive

[22]For example, *Ezhegodnik ministerstva finansov, Vypusk 1909 goda*, Petersburg, Izdanie Ministerstva finansov, 1909, 654–677, and Ministerstvo finansov, *Istoricheski ocherk oblozheniia torgovli i promyslov v Rossii* (Petersburg: Kirschbaum, 1893).

[23]The original trade turnover figures are reported in *Entsiklopedicheski slovar' Granat*, 7th edition, Vol. 36, Part IV, statistical appendix.

[24]*Istoricheski ocherk* . . . .

[25]The annual publication, *Ezhegodnik ministerstva finansov*, published an entire section on state sales and production of spirits (*kazennaia prodazha pitei*).

[26]I construct an index of retail trade from Strumilin's total trade volume data by applying fixed weights of 0.58 to *razriad* I + II sales and 0.84 to *razriad* III sales. State spirits sales are then added to these figures to form a pre-1899 index of retail sales. Comparing this constructed index with the Dikhtiar estimates for 1899–1913, I find a close correspondence between the two indexes (a 2 percent discrepancy for the 1900–07 period and a 1 percent discrepancy for the 1907–13 period). From this exercise, I conclude that my constructed pre-1899 index provides a reasonable duplication of the Dikhtiar methodology.

[27]Gregory, 1976, 458–9.

[28]S. G. Strumilin, *Statistika i ekonomika* (Moscow, Nauka, 1963), 437.

to report all sales. In 1890, trade enterprises paid almost 750,000 rubles in fines—a figure which equals almost 10 percent of supplementary tax collections and 2 percent of total tax collections from trade establishments.[29] One cannot argue *a priori* that one force outweighs the other, but I believe that official tax data should provide a reasonable approximation of trade turnover, especially as an index over time. This is also the conclusion reached by B. V. Avilov, the authoritative compiler of the statistical appendix of the *Granat* encyclopedia.[30] My own suspicion is that under-reporting would be most serious in remote areas, where markets operated on a more informal basis, for example, intra-peasant markets in villages. But such sales will likely be captured by the farm consumption figures.

For the deflation of retail expenditures, three alternative price indexes are available.[31] Two are *retail* price indexes: the Petersburg index of the Institute of Economic Research and the retail price index for Petersburg and Moscow prepared by M. E. Kokhna. In both indexes, the underlying weights were based upon the structure of average budget expenditures of industrial workers in the two cities. The Petersburg portion of the combined Kokhna index coincides closely with the Institute of Economic Research index. There are however moderate discrepancies between the two Petersburg price indexes and the Moscow price index. The indexes vary in product coverage: the Institute of Economic Research index encompasses 27 products, while the Kokhna Petersburg (Moscow) indexes encompass 24 (15) products. The differences between the Moscow and Petersburg indexes could be either the product of divergent regional prices or the consequence of different product coverage.

A third price index is the Podtiagin index. The Podtiagin index is a pseudo-retail price index as its weights are based on average worker budgets, but it uses wholesale prices, taken from the annual publication of the Ministry of Trade and Industry, *Survey of Commodity Prices in Major Russian and Foreign Markets*, annual editions, 1897–1915.[32] The Podtiagin index covers 66 commodities and uses annual averages of monthly prices from various regional markets, often including Petersburg or Moscow markets. It is thus better suited to capture national price trends. On the other hand, it does employ wholesale prices and, in some instances, even includes world market prices.

Fortunately, the choice of the appropriate price index is not crucial, especially if one is interested in long term trends. According to all three price indexes, the annual rate of growth of real retail sales for 1885–1913 was slightly over 3.5 percent, and all three round to 4 percent. For the sub-periods 1885–1900 and 1900–13, the rate varies from 4 to 5 percent for the earlier period, and rounds in all three cases to 2 percent in the later period. For the industrialization decade (1891–1900), the growth rate rounds to 7 percent in the case of the major city

[29] *Istoricheski ocherk . . .*, 360 and appendix p. 77.

[30] B. V. Avilov (ed.), "Statisticheski obzor razvitiia narodnogo khoziaistva v dorevoliutsionnoi Rossii," *Entsiklopedicheski slovar' Granat*, 7th edition, Vol. 36, Part IV, 56.

[31] The three price indexes discussed in this section are duplicated in S. G. Strumilin, *Ocherki ekonomicheskoi istorii Rosii i SSSR* (Moscow: Nauka, 1966), 89.

