# ONLINE APPENDIX – EXPLANATIONS

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# I. The Bulgarian Textile Production, c. 1870-1912

## The Bulgarian textile production around 1870

Given the fragmentary nature of the available archival sources the economic boom (ca. 1820s to 1870s), has so far been described in qualitative rather than quantitative terms.[[1]](#footnote-1) Therefore, we have only a handful of estimates which measure agricultural and proto-industrial production around 1870. Due to paucity of data these estimates offer only very rough and often contradictory approximations of output. Particularly conflicting are the guestimates of agricultural production which point in three different directions – stagnation (Ivanov[[2]](#footnote-2) and Liberatos[[3]](#footnote-3)), growth (Berov[[4]](#footnote-4)) or slowdown (Palairet[[5]](#footnote-5)). The picture in industrial production is not much different. In his already cited study on the level of economic development "on the eve of Liberation", Lyuben Berov[[6]](#footnote-6) estimated the added value in the secondary sector (handicrafts and factories) at about 205 million kuruş (equal to about 37.4 mil. Lev at 1911 prices[[7]](#footnote-7)). M. Ivanov, in his turn, calculated the industrial output to be 115.2 mil. Levs at 1911 prices.

Concerning the textile industry we only possess a few quantitative estimates of the value of braid production in some of the production centers (Kalofer[[8]](#footnote-8), Pirdop[[9]](#footnote-9), Samokov[[10]](#footnote-10), Karlovo and Sopot[[11]](#footnote-11)) or for the total braiding output. Attempts were also made to assess the production of aba (and braid) in textile towns such as Gabrovo, Sliven, Koprivshtitsa, Kotel, Karlovo or in the Rhodope Mountains.[[12]](#footnote-12) However, with rare exceptions (e.g. Tsonchev for Gabrovo), most of them rested on disputable local legends about the previous "golden age", recorded long after the events. If someone takes on the laborious task of collecting and comparing all the quantitative data in the local studies he or she runs the risk of overestimating textile production before 1878. After the Crimean War some cloth-making town, like Koprivshitsa for example, ceased its production and specialized in tailoring. It is highly possible that the Panagyurishte weaved aba and shayak cloth that was then tailored in Samokov appeared in both regional studies and thus was double counted.

