The Russian Beet Sugar Industry in the XIXth Century[1]

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I

Much of the historiography of the economies of nineteenth century Europe is dominated by the process of industrialisation and, in particular, the appearance and rapid development of such industries that may constitute an 'industrial revolution'. Such a revolution in commercial and technical organisation is sought, examined and explained; where it is not found, this, in itself, is significant. The main targets for such an examination have customarily been textiles or heavier factory based industries such as metal fabricating and engineering. In the excellent study of west European technological change, 'The Unbound Prometheus', David Landes notes that an industrial revolution may be characterised by three (at least) phenomena:

1. The substitution of mechanical devices for human skills
2. The replacement of human and animal power by, in particular, steam
3. Improvements in extracting and processing raw materials

[1] A version of this paper was read at research seminars in the Universities of Glasgow and Edinburgh. I am grateful for the helpful comments made on those occasions.

" especially in what are now known as the metallurgical and chemical industries ".[2] It may be deduced that in his pioneering work on the concept of economic backwardness Alexander Gerschenkron was similarly influenced. It is not necessary to rehearse, here, the arguments put forward by Gerschenkron, which are well known,[3] but it might be worth stressing one of the main points of his thesis: that given the relative backwardness of Russian industry in the late nineteenth century the state assumed a primary entrepreneurial role in industrial development. Although the empirical basis of the Gerschenkron thesis has been convincingly challenged by Gregory [4] and Crisp [5] there remains the particular stress on heavy industry.

It is of interest to note, therefore, that in the foremost industrial power in continental Europe, Germany, it was in lighter consumer industries that many innovations in technology and business organisation were first evident. The German brewing industry accounted for considerably more in terms of capital stock than the metallurgical or machine industries. Further, it was in brewing that the application of steam power and refrigeration were first employed.[6] The beet sugar industry in Germany was similarly innovative, though in this case the export market became the more important.[7] A closer examination of such industries might moderate somewhat our concepts of development and relative backwardness.[8]

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[2] D. Landes, *The Unbound Prometheus, Technological Change and Industrial Development in Western Europe from 1750 to the Present* (Cambridge University Press, 1969), p. 1.

[3] A. Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge, Mass., 1962), *Continuity in History and Other Essays*, (Cambridge, Mass., 1968).

[4] P. Gregory, " Some Empirical Comments on the Theory of Relative Backwardness: The Russian Case " *Economic Development and Cultural Change*, 1974, 22, No. 4, 654–665.

[5] O. Crisp, *Studies in the Russian Economy before 1914* (Macmillan, 1976).

[6] M. Teich, " Beer, Science and the Economy in Germany before the Great War," *Council on International Studies, Special Studies* No. 144, S.U.N.Y. Buffalo 1981.

[7] K. Borchardt, " The Industrial Revolution in Germany, 1700–1914 " in C. Cipolla (ed), *Fontana Economic History of Europe* vol. 4 (London, 1973), 128.

[8] The development of the beet sugar industry has been rather neglected by economic

It is the purpose of this article to examine a small but rapidly growing and politically significant industry, beet sugar manufacture. Beet sugar was one of the fastest growing industries in nineteenth century Russia, it developed without direct state patronage, the technology employed and the efficiency of production was in no significant respect backward from that in west European countries. The industry initially developed on gentry owned estates and largely remained under gentry control. This was itself noteworthy in the context of Russia before the Great War.

Sugar extraction from beet was discovered in 1747 by a German chemist Andreas Marggraf, but, as is well known, became a viable commercial proposition only during the blockade of the Napoleonic Wars. The early development was therefore in France, it is said after Napoleon's personal direction. With the ending of hostilities and the re-entry of sugar cane into continental Europe, beet sugar producers were set back though not totally eliminated. They revived operations on a significant scale from the 1830s being much favoured by high import tariffs on cane sugar throughout Europe (the main purpose of which was to raise state revenue). In the next half century the production of beet and extraction of sugar expanded rapidly in France, Austria, Germany and Russia in particular. As a general rule the state provided effective, if not always deliberate, protection through tariffs, and incentive through the method of assessing domestic excise. Further, there were advantages in growing beet in crop rotations. Beet tops and pulp supplied cattle feed and price recession for grain crops in the 1880s provided a material incentive to diversify.[9]

By 1908 two-thirds of the world's sugar was produced from beet. Excess domestic production led to export subsidies by va-

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historians. One notable exception is V. P. TIMOSHENKO and B. L. SWERLING, *The World's Sugar: Progress and Policy* (Stanford, 1957).

