Tariff Levels and Growth Rates in Russia, 1861-1913: a note

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The question of the relation between growth rates and tariff levels is a very controversial and complex problem that involves both theoretical and empirical considerations, as well as political factors, interest group dynamics and methodological questions. Different categories of people take various different points of view on aspects of this topic, as follows. For example, for the mainstream economist, comparative advantage is usually viewed as an unshakable concept that yields unambiguous free-trade recommendations, and hence tariffs can have no positive role to play in catalysing economic growth. For the nationalistic business enterprise, however, industrial protection is often seen as being of assistance in gaining a short-term advantage over foreign competitors. For the (at least nominally) objective historian, the question of whether tariffs help or hinder the general economic development of a nation is, at least in part, an empirical question, which must be answered by reference to an analysis of the particular period and specific context under review. This note attempts to begin this process with reference to tariff levels and growth rates in Russia at the end of the nineteenth century, although because of uncertainties over the accuracy of the data available, it can only be viewed as a preliminary investigation.

Various previous studies have included an account of Russia with that of other European states, although usually with less attention than is really warranted to the specifics of the Russian situation. For example Bairoch (1972) studied states such as France, Germany and Italy and set the question by dividing the period from 1860 onwards into two possible segments - tariff policy switched off or tariff policy on (i.e. either free

trade or protectionist) – and concluded that protection did, indeed, lead to higher growth rates at the end of the nineteenth century.[1] Capie (1983) on the other hand disputed both Bairoch's method and conclusion, instead using an annual numerical calculation of tariff levels and measures of effective protection, and he suggested that there was no positive relation between tariff rates and growth in any of the countries that were under review.[2]

In contradistinction to Capie, O'Rourke (2000) concluded that Bairoch's previously identified positive correlation between tariffs and growth was surprisingly robust, although O'Rourke excluded Russia from his analysis.[3] This was in contrast to an accepted negative correlation observed for much of the twentieth century. This apparent late nineteenth century tariff-growth paradox has been explained by Clemens and Williamson (2001) by positing that 'world environment matters', or that the benefits of free trade depended on the state of the world with respect to tariff barriers.[4] Raising tariffs might only be a successful strategy for a nation in a context where most other states are doing the same. However, even the unambiguous free-trade supporter Capie admitted that Russia was a somewhat anomalous case, with higher tariff levels than many of its European neighbours in the 1880s and especially in the 1890s and 1900s, although the USA was one other nation that had tariffs at a similar level to Russia at this time. Consequently attention is now turned to an investigation of the available Russian data in more detail than undertaken by any of the above authors in their more general studies of Europe, in order to more fully understand the relation between tariff levels and growth rates in Russia between 1861 and 1913.

An Examination of the General Data

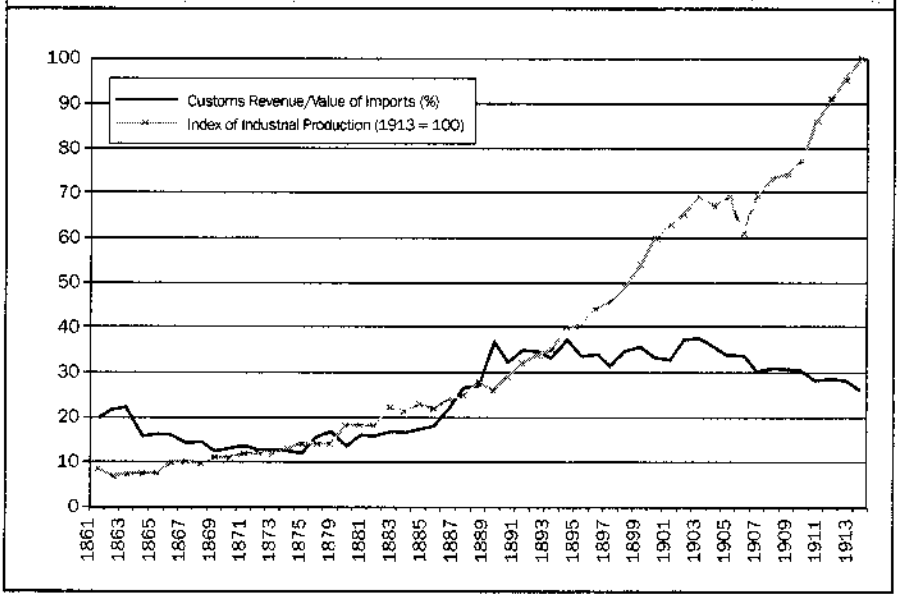
In his investigation Capie used what he called the nominal tariff rate, this being total customs duties collected as a percentage of the total value