**Table 1.1. Cloth Output before 1878 as Reported in Regional Studies**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Type of cloth | Original measurement | Linear sq. meters | Year | Source |
| Gabrovo | Shayak | 15-20 000 arshin | 10 200-13 600 | ca. 1870? | Цончев |
| Karlovo | Aba | 300 000 lakti | 142 500 | 1826 | Документи, 79-80 |
| Klisura | Aba | 130 000 arshin | 88 400 | ca. 1870? | Косев |
| Koprivshitsa | Shayak | 5 000 topa | 60 000# | ca. 1870? | Златаров |
| Koprivshitsa | Aba goods | 150 000 oka | 192 600 кг. | ca. 1870? | Златаров |
| Koprivshitsa | Aba goods | 250 000 oka | 321 000 кг. | 1870 | Говедаров |
| Kyustendil | Balo & shayak | 22-23 000 arshin | 15 000 | 1887 | Сведения |
| Panagyurishte | Aba | 100 000 arshin | 68 000 | ca. 1870? | Тодоров |
| Panagyurishte | Aba goods | 200 000 gold kuruş |  | ca. 1870? | Влайков |
| Panagyurishte | Balo & shayak | 460-530 000 arshin | 313-360 000 | ca. 1870? | Влайков |
| Panagyurishte | Aba & shayak | 300 000 arshin | 204 000 |  | Икономика |
| Panagyurishte | Shayak |  | 500-600 000 | ca. 1870? | Манев |
| Rhodope | Aba | 1 000 000 arshin | 680 000 | 1832 | Документи, 166 |
| Rhodope | Aba | 140 000 lakti | 66 500 |  |  |
| Rhodope | Aba | 80 000 arshin + 2200 topa | 81 000# | 1829 | Документи, 119 |
| Rhodope\* | Aba | 70-80 000 topa | 847-968 000# | 1835 | Документи, 199, 247 |
| Rhodope\* | Shayak | 60 000 topa = 600 000 arshin | 408 000 | 1887 | Сведения |
| Sliven | Yamurluk | Over 100 000 topa | 600 000# |  | Тabaков |
| Sliven | Aba | 250 000 oka = 650 000 meters | 650 000 | 1857 | Michoff, Contribution, 1950, 338 |
| Sliven | Aba factory | 100 000 topa (1,2 mil. arshin) | 816 000 | 1869 | Михов, Принос, 393 |
| Sliven | Aba |  | over 1 000 000 | ca. 1870? | Русев, 43 |
| Sliven | Aba & shayak | 50-60 000 topa = 1,2 mil. arshin | 816 000 | 1887 | Сведения |
| Sliven & Kotel | Aba | 60-80 000 topa | 360-480 000 | ? | Документи, 187, 201 |
| Sliven & Kotel | Aba | 2 560 000 arshin | 1 740 800 | ca. 1870? | Таскова, 8-9 |
| Kotel | Aba | 120 000 topa | 816 000# | ca. 1870? | Таскова, 34 |
| Kotel | Aba | 20 000 topa | 136 000# | 1830s | Тонев |
| Kotel | Aba & yamurluk | 45 000 topa | 306 000# | n/a | Русев |
| Kotel | Aba & yamurluk | 120-130 000 topa | 816-884 000# | ca. 1870? | Русев |
| Samokov | aba, shayak & gaytan | 400 000 kuruş |  | 1869 | Michoff, *Beiträge*, 309 |
| Samokov | aba, shayak & gaytan | 400 000 kuruş |  | 1870 | Michoff, *Beiträge*, 329 |
| Samokov | Shayak | 100 000 arshin | 68 000 | ca. 1870? | Семерджиев |
| Samokov | Shayak | 2 000 000 arshin | 1 360 000 | ca. 1870? | Манов |
| Samokov | Aba | 50 000 Turkish Lira (ca. 5,25 mil. kuruş) |  | ca. 1870? | Манов |
| Samokov | Shayak | 400 000 arshin | 272 000 | ca. 1870? | Семерджиев |

*Source*: Tsonchev, *Iz stopanskoto minalo na Gabrovo*, pp. 58, 423; Kosev, ‘Danni za ikonomicheskoto razvitie na Klisura‘, p. 138; Govedarov, *Koprivshtitsa*, pp. 67-68; Zlatarov, ‘Koprivshtitsa i Etropole’, p. 3; Taskova, *Traditsionni zanayati v Kotel*, pp. 8-9, 34; *Svedeniya po ikonomicheskoto sastoyanie na Balgaria*, pp. 94, 96; *Dokumenti za balgarskata istoriya*, pp. 79-80, 119, 166, 187, 195, 199-200, 201, 247; Todorov, ‘Za nyakoi promeni v tsehovata organizatsiya’, p. 54; *Ikonomika na Balgaria*, p. 216; Vlaykov, *Belejki varhu Panagyurishte*, pp. 18-20;Manev, ‘Panagyurishte’, pp. 8-11; Tonev, *Kotel*, p. 46.; Manov, *Samokov-Zanayati*, pp. 54, 58, 128; Semerdjiev, *Samokov*, pp. 211, 212; Тabakov, *Opit*, p. 52; Rusev, *Firmi i manifakturi*, pp. 43, 144; Michoff, *Beiträge* (1953), p. 309.

*Notes*:

\* Given in the original source as a state procurement production to Plovdiv and Pazardzhik. However, obviously this was a Rhodope aba.

$ Given as shayak in the original source, however, most probably this was aba.

# Shayak top, plural – topa, (roll of shayak) in Koprivshitsa varies between 20 и 30 lakti equal to 11.8 meters: cf. Pranchov, ‘Koprivshtitsa’, p. 28. Roll (top) of aba (shayak) in the Rhodope are is on average 17.8 arshin equal to 12.1 m. A roll of fulled yamurluk in Sliven is 8.82 arshin equal to 6 m. Tabakov, *Opit*, p. 53. Top (roll) of aba in Kotel is ca. 10 arshin equal to 6.8 m. *Opis na osmanoturski dokumenti*, p. 214.