[9] The role of sugar beet in German agriculture has been well shown by J. PERKINS, 'The Agricultural Revolution in Germany 1850–1914' *Journal of European Economic History*, 10, No. 1, 1981.

rious means which caused chaos on the international sugar market until the Brussels sugar convention of 1902. Russia was the last major state to join the convention, delaying until 1907. The pattern of development in Russia bore an essential similarity to the rest of continental Europe, though the state played no direct part in the early development of the industry.

II

The first use of sugar beet in Russia was as an industrial raw material, rather than as cattle feed [10] or for some other agricultural purpose. The two were not mutually exclusive of course, but it seems that the use of beet pulp for feed was taken up only later [11] and that the (forward and backward) linkages in crop rotations were relatively slow to develop. It is significant that the first factory proper was opened before Napoleonic influence in Russia, though subsequent membership of the continental system boosted the industry for a short time. Major-General Blankennagel and his assistant Esipov, opened a factory in the village of Alyabevo, Tula Province in 1802. It was said that techniques developed by Esipov were superior to and more resilient than, those evident in Germany at the time.[12] Sugar had been produced, experimentally rather than commercially, before this date. In 1797 the Moscow agricultural society produced some sugar from beet and in 1800 a Moscow pharmacist of German origin, Bindheim, began to make sugar and vodka (and even vinegar) from beet.[13] Blankennagel produced

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[10] V. T. Krasochkin, 'From the History of Beet Cultivation', *Materialy po istorii sel'skogo khozyaistva i krest'yanstva SSSR, V.* (Moscow 1960) 475–477.

[11] L. Tengoborskii, *Commentaries on the Productive Forces of Russia*, vol. 1, (London 1855), 478.

[12] P. M. Silin, *Technology of Beet Sugar Production and Refining* (Jerusalem 1964), 4–5. Esipov used lime to purify extracted juice where Achard, in Prussia, used sulphuric acid.

[13] K. G. Voblyi, *Opyt' istorii sveklo-sakharnoi promyshlennosti SSSR* vol. 1 (Moscow 1928), 69–70.

a sweet vodka, as well as sugar. Other early factories also produced spirit as well as sugar.[14]

With the continental blockade and reduction of imports of cane it became more viable to manufacture beet sugar. The government, too, was encouraging at this time. Indeed Blankennagel had received a cheap government loan (before 1802).[15] Rumantsev, Minister of Commerce 1804–10, tried to foster the industry. In 1810 Prince Meshchersky borrowed 300,000 rubles, interest free over ten years, to improve an existing factory in Tver' (Kalinin) and build a new one in Kursk.[16] There was some further propagation from the Free Economic Society which in 1805 published a collection of papers advocating beet sugar production. However, with the ending of the continental blockade the industry stagnated for a few years. In 1812 there were only an estimated 4 beet sugar factories in operation but at about the same time (1813–14) 46 factories and refineries producing sugar from cane. There was renewed growth in the beet sugar industry in the 1830s, under the protection of the prohibitive tariff of 1822. A committee of sugar producers was formed in 1834 [17] which subsequently propagated knowledge about the crop and industrial technology.[18] There was, at this time, also a certain amount of regional concentration evident — in Poland, the Ukraine and south Russia, though this was to become more pronounced in later years.

The 1840s were boom years when, using relatively simple technology, estate owners were able to build factories and exploit their locally grown crop, and the high domestic prices for the sugar. The number of factories grew from 140 in 1840 to 217 in 1845 (and as many as 350 in 1849) to 400 in 1860. After 1861 the numbers declined. The 1840s also saw some technological innovation.

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[14] *Ibid*, 75–6.
[15] *Ibid*, 70.
[16] *Ibid*, 76.
[17] *Ibid*, 67.
[18] *Ibid*, 116.