[1] Bairoch, 'Free Trade and European Economic Development in the 19th Century'.
[2] Capie, 'Tariff Protection and Economic Performance'.
[3] O'Rourke, 'Tariffs and Growth in the Late 19th Century', p.473.
[4] Clemens and Williamson, 'A Tariff-Growth Paradox?', p.23.

of imports for each given year, as a measure of the general level of protection. This note retains this particular measure as a not unreasonable general guide, although some qualifications are added further on. However, Capie also used (in his appendix table at least) the yearly change of income as a measure of overall growth. It could reasonably be argued that, since the Russian tariffs were designed to stimulate industrial growth in particular, a measure of the development of industrial production would be a more suitable indicator than income growth. Consequently this note includes a comparison of the nominal tariff rate with an index of industrial production between 1861 and 1913, shown here as figure 1, with the raw data being given in table A1. This graph clearly shows a noticeable coincidence between the growth of protection in the second half of the 1880s and a Rostow-like take-off in Russian industrial development thereafter.

Before 1885 the nominal tariff rate remained within the approximate range of 12-22%, but between 1885 and 1913 this rate increased to within a noticeably higher range of roughly 25-37%. And whereas the index of industrial growth rose from 10 in 1867 to around 25 in the mid-1880s

FIGURE 1: Nominal Tariff Rates and Industrial Production in Russia, 1861-1913



(1913=100), after this date it grew to a level of nearly 70 by 1905, clearly exhibiting a faster rate of growth in the latter period. Moreover if alternative authorities are consulted regarding the rates of industrial development, then the same general pattern of increased growth in Russia after 1885 is confirmed.[5] Of course, after David Hume an apparent temporal conjunction does not necessarily prove a causal connection in either direction, but the matter certainly deserves further investigation.

A test of the numerical results obtained here in calculating the nominal tariff rate is available by cross checking them with similar figures calculated by Sobolev in 1918, shown here in table 1.

TABLE 1: Nominal Tariff Rates in Russia (%)

Year	Nominal tariff rate (relation of customs duties to value of imports) as calculated by:	
	Sobolev	Capie/Barnett
1853	33%	-
1870	13%	12.8%
1880	16%	15.4%
1890	28.7%	34.9%
1900	32.5%	32.6%
1913	28%	25.7%

Source: column 2, Raffalovich (ed), *Russia: Its Trade and Commerce*, p.308; column 3, table A1 in this note.

The only significant difference revealed by this comparison is with regards to the figure for 1890, which Sobolev gives as 28.7%, against 34.9% as calculated here. The overall trend of a rising nominal tariff rate between 1870 and 1890/1900 is clearly indicated, with the rate of growth increasing noticeably after 1880 in both sets of figures. Hence the general picture of the coincidence between increased tariffs and heightened growth is not put into doubt by the Sobolev comparison.

[5] For example Falkus wrote that 'growth accelerated markedly after the mid-1880s', *The Industrialisation of Russia*, p.46. Capie reported that Russian GDP growth increased from 16% in the 1880s to 68.5% in the 1890s, *Tariffs and Growth*, p.41. Khromov has the rate of industrial growth rising from 5.8% between 1885-90, to 7.6% in 1890-95, then to 9.2% in 1895-1900, *Ekonomicheskoe razvitie Rossii*, p.408.