[32] Summary price data for the 1890–1913 period are given in *Svod tovarnykh tsen na russkikh i inostrannykh rynkakh za 1913 god*, Ministerstvo torgovli i promyshlennosti, 1915, Tables II–VII.

indexes and to 8 percent for the Podtiagin index. The greatest discrepancy among the indexes is for the sub-periods 1900–07 and 1907–13. The Podtiagin index reveals a substantial (14 percent) decline between 1900 and 1907 and then a dramatic increase (47 percent) from 1907–13. The major city indexes, on the other hand, reveal a stagnant level of real retail sales between 1900 and 1907 and a less substantial increase between 1907 and 1913. In Table 1 (row A.1), I use an unweighted average of the three price indexes to deflate retail sales. This choice is not crucial to my final results.

Housing rents

Urban and rural housing rents in 1913 prices (Table 1, row A.2) are estimated by applying net capital stock indexes (also in 1913 prices) of urban and rural dwellings to estimates of 1913 rental payments. The 1913 figures are described in a previous publication.[33] The net capital stock series for urban dwellings is that of Kahan for the period 1890–1910.[34] I reject Kahan's series between 1910 and the end of 1913 because it shows a decline in the net stock of urban dwellings despite rising retail sales and rising urban population. Vainshtein's urban dwellings figures for 1910–13 are used in place of the Kahan figures.[35] Prior to 1910, Kahan's series grows at approximately the same rate as the urban population; therefore I extend his index from 1890 to 1885 using the rate of growth of the urban population.

Rural rental payments are calculated in the same manner; namely, by applying an index of the real net stock of rural dwellings to 1913 rural rental payments. The rural dwelling net stock series is based upon an independent study of rural structures and is described in a technical working paper.[36] It is based upon the value of peasant structures insured under the government's compulsory fire insurance program. There is evidence to support the view that the rise in insured values covered under this program will be the consequence of the rise in the market value of aggregate peasant structures, not of increased insurance coverage. Thus I believe this series is a reasonable indicator of the value of peasant structures. Although insurance data suggest that "capitalist" farm structures may have grown more rapidly than peasant structures, I assume that they grew at the same rate to avoid a possible overstatement of the growth of farm structures.[37] It is true that this series, after deflation with a construction cost index, will be indicative of the rate of growth of all farm structures, both dwellings and

[33]Gregory 1976, statistical appendix.

[34]Arcadius Kahan, "Capital Formation During the Period of Early Industrialization in Russia, 1890–1913," *Cambridge Economic History of Europe*, Vol. VII, Part 2 (Cambridge: Cambridge University Press, 1978), Tables 42–52.

[35]A. L. Vainshtein, *Narodnoe bogatstvo i narodnokhoziaistvennoe nakoplenie predrevoliutsionnoi Rossii* (Moscow: Gosstatizdat, 1960), 417, 420.

[36]Paul Gregory, "The Value of Structures in Agriculture, Russia, 1885–1913," mimeographed 1978.

[37]According to the official insurance data, the share of the value of non-peasant structures in the total (state sponsored programs) rose during the period. Some of this may have been a real share increase, but I feel most of the increase was caused by increases in participation by the gentry in state insurance programs.

productive structures. However, it is impossible to separate out the two, and it is fairly safe to assume that both types of structures grew at the same rate.

Services

Five types of service expenditures, not included under retail sales, are given in Table 1 (row A.3): personal transportation, communication, utilities, medical care, and domestic service.

Railroad travel: The rail transport figures incorporated in Table 1 are for gross sales of rail tickets to passengers for the Russian empire and are drawn from official transportation ministry yearbooks. This calculation of consumer transportation expenditures is likely biased in two opposing directions. A portion of passenger rail expenditures is intermediate in nature (business trips) and should be netted out, but I would imagine such expenditures to be a small fraction of the total. On the other hand, transportation expenditures on other forms of transport (horse-drawn coach, water, etc.) are not included, but these should be small as well. In the absence of better information, I assume that these two items offset each other.

Communication (telephone, telegraph, post): Personal (as opposed to business) expenditures for communication services cannot be estimated with precision because of the difficulty of differentiating private from business expenditures. My procedure is to make rough estimates of the ratio of private to total postal expenditures by eliminating obvious business mail (advertising, mass shipment of newspapers, etc.) from total mail deliveries and then assuming (subjectively) that 75 percent of the remainder (largely packages and first class mail) is for private purposes. Communication services were all state owned, and detailed information on telephone, telegraph, and postal revenues is provided in the various official statistical publications. I acknowledge that my procedure for estimating personal communication expenditures is arbitrary and will likely lead to measurement errors; nevertheless, communications expenditures are not large, and trends over time should not be seriously distorted.