One of the leaders in this was Count Alexei Alexeivich Bobrinsky — the best known name in the sugar industry in Russia. He owned estates in Kiev, Tula and Kursk. In 1837 he opened his first sugar factory in Kiev;[19] by the 1860s he had 5 factories in operation, which were reduced to 4 in 1885. The technology and equipment employed by Bobrinsky was easily comparable with the best in France (the European leader into the 1850s) and Germany; indeed it was imported from France.[20] (He even used mechanised beet sowing from the 1850s). The Branitsky factories (3 in Kiev), those of Yakhnenko and Simirenko (also in Kiev) Golytsin, in Kharkov, Vasil' chikov in Tambov, were also amongst the technological leaders. However, many factories remained crude and simple. Steam power was introduced in the 1840s but, in 1849, only 49 factories had steam apparatus in use (and only 38 used screw presses rather than the more common hydraulic presses).[21]

III

The growth and innovation of the early nineteenth century took place in the face of government hostility or, at best, indifference. After Rumantsev there was little official favour for the industry. Tsar Nicholas I himself seemed implacably opposed, even believing that sugar beet damaged the soil.[22] More significantly his finance minister Kankrin, was confident that the industry would amount to nothing, observing in 1832 that "one of the most groundless speculations of the Russian gentry (*dvoryan*) is the beet sugar industry".[23] He was, of course, to be proved wrong but the then current official indifference may be further illustrated. In 1839 a branch of the Commercial Bank was opened in Kiev

[19] F. N. Vovchenko, "The Agriculture of the Smelo estates of the Counts Bobrinsky" *Russkoe sel'skoe khozyaistvo*, 14, no. 2, (1876) 2-3.

[20] Tengoborskii, *op. cit.*, 484.

[21] *Ibid.*

[22] W. Pintner, *Russian Economic Policy under Nicholas I*, (Ithaca 1967) 222-3.

[23] Quoted in Voblyi, *op. cit*, 390.

province. The bank made loans (over 3, 6 or 9 months) against the security of paper or land, or the products of the land — i.e. the future price of grain, flax, hemp or wool but specifically not against sugar.[24] Yet the effect of the 1822 tariff had been to foster the beet sugar industry, inadvertently. The main purpose of the tariff was to raise government revenue, and the level of duty on raw cane sugar was raised in 1831 and again in 1841. Such was the development of the beet sugar industry that in 1844 the St. Petersburg cane sugar refiners petitioned the Tsar over the unfair position the duty put them in. (Refined sugar was banned, and raw sugar was subject up to 100% a.v. Home produced beet sugar was subject to no such tax or duty). This appeal fell on deaf ears. The real impact on government was the foregone revenue, which forced a change of attitude and policy.

Although imports of raw cane sugar continued to increase up to 1850 the rate of increase declined from the mid 1820s.[25] Customs revenue moved as follows:

1831 3,707,000 rubles
1844 8,098,000 rubles
1847 5,462,000 rubles [26]

Despite this fall, in the years 1848-50 the sugar duty represented 23.9% of total customs revenue. The importance of the declining revenue was therefore evident.

A domestic excise duty was considered as early as 1841 but not introduced until 1848.[27] The initial rate was 30 kopeks per pud raw sugar (raised to 45 k. in 1850), but with a lower rate for very small establishments.[28] In the first years of its operation the excise yielded only 42,208 rubles — hardly enough to correct the deficit on customs revenue,[29] but the principle had been established. Further,

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[24] *Ibid*, 279.
[25] TENGOBORSKII, *op. cit.* 467-8.
[26] I. LEVIN, *Sveklosakharnaya promyshlennost' v Rossii* (St. Petersburg 1910) 55.
[27] VOBLYI, *Opyt'*, 320.
[28] TENGOBORSKII, *Commentaries*, 469.
[29] LEVIN, *op. cit.*, 57.

the method of assessing the excise provided an effective spur to improvements in productive efficiency. An extraction rate of three per cent was assumed. In effect, therefore, the amount of raw material was assessed and the higher the real level of extraction the lower the real level of excise paid. Three per cent was a reasonable notional extraction rate when first introduced for the less efficient producers. However, Tengoborsky reckoned that, in 1850, 4% was a realistic average.[30] In 1848 Brobinsky was achieving a 6% rate and in the 1850s 8 to 9%,[31] easily comparable with levels in Germany.[32] A new statute of 1863 based excise on higher notional rates of extraction which were in turn linked to the technology employed and varying from 4.5% to 6%. In 1872 a further variable for the region of production was adopted now with a range of assumed rates from 5.5% to 7.5%, but these still fell a long way below the real levels of extraction.[33] Adjustments were also made to the level of duty which thus increased in stages to 90 kopeks per pud in 1872. This complicated series of adjustments illustrated a fundamental change in government policy towards acceptance of the domestic industry. Indeed in 1849 a government commission investigated the industry and the most favourable circumstances for its conduct.[34]