A further partial test is possible by cross checking the data in table A1 with data given by the main architect of the 1891 tariff himself, D.I. Mendeleev, in 1892. Mendeleev presented a table including figures for customs income in relation to the value of imports in Russia between 1869 and 1889, shown here as table 2.

TABLE 2: Mendeleev's Calculation of the Nominal Tariff Rate in Russia, 1869-89

Year	Relation of customs income to value of imports (%) – Capie/Barnett	Relation of Customs income to value of imports (%) – Mendeleev
1869	12.3	12
1870	12.8	12
1871	13.3	13
1872	12.6	12
1873	12.6	13
1874	12.3	12
1875	12.1	12
1876	15.3	16
1877	16.5	22
1878	13.6	13
1879	15.8	16
1880	15.4	16
1881	16.6	16
1882	16.6	17
1883	17.3	17
1884	18.1	18
1885	21.8	22
1886	26.2	23
1887	26.8	27
1888	36.5	36
1889	31.9	31

Source: column 2, table A1 in this note; column 3, Mendeleev. 'Tolkovyi tarif', p.920.

Mendeleev's figures, while not exactly identical to the figures given in table A1, are actually very close to them, and mirror the general trend of the period quite accurately. Hence, through these two separate checks it is

possible to conclude that the Capie method was not wildly inaccurate, or at least found active support amongst some Russian investigators of the time.

However, some additional information about the data used by Capie, Mendeleev and Sobolev to calculate the nominal tariff rate does need to be considered. First of all, the figures used for total customs duties included duties levied on both imported and some exported goods, as well as any fines imposed for transgressing customs regulations.[6] Hence, the actual amount levied on imports alone was very likely somewhat less than the figures used by Capie. This tendency is confirmed by comparing data from another source for the total sum of customs income received in 1892 – 82.2 million rubles – with the figure used by Capie for the same year – 131 million rubles.[7] The general effect of this downsizing of the customs intake would be to reduce the nominal tariff rate considered to be in existence in Russia, although if this downsizing was assumed to operate to the same extent throughout the period in question, then the observed relationship between heightened duties after 1885 and increased growth would not be fatally affected.

Secondly, Mendeleev pointed out that some customs income was transferred between years due to delays in payment, although the amounts in question were probably quite small. More importantly he noted that collection was actually carried out in gold rubles, which had then been (for comparison) converted into credit rubles at a certain rate of exchange, which could (and in fact did) vary, depending on who was making the calculation.[8] However there appears no good reason known at present to question Mendeleev's particular choice in this matter, especially as Sobolev had obtained similar results.

A related question that needs to be considered is the general effect of tariffs on the level of Russian imports and exports, i.e. were there any noticeable improvements or hindrances to trade that were generated by protection? Table 3 shows data on the level of Russian imports and exports from 1860 to 1910 over ten-year intervals.

[6] Michelson, Apostol and Bernatzky, *Russian Public Finance During the War*, p.42.
[7] Sobolev, *Tamozhennaya politika Rossii vo vtoroi polovin XIX veka*, p.792.
[8] Mendeleev, 'Tolkovyi tarif', p.919, fn.2.

TABLE 3: Russian Imports and Exports, 1860-1910 (millions of rubles)

	1860	1870	1880	1890	1900	1910
Imports	159.3	335.9	622.8	406.6	626.3	1084.4
Exports	181.3	359.9	498.6	692.2	716.2	1449

Source: Crisp, *Studies in the Russian Economy before 1914*, p.112.

This data suggest that the level of imports into Russia did fall significantly in 1890, by around 35% compared to 1880, but they had recovered to the 1880 level by 1900, and grew noticeably after this date. Exports doubled between 1900 and 1910. Thus increased protection after 1880 probably did affect imports at least temporarily, although factors other than tariffs may have contributed to the decline in 1890 to some extent.