Utility expenditures: Consumer utility expenditures also cannot be estimated with precision. Instead, circuitous procedures are required. Two difficulties must be dealt with in estimating private utility expenditures: The first is the distribution of total utility expenditures among private and business uses; the second is the estimation of total revenues from the sale of utility services. To approximate the private-business distribution, I use the 1912 ratio of the value of the urban housing stock to the total stock of urban structures including commercial and industrial establishments (83 percent), which I subjectively lower to 75 percent to adjust for greater industrial energy usage by industrial and commercial consumers.[38] I then apply this ratio to the entire 1885–1913 period. This procedure has been described by this author in my 1976 study. Direct data on utility receipts are not available, except for some information on municipally-

[38]This assumption does not appear to be too far off, at least as far as the industrial consumption of electricity in Moscow and Petersburg in 1908 was concerned. This was slightly under 35 percent according to L. G. Davydova, *Ispol'zovanie elektricheskoi energii v promyshlennosti Rossii* (Moscow: Nauka, 1966), 65.

owned utilities. The capital stock of utility corporations (water, sewerage, gas and electricity, and local transportation) is however known.[39] I thus backcast 1913 utility expenditures with an index of municipal and corporate utility capital stock. It is surprising that so little data on utility receipts are available for Russia, a likely consequence of the tax system and the paucity of data on local government. With this estimation procedure, I believe that major errors would more likely be found in levels rather than in trends over time.

Domestic service: The estimation of expenditures on domestic services is more straightforward: I take annual employment in domestic service and multiply it by the average annual wage of domestic servants in 1913. This wage is known only for 1904 (an average of 132 rubles for male and female servants),[40] so I extrapolate it to 1913 using the nominal wage index of Russian factory workers. The product of the 1913 wage and average employment in domestic service then serves as my estimate of real expenditures for domestic service. The index of employment in domestic service is calculated from the ratio of domestic servants in Moscow and Petersburg to the total population of these cities. These cities accounted for over 20 percent of the urban population of the 50 European provinces (1917), and the Moscow–Petersburg ratios for selected benchmark years are applied to the urban population figures (50 European provinces) to obtain an index of domestic service employment. This index uses the assumption that the Moscow–Petersburg ratios are typical for other cities. The 1913 figure on domestic servants in the Russian empire is taken from Rashin.[41]

Medical Care: Expenditures for medical care are calculated as the sum of expenditures on physicians and paramedical personnel and on prescription drugs. These figures should be reasonably reliable as the numbers of medical personnel in the civilian sector were reported in some detail in various official statistical yearbooks.

Price indexes: Price indexes for the deflation of service expenditures were gathered from various sources. Much of my price information is taken from contemporary Baedeker travel handbooks along with various issues of the *Petersburger Kalendar.*[42] The railroad price deflator is the series on revenues per passenger-verst of state and private railroads taken directly from the annual yearbook of the transportation ministry.

The postage price deflator is the cost of a closed letter within the Russian empire, and the telegram price deflator is the cost of a 10 word telegram sent within the Russian empire. The telegram tariff system was changed slightly after 1885, after which it was vastly simplified; so my calculation of a comparable rate for 1885 is somewhat complex but should be reasonably accurate. Postage rates

[39]The capital stock data on utilities is found in the *svodny balans* section of the *Ezhegodnik ministerstva finansov* (annual editions).

[40]The average has been calculated from *Goroda Rossii v 1904 g.*, Tsentral'ny statisticheski komitet, Petersburg, 1906, 453.

[41]A. G. Rashin, *Formirovanie rabochego klassa Rossii* (Moscow: Sotsekizdat, 1958), 171.

[42]Karl Baedeker, *Russland, Handbuch für Reisende*, 4th, 7th and 1st English edition (Leipzig: Baedeker Verlag, 1897, 1912, 1914); Baedeker, *St. Petersburg und Umgebungen* (Leipzig: Baedeker Verlag, 1901); *St. Petersburger Kalender 1886* (Petersburg: Verlag Schmissdorf, publication date not given).

remained unchanged over the entire 1885–1913 period. Telegram rates remained fixed from 1885–1913.

The utility price deflator is an input price index compiled from the major material inputs into energy production: coal, wood fuels, oil products and labor.

Military subsistence: Military subsistence is calculated from official budgetary data on expenditures on uniforms and provisions of the War and Marine Ministries. These expenditures are deflated using price indexes of grain prices and textile prices.