IV

In the years after peasant emancipation two clear trends emerged: the state became more closely involved, and there was increasing concentration in production. As in many branches of agriculture emancipation, and the loss of serf labour, meant ruin for some sugar producers. The number of factories in operation declined sharply (from 213 in 1870–1, to 184 in 1890–1). The more efficient survived

[30] TENGOBORSKII, *op. cit.*, 464.
[31] VOBLYI, *op. cit.*, 306.
[32] TIMOSHENKO and SWERLING, *The World's Sugar*, 236.
[33] D. I. MENDELEEV (ed), *The Industries of Russia*, vol. 2 (St. Petersburg 1893), 238.
[34] TENGOBORSKII, *op. cit.*

and prospered, and the scale of production increased. The Austrian invented a diffusion process, which was widely adopted from the 1860s, helped improve extraction rates and labour productivity. Average output per worker per year increased from 33.5 puds in 1862-3 to 177.1 puds in 1880-1.[35] Fewer estates retained factories but many continued to grow beet, often under contract to nearby factories. Indeed such 'plantations' became responsible for the major output of beet by the end of the century.[36] Improved efficiency and transport made it more worthwhile to shift bulky sugar beet over greater distances for processing — there were thus fewer, larger factories. Concentration was evident also regionally. The beet growing area effectively became confined to 14 provinces of south Russia and the Ukraine and nine provinces of Poland, with Tula, where it all began, at the northern limit.

There was rather more concentration in the ownership of factories so that sugar magnates could be readily identified. By the end of the nineteenth century the two branches of the Bobrinsky family owned seven factories; the Branitsky family also had seven factories, Kharitonenko eight and Tereshchenko 10.[37] The Brodsky family had 12 factories by 1911.[38] It is perhaps more significant, however, that many of the factories in gentry ownership had been brought or opened *for the first time* in the late nineteenth century. Recent researches by Minarik into the economic activities of the richest landowners (with over 50,000 desyatinas) reveal an interesting picture. Of these rich families 29 owned sugar factories (mostly privately though some through companies — see below), and of these 29, 9 had inherited factories established in the first half of the nineteenth century (before 1860), among them Bobrinksy, Branitsky,

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[35] GEFTER, 'From the History of Monopoly Capitalism in Russia, *Istoricheskie zapiski*, 30 (Moscow, 1951), 107.

[36] *Ibid*, 105.

[37] L. MINARIK, 'On the connections between large landowners in Russia and industry by the beginning of the 20th century', *Ezhegodnik po agrarnoi istorii vostochnoi Evropy za 1971 g.* (Vil'nius 1974) 311-3.

[38] GEFTER, *op. cit.*

Pototsky, 8 opened factories between 1860 and 1890 and 12 after 1890. Of the 64 factories they owned privately 29 were established before 1860, 18 1860-90, 17 after 1890.[39] The long established enterprise inherited by generations was the exception rather than the rule. More typical examples might be seen in the following. The families Tereshchenko and Kharitonenko between them bought 18 factories after 1870, Orlov acquired one in 1875 and another in 1896. Kleinmikhel's factory in Kursk was first opened in the late 1870s. The Yusupovs opened their factory on the Rakityan estate in Kursk in 1895. In the same year the Orlov-Davydovs began production in Tambov and the Grand Prince M. A. Romanov opened a factory at about the same time. A factory was opened for the first time on the Lonovsky estate in Poltava in 1899 [40] and the first of two factories on the Karlov estate of Count Meklenburg-Strelitsky was opened in 1904.[41]

The gentry involvement in the industry, at this level, was not simply a function of tradition, inheritance or historical inertia but rather more a function of deliberate commercial investment. Indeed in some cases they had bought factories from merchants.[42] This raises the question as to the extent of gentry control of the sugar industry in the late nineteenth century. Under serfdom it was natural that sugar factories should be almost exclusively owned by the gentry; the few peasant or merchant entrepreneurs were exceptional indeed.[43] As the industry became more capitalist, however, gentry ownership remained important though less exclusive. There was evidently an entry of mercantile capital and joint-stock companies. Evidence of factory ownership is, however, inexact and sometimes inconsistent. The data referred to above

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[39] MINARIK, *op. cit.*, 313.