An examination of some industry-specific data

One possible response to the idea of industrial growth being connected with general protection could be that nominal tariff rates are not a good measure of the specific tariff levels set on the particular types of products that need to be considered in order to gauge accurately the effects of protection on growth. Consequently, some data on the specific tariff levels set on particular goods are now considered, along with growth rates for particular branches of Russian industry. Sobolev has provided some data on the latter, shown here as table 4, Lyashchenko on the former, shown here as table 5.

A comparison of these two tables shows that in some branches of industry such as cotton, rails and coal, an increase in the specific tariff level between 1868 and 1891 corresponded with a decline in the rate of growth in the last quarter of the nineteenth century. On the other hand in other branches such as iron and iron founding, increased tariffs corresponded with increased rates of growth. This suggests that the impact of the 1891 tariff was often industry-specific, and that general conclusions as to its result are difficult to make accurately. But some beneficial impact cannot be ruled out through this industry-specific data,

TABLE 4: Growth Rates in Russia in the Second Half of the XIXth Century (%)

Industrial Branch	Third quarter XIXth century	Fourth quarter XIXth century
Cotton fabric	14.8	10.5
Woollen fabric	7.4	1.8
Cloth	5.3	1.8
Textiles	0.6	9
Silk	10.8	6.5
Leather	7.5	2.7
Rubber	196	17.6
Butter	44.9	227
Chemicals and paints	5.6	13.6
Glass and crystal	2.8	4.5
Machine construction	376	7
Iron founding	22.4	49
Brass	13.3	11.8
Sugar	101	9.3
Coal mining	48.7	23.4
Cast iron	3.4	14.9
Iron	2.9	3.4
Steel	41.5	304.5
Rails	57.9	7.5
Copper	-1.5	3.7

Source: Sobolev, *Tamozhennaya politika Rossii vo vtoroi polovin XIX veka*, p.796.

although it should readily be acknowledged that this very inexact comparison between two broad periods of time is open to various easy objections.

Sobolev himself emphasised that growth rates had fallen dramatically from the third to the fourth quarter of the nineteenth century precisely in those branches of industry in which protection was increased the most. For example in sugar, rails and coal mining the annual rate of growth of industry was 101%, 57.9% and 48.7% respectively for the third quarter, falling to 9.3%, 7.5% and 23.4% for the fourth quarter. In some other branches however such as paper and textiles, chemicals and paints, glass and crystal, and pottery and fabrics, growth rates were higher in the fourth quarter. Overall Sobolev concluded that the total value of production in branches of industry that witnessed more significant growth in the fourth quarter than the

TABLE 5: Tariff Levels in Russia in the Second Half of the XIXth Century (gold kopeks per pud)

Industrial branch	1868 Tariff	1891 Tariff
Coal	0	2-3
Iron ore	0	10.5
Raw pig-iron	5	45-52.5
Pig-iron products	50-250	112.5-255
Iron	20-50	90-150
Forge and boiler products	100	255
Rails	20	90
Industrial machines	30	250
Locomotives	75	300
Locomobiles	30	170
Agricultural machines	0	70-140
Raw cotton	0	120-135
Cotton yarn	325	420-540
Cotton manufactures	28-110	35-135

Source: Lyashchenko, *History of the National Economy of Russia to the 1917 Revolution*, p.558.

third was 486 million rubles, against a total value of branches with lower growth of 667.5 million rubles. This, on first view, suggested an overall negative impact of increased tariffs in the fourth quarter, but only if they were assumed to have affected all industries equally, which of course they did not.[9]

One factor not mentioned by Sobolev could be that a slackening in rates of growth between the third and fourth quarter of the nineteenth century might have been inevitable to some extent, at least in Russia, due to the very low starting levels at which growth was calculated to begin, and the very high rates seen initially in the third quarter. Hence not all the observed slackening should necessarily be attributed to increased protection, but rather in part to inevitable declining returns to increased activity.[10] But again, the idea that increased protection had no beneficial effect on growth at all has not been conclusively demonstrated for Russia.

[9] *Ibid*, p.796.

[10] I am grateful to Professor Philip Hanson for bringing this point to my attention.