Apart from the fact that some of the data in the above table seem to be quite exaggerated, in general the data on cloth production on the eve of Liberation are difficult to compare due to varying units of volume and value for the output. Our estimate in linear square meters offers only a very rough estimation. The seemingly arbitrary handling of different cloth types is also apparent in the table. Often, aba, shayak, yamurluk are presented in the regional studies as shayak, which was still in fashion at the time when the regional studies were published but not at the time they pretend to tell us about. We should also remind the probable double counting of some of the output. Lastly, the so called "aba goods" which appear in few places in the table are most likely cut and tailored clothes, and not hand weaved cloth.

Michael Palairet was the only one who estimated in 1983 the Bulgarian textile output in total on the eve of the Liberation (ca. 1870). His figures include both the final production and added value of the total handicraft and factory output of woollens at 1910 constant prices. Moreover, Palairet also reports the output of all key subsectors – cloth (aba, shayak), braids and carpets[[13]](#footnote-13). Without corrections these results were later reproduced in his book, provocatively subtitled ‘Evolution without Development.’[[14]](#footnote-14) Probably due to lack of space, Palairet failed to publish his calculations, or at least the method he has applied.[[15]](#footnote-15) A closer look at both publications can outline only the most general contours of his methodology. Given the breakdowns by major proto-industrial regions, Palairet probably relied heavily on the regional literature (summarized in Table 1.1), supplementing it with a variety of other sources – official Ottoman statistics, consular reports, travellers’ accounts, archives etc. We should certainly underline the impressive depth with which Palairet has managed to embrace the vast literature on the subject, something that was certainly not easy for a historian based abroad. Undoubtedly, to this day his estimations are the best and most serious ones of Bulgaria’s textile proto-industrial output. No wonder, they have been widely used[[16]](#footnote-16) and discussed[[17]](#footnote-17) in the literature. So far, no one has subjected Palairet's data to a thorough revision.

For all its merits, Palaret's estimates bear two serious problems. First, they are most likely based on incompatible and fragmentary evidence gathered decades later, often coloured by the significant regional biases of their authors. Secondly and more importantly, such a reconstruction procedure carries the risk of double-counting of an unknown part of the proto-industrial production. It is not clear, for example, how and where Palairet accounted the Rhodope and Troyan aba cloth, which was later finished (fulled, dyed) and tailored by Klisura, Plovdiv or Samokov artisans. In other words, it seemed that he has not sufficiently taken into account the regional division of labour within the textile proto-industry.

The approach we have taken is fundamentally different. Instead of relying mainly on regional studies, which are probably inflated with nationalist and sentimental motivation, or relying on very uncertain data occasionally given by contemporaries we reconstruct the production chain from the raw material (wool) to the final products (braid, aba, shayak, socks, carpets and blankets). Our method is very similar to that of Dean and Cole for British wool and Pamuk for Turkish cotton goods production.[[18]](#footnote-18)

Bulgarian population data prior to 1878 are extremely uncertain. Even more controversial is the existing information about its ethno-religious composition (Muslims and Christians; Bulgarians, Turks and other ethnic groups) and territorial divisions (Moesia, Thrace, Dobrudja, the Rhodope, Western Bulgaria, etc.). The most reliable assessment belongs to the Russian diplomat Vladimir Teplov,[[19]](#footnote-19) who estimated 3.415 million inhabitants in 1874 within the present day Bulgarian borders.[[20]](#footnote-20) Using the approximate population growth rate given by N. Todorov and Sh. Shterionov, it can be assumed that around 1870, 3,280 million people lived within present day borders, of which 936 thousand were Muslims.[[21]](#footnote-21) Our figures are very close to those suggested by other authors - 3.1 million according to McAvedy and Jones, and 3.178 million according to Shterionov.[[22]](#footnote-22)