[40] *Ibid.*

[41] A. ANFIMOV, 'The Karlov estate of Meklenburg-Strelitskii at the end of the nineteenth and beginning of the twentieth centuries' in *Materialy po istorii sel'skogo khozyaistva i krest'yanstva SSSR*, V, (Moscow 1960), 321.

[42] GEFTER, *op. cit.*

[43] W. BLACKWELL, *The Beginnings of Russian Industrialisation* (Princeton 1968) 54.

given by Minarik refer only to the richest gentry families, and exclude reference to Poland altogether. Detailed factory surveys, in 1878-9 and 1890-1, did not record ownership in every case. Thus in 1878-9 of 200 listed beet sugar factories in Russia only (excluding refineries) 98 were definitely given as belonging to Princes, Counts and landowners.[44] In 1980-1 at least 78 of 184 so listed were known to be in gentry ownership.[45] An extrapolation of Minarik's data would suggest that approximately 92 out of 213 factories were in gentry ownership at the close of the nineteenth century.[46] In 1871 there were 180 joint-stock companies operating in the sugar industry, though this number includes the separate refining process.[47] One source estimates that 55% of factories in 1899 were owned by such companies [48] (a ratio quite close to the deduction from Minarik's figures). A detailed index of all joint-stock companies in the Russian Empire in 1902 lists 142 sugar factories and refineries,[49] the fall in number from earlier years probably resulting from amalgamation or bankruptcy in the industrial recession which persisted through 1902. Gefter gives a figure of 145 from a total of 280 factories in 1911 as company owned.[50]

There is clearly some uncertainty of detail but it is, nonetheless, evident that joint-stock company involvement increased to account for something like half the factories at the end of the nineteenth century. In many cases, however, members of the gentry were closely involved in such companies, retaining directorships. Minarik found the following examples a the end of the nineteenth

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[44] P. I. Orlov, *Ukazatel' fabrik i zavodov* (St. Petersburg 1881), 544-56.

[45] P. I. Orlov, *Ukazatel' fabrik i zavodov Evropeiskoi Rossii* (St. Petersburg 1894) 682-96.

[46] Minarik, *op. cit.*, 311.

[47] I. Levin, *Sveklosakharnaya promyshlennost'*, 16.

[48] P. Chefranov, 'The Beet Sugar Industry' in V. I. Kovalevskii (ed) *Rossiya v kontse XIX veka* (St. Peterburg 1900), 337.

[49] *Ukazatel' deistvuyushikh v Imperii aktsionernykh predpriyatii* (St. Peterburg 1903).

[50] Gefter, *op. cit*, 146.

century: Von-Derviz was a director of the Kiev sugar company, Vorontsov-Dashkov on the boards of the Kharkov and Sablinoznamensky companies and Musin-Pushkin on the Nosovo-Kozarsky board.[51] Apart from the latter case none of these positions is recorded in the 1902 detailed index, however.[52] There were other links. The Marinsky company was formed in 1899 in order to manage the sugar interests of the estates of Countess Kleinmikhel;[53] the Stroganov sugar company was established in 1872 to operate the factory on Countess Stroganova's Podol'sk estate.[54] Joint-stock companies did not therefore mean a necessary divorce from gentry ownership.[55] It is significant also that, in many cases, gentry estate owners entered the business for the first time late in the nineteenth century. And it made good sense for sugar production was, in some years, the most profitable of ventures. The Yusupov estates yielded their highest return to capital, at 20%, from the single sugar factory on the Rakityan estate.[56] A similar picture is evident on the Karlov estate of the Meklenburg-Strelitsky family. Two factories (opened in 1904 and 1910) provided an average of 22.1% of total net income in the five years 1908-9 to 1912-13.[57] Sugar production was more profitable than any other estate enterprise, which included flour mills, a brick factory, starch factory and, significantly, a distillery. By 1895 the sugar industry, as a whole, was second only to cotton in the use of credit.[58] In 1902 the 141 joint stock companies held total fixed capital stock of 105 million rubles, fifth of all joint-stock operations behind railways and transport, general manufacturing, metallurgical and engineering, com-

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[51] MINARIK, *op. cit.*, 313.

[52] *Ukazatel'*, 868, lists Musin-Pushkin on the board of directors of the Novo-Kozarsky company.

[53] *Ukazatel'*, 154.

[54] *Ibid.*, 986.