III. Findings: Rejection of Hypotheses of the Conventional Model

In Table 1, I reported my estimates of personal consumption expenditures in the Russian empire for selected benchmark years between 1885 and 1913. In addition, I supply estimates of government expenditures for goods and services in 1913 prices, broken down into imperial and local government (*zemstvo*, municipal government, and *mir*) expenditures. These estimates of government spending are preliminary (but I believe reasonably accurate at this point) and are taken from my larger study of Russian national income. Their derivation will not be discussed in this paper, but they are based upon official budgetary data deflated by appropriate wage and price indexes.

Methodology: "Normal" Resource Allocation Patterns

Let me deal first with the issue of resource allocation patterns and the accepted notion that the Russian pattern was in some sense "different" from the European model. Two hypotheses of the conventional model of Russian industrialization are to be tested with the data assembled in Table 1 (and Table 2): The first is the hypothesis that the moving forces behind industrial growth after 1885 were the "extraordinary" growth of public demand and, to a lesser extent, of industrial investment, both financed out of forced savings from the peasant population. The corollary of this hypothesis is that consumption growth was "unusually" slow in the Russian case. The first hypothesis would be sustained by evidence of relatively low consumption elasticities with respect to GNP and by relatively high government expenditure and investment spending elasticities. In both cases, differential growth rates of consumption, government, investment, and GNP must be shown to be "large" relative to "normal" patterns in other countries to demonstrate that the growth of consumption (government, industrial investment) was unusually retarded (accelerated) in the Russian case.

The second hypothesis to be tested is the growing "Europeanization" of the Russian model after 1906. In order for the Europeanization hypothesis to be sustained, a shift in resource allocation patterns must be observed after 1906. Prior to 1906, the pattern should be one of slow consumption growth relative to GNP as measured by European standards. After 1906, the pattern should be one of more rapid consumption growth relative to GNP, again measured by European standards.

The methodological difficulty to be faced in testing these hypotheses is that one must have some conception of the "normal" European pattern before any

conclusions concerning the Russian pattern of resource allocation can be drawn. It would be naive to accept the hypotheses by demonstrating that consumption grew at a slower rate than GNP or that government spending grew at a more rapid rate than GNP. This is true because, in the course of economic development, consumption has typically grown more slowly than GNP while government spending has typically grown more rapidly than GNP.[43] I must therefore be able to define the normal "European" pattern of consumption, government spending, industrial investment and GNP growth rates against which to compare the Russian pattern.

I determine the normal European pattern by calculating the German and English elasticities of personal consumption and government consumption with respect to GNP during this approximate period (using data from Kuznets[44]). The consumption/income elasticity is found to be around 0.9 for both Germany (0.90) and the U.K. (0.88), and the government/income elasticity is found to vary between 1.3 (Germany) and 1.7 (U.K.). Thus the normal pattern in Germany and the U.K. in the late 19th and early 20th centuries was for consumption to grow at 9/10 the rate of GNP and for government spending to grow between 1.3 and 1.7 times the GNP growth rate. *We use these elasticities (0.9 and 1.3–1.5) to represent the "normal" European pattern in this paper.*[45] Thus acceptance of the first hypothesis would require a ratio of personal consumption growth to GNP growth below 0.9, a ratio of government consumption growth to GNP growth above the 1.3 to 1.6 range, and a ratio of consumption to government growth below the 0.56 to 0.69 range defined by the German and U.K. experience. Because the American economy was roughly comparable to that of imperial Russia in terms of population, I calculate the U.S. elasticities for the late 19th and early 20th centuries.[46] The consumption/income elasticity is 0.97, and the government/income elasticity is 1.2.

Hypothesis Testing

In Table 2, I have assembled data on the growth rates of personal consumption, government consumption, and GNP for the Russian empire between 1885 and 1913. In addition, Arcadius Kahan's estimates of the growth rate of industrial investment are cited. How well do these growth rates conform to the conventional description of Russian economic development? For the entire 1885–1913 period, consumption and GNP grew at roughly the same rate (3.4 versus 3.6 percent annually). Thus the growth rate of consumption was 94 percent of the growth rate of GNP and was above the normal pattern (90 percent) predicted by the German and U.K. experience (but slightly below that of the U.S.). Given the possibility of measurement errors in the Russian figures and the European elasticities, one

[43]Simon Kuznets, *Modern Economic Growth*, (New Haven: Yale University Press 1966), 234–243.

[44]Kuznets 1966, 236–237.