Another complicating factor is that the figures given in table 5 for tariff levels are in fact a simplification of the actual 1891 tariff schedule, which contained 226 separate items, each item sometimes being further sub-divided. For example tariff levels for coal (item 66 in the schedule) were divided into seven main types with six other sub-divisions, e.g. coal for serving factory production (a tariff of three kopeks) as against coal for powering the streets (no tariff at all). Overall the actual tariff levels levied on coal ranged from zero to 30 kopeks, while most categories fell within the range of three to six kopeks.[11] Hence Lyashchenko's data was only very approximate, and any conclusions derived through using it can only be considered preliminary, although there is no doubt at all that the general tendency expressed in the 1891 tariff was to increase customs duties as against those of previous tariffs.

Possible explanations of the apparent link between protection and growth

Of course, it is possible that the apparent connection between protection and growth seen in some Russian industries has been erroneously concluded, as lags between the two quantities might have been in operation. One alternative possibility is that reduced protection in one period actually fostered increased growth in a later period, i.e. the beneficial effects of free trade were lagged to a significant degree. For M.I. Tugan-Baranovsky the 1891 Russian tariff had been successful in part precisely because of the effects of the previous period of relatively low levels of protection. Thus, in reality, it was an expansion of the railway network that was a principal cause of the observed development of Russian industry in the 1890s, an expansion that had occurred in part due to a previous period of reduced customs duties.[12] Capie rejected the reverse idea that protection in one period produced increased growth in the next period at least for Germany, Italy, the UK and Russia, after conducting regression analysis on the general data series, although he did not consider any industry-specific data in this respect.[13]

[11] Mendeleev, 'Tolkovyi tarif', pp.62-3.
[12] Tugan-Baranovsky, *The Russian Factory in the Nineteenth Century*, pp.291-2.
[13] Capie, *Tariffs and Growth*, p.42.

Another more finely distinguished set of possibilities is that in full empirical reality, all these different tendencies were at work to some extent in some industries and in some periods in various countries. That is, increased protection did foster some growth in some industries in the current period and in the next period in certain instances, but it also hindered some growth in some industries in the current period and the next period in certain other instances; and, moreover, that reduced protection did assist some industries in the current period and laid the ground for growth in some industries in the next period in some cases, but also allowed foreign competitors greater opportunity in some industries both in the current and next periods in some other cases. Exactly how to separate out or quantify this matrix of possibilities is difficult to establish, especially given the data for Russia that is being considered here, but acknowledging these multiple strands of influence is certainly something that is necessary to consider.

For instance agrarian interests in Russia often opposed the raising of tariffs, which was sometimes seen to have negative effects, for example on the price of imported agricultural machinery, and hence a consideration of interest-group politics is important to understanding the effects of tariffs in some situations. Moreover, in the Russian case, other important economic policies apart from protection were implemented in the 1890s that might well have contributed to the observed increased rates of growth. For example with respect to monetary policy, the gold standard was finally introduced in 1897-99, after a protracted period of preparation. This might reasonably be thought to have encouraged foreign investment in Russian industry, although most of the effect of this reform was probably not seen until the 1900s. Rostow himself dated the Russian industrial take-off at 1890 or thereabouts, explaining it by a rising export demand for grain, which in turn made attractive the laying of a large railway network.[14] However he made no specific mention of the 1891 tariff in his account of Russian development.

Another possibility to consider (one discussed by O'Rourke) was that the success of tariffs depended on the state of the business cycle. In one

[14] Rostow, *The Stages of Economic Growth*, p.66.

version of this connection, tariffs were beneficial only during recessions, as a method used to kick-start a new upturn. In another version, fixed duties translated into higher rates of protection in periods of low prices, i.e. in depressions. O'Rourke disputed such possibilities in the countries that he examined, and rejected the idea that the counter-cyclical nature of tariffs explained their success, but what about in the Russian case? Pervushin characterised Russia as being in depression between 1881 and 1886, with a recovery between 1887 and 1889, then a depression again between 1890 and 1892, with a recovery following in 1893 to 1896, leading to prosperity in 1899. Mitchell plotted a similar pattern, with a recession in 1891, depression in 1892, a revival in 1893 and prosperity from 1894 to 1899.[15]