[55] GEFTER, *op. cit.*

[56] L. P. MINARIK, *Ekonomicheskaya kharakteristika krupneishikh zemel'nykh sobstvennikov Rossii k. XIX - n. XX v.* (Moscow, 1971), 110.

[57] ANFIMOV, *op. cit.*, 367.

[58] *Spravochnik po sakharnoi promyshlennostyu* (Petrograd 1918) 48.

mercial banks.[59] Thus, by the end of the century, the sugar industry had become one of the major capitalist industries of Russia.

V

The prominent and profitable position of the industry had not always been so evident. The response to falling prices and market fluctuations was to control the market as far as possible, eventually with state intervention. But the state took little initiative. Prices began to fall in the 1870s. Raw sugar averaged 6 rubles per pud in 1850;[60] by 1876 the price had fallen to almost 3 rubles.[61] There was some assistance with a refund of excise duty on exported sugar which both boosted producers income and acted as an incentive to sell 'excess' production overseas. In 1872 27 kopeks per pud was repayable. This was increased to 45 k. for crude sugar and 47 k. for refined sugar in 1874. However, because of the purely notional method of assessing excise, this refund acted as a bounty for the more efficient producers. Government payments came to exceed revenue.[62] In 1879, therefore, the government made the decision to levy excise on the final product. This final product levy was first introduced in 1881 at 50 kopeks per pud, then raised to 65 k. in 1883, one ruble in 1889, and finally to 1.75 ruble in 1895. Excise collected increased from 3.7 m rubles in 1880-1 [63] to 139.5 m in 1914 (which equalled 21 % of all indirect taxes).[64] A small direct export bounty was paid after 1881 and this was supplemented by an additional payment of 1 ruble per pud on sugar exported to Asian markets.[65] This was maintained until 1886.

Despite such export incentive payments the real level of excise payments made inroads into the profits of the producers. This,

[59] *Ukazatel'*, vi.
[60] TENGOBORSKII, *Commentaries*, 463.
[61] GEFTER, 'From the History ...', 113.
[62] *Ibid.*
[63] LEVIN, *Sveklosakharnaya promyshlennost'*, 59.
[64] GEFTER, *op. cit.*, 151.
[65] *Ibid.*, 113.

and the tendency to overproduction, led to what many producers claimed was a near crisis in the early years of the 1880s. The traditional first response was to petition the Tsar — but this was rebutted. Thus the producers formed a voluntary cartel — the *normirovka* in 1887 — the first such in Europe. Significantly there was no (formal) state involvement in this exercise though it does seem that former finance minister, Bunge, was instrumental in helping to formulate the syndicate, and it did meet with government approval.[66] The major purpose of the cartel, obviously enough, was to regulate domestic prices, carve up the home market amongst members and force exports (of the excess production) at low prices. In the first year 117 out of 219 producers joined and by 1893–4 virtually all producers were members.[67] Each member received a production norm as a guaranteed share of the home market with any excess being exported (with a penalty of 2.50 rubles per pud if not so). Exports were 'rewarded' with a drawback of the real excise duty. Average domestic prices rose from 3.40 rubles per pud in 1886-7 to 5.12 rubles in 1892-3. High domestic prices secured profits against dumped exports. A similar pattern was evident elsewhere in Europe, most notably in Germany. It is significant that the market control in Russia was undertaken, at this stage, without state management. This was not, however, to last. Domestic prices fell back from the peak of over 5 rubles (though they rarely fell below 4 rubles before 1914, thereafter) and in 1895, the government replaced the cartel with a state controlled and legally binding system essentially similar in operation. The Ministry of Finance estimated a domestic market 'norm' (initially at 25 m. puds) and distributed a share to each producer. Sugar produced above the norm was subject to double duty if

[66] *Ibid.*, 114.

[67] *Ibid.*, 107. In correspondence with Britain, the Russian government claimed that membership of the voluntary cartel reached 210 from 219 producers. *Correspondence with the Russian Government respecting the interpretation of the Most Favoured Nation Clause in connection with Countervailing Duties on Bounty Fed Sugar*, (Parliamentary Papers, 1903) LXXV, 7.

sold on the home market, nil duty if exported.[68] This was a change from the use of export bounties though there was some dispute about the status of such refunds later — they were prohibited under the Brussels Convention.