[45]These elasticities are calculated at the means and will rise as the ratios of consumption and government to national income fall. If the average European consumption ratio were applied to calculate the Russian elasticity, it would be raised, thereby intensifying my findings.

[46]The American elasticities are calculated from Kuznets 1966, 234–43 and from *Historical Statistics of the United States, Colonial Times to 1970*, F98-124.

TABLE 2

ANNUAL GROWTH RATES, PERSONAL CONSUMPTION, GOVERNMENT EXPENDITURES FOR GOODS AND SERVICES, INDUSTRIAL INVESTMENT AND GNP, RUSSIAN EMPIRE, 1885–1913 (1913 Prices)

Period	1 Personal Consumption Expenditures	2 Government Final Expenditures	3 Industrial Investment	4 National Income[c]
1885–1913	3.4	4.35	6.1[a]	3.6
1885–1900	3.9	4.0	12.2[b]	3.8
1900–1907	0.3	2.2	0.3	1.4
1907–1913	5.6	7.7	1.9	5.6

[a]1890–92 to 1911–13.
[b]1890–92 to 1899–1901.
[c]Revised Goldsmith figures.

Sources: *Columns 1 and 2*: Table 1; *Column 3*: Arcadius Kahan, "The Growth of Capital During the Period of Early Industrialization in Russia," *Cambridge Economic History*, Vol. VII (Cambridge: Cambridge University Press, 1978) p. 303; *Column 4*: Paul Gregory, "Economic Growth and Structural Change in Tsarist Russia and the Soviet Union", forthcoming 1979. The national income estimate is based upon Goldsmith's industrial (1908 imputed weights) and agricultural production series with series on livestock production and services added. I accept Goldsmith's hypothesis that handicraft production grew at 2/3 the rate of factory production. A series on *net* grain production is substituted for Goldsmith's gross production series. The former grows at a more rapid rate than the latter due to the rise in the net to gross ratio.

cannot draw firm conclusions. However, it would be hard to argue that the Russian consumption/GNP elasticity was low by European standards. The annual growth rate of government spending was 4.35, a figure 1.21 times the GNP growth rate, and *below* the ratio predicted by the normal European pattern.

Turning to the critical 1885–1900 period, when the Russian model was supposedly in its strict non-European phase, consumption and GNP grew at roughly identical rates (3.9 versus 3.8 percent, respectively), while government spending grew at a slightly higher rate than GNP (4.0 percent versus 3.8 percent). Thus examination of differential rates of growth of consumption, government spending, and GNP calls for the *rejection* of the first hypothesis. In fact, if anything, my evidence would call for the acceptance of the reverse hypothesis; namely, that the *relative* (to GNP) growth rate of personal consumption (government consumption) was unusually high (low) relative to the European experience. This latter point is seen in the high ratio of consumption to government growth in Russia (0.98), well above the European range of 0.56 to 0.69.

Does the second hypothesis of the growing Europeanization after 1906 fare any better than the first hypothesis? According to the reported figures, there was indeed an acceleration in the absolute growth rates of consumption, government spending, and GNP after 1906, following a period of slow or stagnant growth from 1900–7. But again I fail to detect major changes in resource allocation. From 1907–13, consumption and GNP grew at approximately the same rates (5.6 percent for both), while government consumption grew at a rate 38 percent above that of GNP, intermediate between the U.K. and German elasticities. However, this increase in the relative growth rate of government consumption goes *against*

the conventional hypothesis of a declining relative role of government demand after 1906.

In sum, my evidence fails to reveal the deviations in Russian resource allocation from the European pattern predicted by the conventional model of Russian industrialization. Relative to the European experience, the growth of personal consumption was not retarded relative to the growth of GNP; nor was the relative growth of government consumption rapid relative to the European experience. If anything, the reverse is suggested although the deviations are fairly minor. Moreover, I fail to find evidence of the growing Europeanization of Russian industrialization after 1906.