The approximate number of sheep in the Danube (in 1867 and 1871)[[23]](#footnote-23), Edirne (in 1870 and 1871)[[24]](#footnote-24) and Salonika vilayets (1870, 1871 and 1874),[[25]](#footnote-25) parts of which falls within todays’ Bulgarian territory, can be drawn from the Ottoman provincial statistical yearbooks (the so-called *Sālnāme*) supplemented with other sources. Although rough, these figures can serve as an indication of the approximate size of the sheep population around 1870. Taking into account the transhumant nature of animal husbandry and the practice of herds spending almost half of the year on winter pastures in Edirne Thrace, the Aegean and Dobrudja, which are now not part of nowadays Bulgaria, we have adopted a more relaxed approach. This should compensate for the practice of hiding some sheep in the official Ottoman census in order to avoid taxes. We thus included 50 percent of the of flocks registered by the *sālnāmes* in the Edirne, Serres and Drama Sandzak and 100 percent of those in Tulcha Sandzak arriving to a total figure of 8.6 million sheep. For a robustness check we compared the national total (sheep from the described parts of the Danube, Edirne, and Salonika vilayets) of 8.6 million sheeps with the livestock censuses undertaken by the Bulgarian state in 1887, 1892, 1900, 1905 and 1910,[[26]](#footnote-26) as well as with the revenues from the sheep tax (beglik), available on an annual basis from 1886 onwards.[[27]](#footnote-27)

A sheep population of 8.6 million heads is almost twice as large as M. Palairet's estimate of 4.7 million animals[[28]](#footnote-28) and most likely defines the upper limit of sheep flocks ca. 1870. In the light of all the information available, it should be noted that the figure given by Palairet seems too modest. In 1886, without Northern Dobrudja and most of the Rhodope area, the beglik statistics reported 6.5 million heads. It should also be borne in mind that, in addition to the needs of the local textile proto-industry and the self-sufficient population, sheep must also provide sufficient wool for the significant exports, which at the time were estimated at one third of total wool output.[[29]](#footnote-29)

The approximate size of the sheep herd is only the first step in the difficult process of estimating the amount of wool available in the country around 1870. As can be assumed, there is no precise information on how much wool an animal could produce on the eve of Liberation. First data on the average fleece weight date from the late 1880s and early 1890s. These, as well as other data are summarized in table 1.2. We noticed significant variations (between 0.5 and 4.7 oka of wool per sheep) depending on the breed and the sex of the animal. Following the established opinion in the literature[[30]](#footnote-30), instead of using a simple average of the 33 observations presented in table 1.2 we apply a yield of 1 oka (1.284 kg.) wool per sheep. Thus, the total wool output ca. 1870 was just over 11 million kg. From this amount we deducted the net export of 3.25 million kg.[[31]](#footnote-31) There are almost no data on imports of wool[[32]](#footnote-32) while most of the exports are directed to France, Austria-Hungary and, to a lesser degree, to Belgium. Most significant quantities (approx. 1-1.2 million kg) were exported from Dobrudja through the Varna, the Constanta, and the Silistra port.[[33]](#footnote-33)

**Table 1.2. Properties of Different sheep breeds**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Bulgarian long-haired sheep (Karnobat) | Bulgarian sheep, average | Merino sheep | English long-haired sheep | English sheep, average |
| Fleece weight, kg. | 2,5-2,7 | \*1,9 | 3-6 | 5,66 | 2,95 |
| Yarn yield per kilo of greasy wool, kg. | \*\*ca. 0,5 | 0,62 | 0,50 | 0,41 | 0,48 |
| Hair length, sm. | 12-18 | n/a | 6-10 | 21-28 | 15 |