There can be little doubt that the favourable environment for the industry reflected in the examples given above (p. 299) was largely attributable to the effect of the cartel of 1887 and more particularly the state cartel of 1895. Not that uncontrolled profiteering was encouraged, for the government also fixed a maximum price. A guaranteed share of the market, and price stability, were more important considerations. Such protection of domestic producers was by no means peculiar to Russia. Severe protection and stringent measures against subsidised imports were widespread in Europe. If anything it was distinctive that the Russian government was apparently slow to take action — the initiative being undertaken by the producers themselves. Nonetheless the effect was greatly to stimulate production. Crude sugar output increased by 90% from 1886-7 to 1900-1 and by a further 133% 1900-1 to 1910-11, which was the peak year. The number of factories in operation increased from 184 in 1890-1 to 241 in 1914 (figures exclude Poland; or 224 to 296 over the same years if Poland included). The home market accounted for the great bulk of production though with exports taking an increasing share. Consumption remained low by international comparison though increased markedly before 1914. Exports reached a peak of 28% of production in 1911-12 but were otherwise usually about a fifth or less of the total. (See table 1). This represented a smaller proportion than many other European producers.[69] As a proportion of total export earnings sugar was rather less important for Russia than Germany; in 1901-1910 (annual average) accounting for 2.2%

[68] *Pol'noe Sobranie Zakonov*, XV (1895), 623.

[69] The Russian government claimed that up ot 60% of production was exported by some European producers, with only about 12% of Russian production exported c. 1902. *Correspondence with the Russian Government*, 9.

TABLE 1

SUGAR PRODUCTION AND EXPORTS

Year	Productions [in million puds [1]]	Export
1870-1	7.5	
1886-7	25.9	3.3
1894-5	32.3	5.2
1896-7	38.7	7.2
1900-01	49.2	10.0
1910-11	114.9	20.0
1913-14	93.1	31.6 [2]

Notes:
[1] pud = 16.4 kg.
[2] 1911-12.

Source: P.I. KHROMOV, *Ekonomicheskoe razvitie Rossii v XIX-XX vv*, (Moscow 1950), 437.

of exports.[70] Until the late 1890s Britain was the largest single market for exports, (she took 32% of Russian exports 1892-6), followed by Persia (Iran) and Italy.[71] Britain was one of the few open markets for sugar. European producers increasingly protected their markets with countervailing import duties against dumped or 'bounty fed' exports. The European market approached the chaotic and various attempts at international agreement to alleviate the position came to nought as long as Britain took no part. It was not until the International Sugar Convention of Brussels in 1902 that there was any measure of agreement. Russia, however, was absent.[72]

VI

The convention was designed to bring order to the international sugar market and suppress export bounties, in whatever

[70] Calculated from P. I. KHROMOV, *Ekonomicheskoe razvitie Rossii* (Moscow 1950), 455, and N. A. KRYUKOV, *Vneshnyaya torgovlya Rossii produktam sel'skogo khozyaistva za desyatiletke 1901-1909* (St. Petersburg 1912), 29.

[71] I. POKROVSKII, *Sbornik svedenii po istorii i statistike vneshnei torgovli Rossii*, (St. Peterburg 1902), 39 and KRYUKOV, *Vneshnyaya torgovlya*, 29.

[72] The original signatories were Britain, Germany, Austria, Belgium, Spain, France, Italy, Netherlands and Sweden.

Sugar Conference at Brussels, Convention March 5 1902 (P. P. 1902) civ., 275.

form. These specifically included direct bounties, indirect assistance such as exemption from domestic taxation, excess profits from secured home sales or from too high a surtax (i.e. the margin of import duty over domestic excise).[73] Although she strongly denied using export bounties, in protracted correspondence with the British government,[74] it was clear that, according to convention definitions, Russia was employing export incentives in the form of excise refunds. The Convention further agreed to impose special (countervailing) duties on imported sugar which was supported by any form of bounty (article IV) and to admit at the lowest rate imports from other members (article V).

Russia's absence from the Convention was curious because, as a result, she faced countervailing duties in European markets. Indeed a special duty of 31 gold francs per 100 kg refined and 19 gold francs per 100 kg raw sugar was levied on imports from Russia.[75] This was clearly a device to encourage Russian membership — and negotiations continued after 1902 — though the Russian government objected that the convention would limit domestic independence of legislation.[76] Russian exports to European markets were markedly reduced, with the result that Finland with 50% raw sugar exports in 1910, and Persia (90% refined sugar exports), became staple markets.[77] There was some downturn in production in 1903, and some renewed protection through an increase in the production norm, but setbacks were only temporary. There are few signs that Russia suffered from exclusion. She eventually joined the Convention in 1907, very much on her own terms.