On the crucial matter of investment, one has only very partial evidence in the Russian case. The conventional model argues that the government policies of direct railroad investment and forcing savings from the countryside led to relatively high rates of growth of industrial investment, again relative to the "normal" European experience. According to Kahan's estimates, the growth of industrial investment between 1890 and 1913 (cited in Table 2) was indeed quite rapid, at almost double the growth rate of GNP. Whether such a growth rate is high relative to European standards is difficult to determine, for I cannot find sectoral investment breakdowns. The German, U.K., and U.S. investment elasticities with respect to GNP for this period are 1.3, 1.1, and 1.0, respectively, but these elasticities refer to *total* investment (in industry, agriculture, services, and residential construction). According to Kahan's figures,[47] other types of investment grew well below the GNP rate, primarily due to the slow growth of agricultural investment. In fact, Kahan finds that aggregate investment did not keep pace with GNP and that the capital-output ratio declined markedly between 1890 and 1913. I find myself in disagreement with Kahan's estimates of agricultural investment,[48] but have no reliable substitutes at this time. Thus it remains to be established whether the growth rate of total investment in Russia was high or low relative to European standards, but at this time the only evidence does not point to high elasticities. Below I derive an implicit growth rate of investment (4.4 percent) from Goldsmith's national income series, which yields an elasticity similar to that of Germany.

In my analysis of 1913 Russian national income,[49] I demonstrated that 1913 Russian investment and government expenditure proportions (as a percent of NNP) were high relative to contemporaneous standards in more industrialized countries, once the lower level of Russian national income was taken into consideration, and that the consumption proportion was low by the same standard. If one couples this finding with the relative growth rate figures in Table 2, one would have to conclude that personal consumption and government consumption proportions were also relatively low and high, respectively, at the beginning of the industrialization era. The lack of firm data on investment prevents one from drawing any conclusions concerning investment proportions at

[47]Kahan 1978, 296–300.

[48]Kahan's figures suggest a substantial decline in *per capita* livestock herds of the rural population and a small decline in the *per capita* stock of rural dwellings, despite rising real income in agriculture, especially after 1906.

[49]Gregory 1976, 446–456.

the beginning of the industrialization era and whether they rose substantially between 1885 and 1913. Thus Russia entered the industrialization era with a relatively high ratio of government consumption to GNP and a relatively low personal consumption ratio, and this persisted throughout the period 1885–1913. However, one cannot use this as evidence of an extraordinary government effort to promote industrialization because the high government expenditure ratio was primarily a consequence of high defense and administration expenditures.

Consistency with the Revised Goldsmith Estimates

In the introduction, I suggested that one further use of the estimates of personal consumption and government consumption is as a check on the revised Goldsmith estimates of national income growth against which I contrasted the growth rates of personal consumption and government consumption. Thus Table 2 assumes the revised Goldsmith figures to be correct. Personal consumption and government expenditures made up 88 percent of GNP in 1913;[50] therefore their combined growth can be used as a rough check on the GNP figures, for extraordinary growth rates of investment would be required to alter the national income growth rate. Between 1885 and 1913, personal consumption and government consumption combined grew at an annual rate of 3.5 percent. According to the revised Goldsmith figures, national income grew at an annual rate of 3.6 percent over the same period. Combining these two figures yields an annual growth rate of investment of *circa* 4.4 percent, an intuitively plausible figure. Thus I would conclude that my independent estimates of Russian national income are consistent with the revised Goldsmith series and provide important support for the accuracy of the Goldsmith estimates.

One further point needs to be made: Contrary to the general conviction in the literature, the Russian growth rate (both total and *per capita*) after 1885 was above average for the late 19th and early 20th centuries.[51] Thus the stereotype of the Russian economy as a sluggish grower (due to the failure of agriculture) is not supported by my findings. I should note that my results are sensitive to the choice of base and terminal years because of significant annual fluctuations in agricultural output and investment. If I recalculate the growth rate using 5-year averages (1883–87 to 1909–13), the national income growth rate drops to $3\frac{1}{3}$ percent per annum, but this rate is still above average for that time period.

IV. Summary

In this paper, I have examined the relative growth rates of personal consumption, government consumption, and national income in Russia from 1885–1913 and have contrasted them with the "European" model (derived from the U.K. and German experience). Two hypotheses of the conventional model of Russian industrialization were tested: the retarded growth of personal consumption and the accelerated growth of government consumption and investment

[50]Gregory 1976, 458–459.

[51]This conclusion is reached from data cited in Simon Kuznets, *Economic Growth of Nations* (Cambridge, Mass: Harvard University Press, 1971), 11–14.

(relative to the European model) and the growing Europeanization of Russian growth after 1906. The estimates of personal consumption and government consumption failed to sustain either hypothesis. In fact, the reverse hypotheses appear to be more plausible. The lack of data on investment prevented the testing of the investment hypothesis, but the limited evidence which is available does not point to an extraordinary growth of investment. As a final experiment, the combined growth rates of personal and government consumption were compared with a revision of Goldsmith's national income estimates. They were shown to provide strong support for the accuracy of the revision of Goldsmith's estimates.