Customs duties in Russia had been rising since 1884, with more increases following in 1887; according to Pervushin this was a period of depression.[16] The 1891 Mendeleev tariff also appears to fit in with the idea that raising duties was used as a partial cure for recession. This connection was further in evidence following the recession and depression in Russia between 1900 and 1902, when the nominal tariff rate increased from 32.5% to 37.5%. However, even if Russian tariff levels did depend in the state of the business cycle to some extent, this does not mean that they did not have any positive influence on economic growth at all.

Preliminary conclusions

The idea that increased tariff levels had a positive influence on industrial growth rates in Russia in the period 1863 to 1913 has not been conclusively disproved by using the data discussed in this note. It still remains a possibility that heightened tariffs in the 1890s did have some positive influence on growth rates, despite the many other interacting factors that need to be considered. Hence the preliminary results of this note support tentatively the conclusions made by Bairoch and O'Rourke against those made by Capie, although this applies only to the case of Russia and cannot be generalised.

[15] Barnett, 'Trading Cycles for Change: S.A. Pervushin as an Economist of the Business Cycle', pp.1018-19.
[16] Sobolev, *Istoriya Russko-Germanskago torgovago dogovora*, p.15.

APPENDIX

TABLE A1 – Data for Russia Used in Plotting Graph One

Year	Customs Revenue (millions of rubles)	Value of Imports (millions of rubles)	Customs Revenue/ (%) Value of Imports	Index of Industrial Production (1913=100)
1861	33	167	19.76048	8.5
1862	33	153	21.56863	6.8
1863	34	155	21.93548	7.3
1864	27	175	15.42857	7.6
1865	26	164	15.85366	7.5
1866	32	205	15.60976	9.8
1867	37	265	13.96226	10
1868	37	261	14.17625	9.7
1869	42	342	12.2807	11
1870	43	336	12.79762	11
1871	49	369	13.27913	12
1872	55	435	12.64368	12
1873	56	443	12.64108	12
1874	58	471	12.31423	13
1875	64	531	12.05273	14
1876	73	478	15.27197	14
1877	53	321	16.5109	14
1878	81	596	13.5906	18
1879	93	588	15.81633	18
1880	96	623	15.40931	18
1881	86	518	16.60232	22
1882	94	567	16.57848	21
1883	97	562	17.25979	23
1884	97	537	18.06331	22
1885	95	435	21.83908	24
1886	112	427	26.22951	25
1887	107	400	26.75	28
1888	141	386	36.5285	26
1889	138	432	31.94444	29
1890	142	407	34.88943	32
1891	128	372	34.4086	34
1892	131	400	32.75	35
1893	166	450	36.88889	40
1894	184	554	33.213	40
1895	179	526	34.03042	44
1896	182	586	31.05802	46
1897	196	560	35	49
1898	219	618	35.43689	54
1899	219	661	33.13162	60
1900	204	626	32.58786	63
1901	219	593	36.93086	65
1902	225	599	37.5626	69
1903	241	682	35.33724	67
1904	219	651	33.64055	69
1905	213	635	33.54331	61
1906	241	801	30.08739	69
1907	260	847	30.69658	73
1908	279	913	30.5586	74
1909	274	906	30.24283	77
1910	301	1084	27.76753	86
1911	328	1162	28.22719	91
1912	327	1172	27.90102	95
1913	353	1374	25.69141	100

Source: column 3, B.R. Mitchell, *European Historical Statistics 1750-1975*, p.511 & p.516; column 2, *ibid*, p.750 & p.760; column 5, *ibid*, p.375 & p.377. See also Paul Gregory, *Russian National Income*, p.314. Gregory's figure of 450 million rubles for the value of imports in 1893 has been used as being quite probably more accurate than Mitchell's stated 400 million, given the observed trend.

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