Russia was allowed to retain her fiscal and customs legislation; she was further permitted to exempt from domestic taxation expor-

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[73] *Ibid.*, 2.

[74] *Correspondence* (P. P. 1903) lxxv, 4.

[75] *Findings of the Permanent Commission on the Sugar Convention of March 5 1902* (P. P. 1903), lxxv, 3.

[76] *Further Findings of the Permanent Commission* (P. P. 1904) xcv, 5.

[77] KRYUKOV, *Vneshnyaya torgovlya*, 29. Although within the empire, Finland's trade was regarded as foreign.

ted sugar up to a maximum of 1 million tons over 5 years (i.e. to September 1913). Exports to Finland, Persia and other Asiatic markets bordering Russia, apart from Turkey, could be subsidised or supported without obstacle.[78] In other words Russia maintained a perfectly free hand in her staple markets. Probably as a result of such favours Russia was able to increase her exports markedly down to 1914 (Germany and Austria maintained theirs; others declined).

As a proportion of total European exports Russia's increased substantially from 13.6% in 1900-1 to 18.1% in 1913-14 for raw sugar; 3.1% to 8.1% for refined sugar. Russian production more than doubled 1900-14. As a proportion of total European output Russian production increased from 18.6% to 29.1% over the period 1895-1900 to 1909-13.[79] By international comparison then the Russian industry was virtually booming by the eve of the Great War. Favourable comparison may be illustrated in other ways. The technology of the industry was little different in Russia from that in Western Europe. Industrial efficiency, measured by the rate of extraction, was high in Russia, being second only to Germany (Table 2). What was low was the yield of beet, so that

TABLE 2

COMPARATIVE YIELDS AND EXTRACTION RATES

	1900		1911-12	
	Beet Yield [puds/desyatina]	Extraction [Sugar as % beet]	Yield [puds/desyatina]	Extraction [%]
Russia	1014.4	11.1	1081.7	13.8
Germany	2028.7	12.4	1816.2	14.6
France	1809.9	10.6	1666.0	11.2
Austria	1551.6	11.0	1630.5	13.2

Sources: P. BELOVODSKU, in *Zemledel'cheskaya Gazeta* 25 (1900), 356 and *Spravochnik po sakharnoi promyshlennostyu Rossiiskoi Imperii* (Kiev, 1918), 263.

[78] *Protocol Recording Accession of Russia to the International Sugar Convention of March 5.1902* (P. P. 1908), cxciv, 19.

[79] F.A.O. *World's Sugar Economy in Figures 1880-1949* (Rome 1961) 21-35.

Russia had the largest sown area of beet but second largest sugar production in Europe.

In itself sugar processing was not a major industry in Russia, though it was of considerable importance in some regions of the country. The significance of this example should be judged in other ways. The sugar industry stimulated technological innovation, the substitution of mechanical, and steam, for animal power; there were many examples of improvements in productive efficiency of the industry, especially in the extraction rate of sugar from beet. In none of these respects was the Russian industry 'backward' in relation to her European neighbours. The Russian industry was easily on a par with, and often superior to, that in other producing countries, with the consistent exception of Germany. Where Russia was backward was in crop yields, not in the industrial production *per se*. Further, the industry was developed in private hands. There is no doubt that extensive state protection, especially in the late nineteenth century, and cartelisation provided a favourable environment for the industry, but such phenomena were by no means peculiar to Russia and may not be attributed to her backwardness. Indeed these characteristics developed only after the industry was firmly established. Deeper analysis of Russian industry shows the importance to the economy of the food processing industry in general, of which sugar was a part.[80] In 1912 31% of the labour force in manufacturing industry was employed in food processing; only textiles, clothing and leather had a larger share, at 31%. However, in terms of product share the figures are reversed, 30% for food, 26% for clothing, leather and textiles.[81] In all these industries there was little state entrepreneurial activity, little involvement from foreign businesses and little state demand.

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[80] O. Crisp *Studies in the Russian Economy before 1914*, 34–5.

[81] P. Gregory, 'Economic Growth and Structural Change in Tsarist Russia: a Case of Modern Economic Growth?" *Soviet Studies*, 23, 1972, 429.