*Source*: *About the length of the hair of the Karnobat breed*: Neytchev, *Karnobat*, p. 15; Kovachev, ‘Ovtsevadstvoto v Yujna Dobrudja’, с. 119.; *About the fleece weight (per sheep) in Bulgarian breeds*: average of 33 observations in the literature: Tashev, *Selo Petkovo*, p. 33 (2 observations); Minchev, ‘Iz istoriyata na ovtsevadstvoto v Kazanlashko’, p. 81; Neytchev, *Karnobat*, p. 16 (3 observations); Georgiev, *Zemledelcheskata prozvoditelnost*, pp. 8-9; Savov, ‘Razvitie na ovtsevadsvoto’, pp. 388 и 456 (4 observations).; Nikolchov, ‘Valneno-tekstilnata industriya v Balgaria’, p. 86 (2 observations).; *Balgarski targovski vestnik*, I, No. 22, 24 December 1893, p. 1; *Balgarski targovski vestnik*, ХIХ, No. 123, 10 June 1911, p. 3; *Varnenski targovski vestnik*, V, No. 442, 12 June 1911, p. 2; ‘Dohodno li e ovtsevadstvoto u nas?‘, pp. 11-12 (2 observations); Draganov, ‘Po ovchastrvoto v Dobrujanskiya kray’, pp. 348-351 (4 observations); Dechev, ‘Ovtsevadstvoto v Srednite Rodopi’, pp. 305-306; Simov, ‘Ovcharstvoto v Shopsko’, pp. 135-147 (2 observations); Saranov, ‘Novata’, pp. 2-8; Dichev, ‘Iz balgarskoto zemledelie’, pp. 315-320 (2 observations).; Iliev, *Satro-Zagorskii okrag* p. 67 (4 observations). *About the Merino sheep*: <https://en.wikipedia.org/wiki/Merino#Wool_qualities> (last visited on 3 April 2020); *About the English breeds*: Iredale, ‘Preparation of Wool’, p. 66.

Undoubtedly, the most difficult problem is how to determine the wool used for self-sufficient household production of clothes and other woollen goods (carpets, socks, etc.). Literature consents that it was mainly the Muslims (Turks, Tatars, Circassians, but not Bulgarian Muslims and Roma) and the urban population of the larger cities that purchased ready-made fabrics and other woollen goods from the market.[[34]](#footnote-34) Knowing their approximate number, we could estimate how much of the remaining, mostly rural, population was self-sufficient. If we then multiply the resulting figure by the square meters of cloth used per person per year, we should be able to roughly determine the share of the wool diverted to self-sufficiency.

Using official Ottoman statistics (*sālnāme*), consular reports (published in various volumes of Michoff[[35]](#footnote-35)), Teplov, Shterionov[[36]](#footnote-36) and other sources, we assume that the population within today's borders was 3.28 million people. Our assessment of the size of the Muslim community is a compromise between Teplov and Shterionov (about 28 percent)[[37]](#footnote-37) and K. G. Popov[[38]](#footnote-38), whose data imposed on Teplov's figures for the total population a 26 percent share of non-Christians. Following the instructions in the censuses of 1880 for the Bulgarian Principality and 1887 for a united Northern and Southern Bulgaria, we assume that 93 percent of all Muslims (Turks and Tatars) bought their clothes. After an extremely laborious study of the available regional literature, we were able to gather information about the population living around 1870 in the 56 towns and cities with more than 5,000 inhabitants[[39]](#footnote-39). To avoid duplication, we deducted the urban Turkish and Tatar population, which, based on later censuses, we presumed to be approximately 28 percent of all Turks and Tatars. To sum up, approximately 1.17 million people bought woollens from the market while another 2.07 million had been self-sufficient with clothes.

Unfortunately, it turns out that we know almost nothing about the approximate size of the traditional Bulgarian costume. Information in ethnographic literature is surprisingly scarce and contradictory. According to N. Todorov[[40]](#footnote-40), at most two costumes could be made from one roll of cloth (14 to 15 arshins). This makes about 1.7 square meters per costume. When add up, the data of V. Dechev[[41]](#footnote-41) show a significantly larger size of 4.6 sq. m. per costume which he considers to have been used for "one or at most two years". "One set of clothes" for K. Kanev is 2.3 sq. m.[[42]](#footnote-42), and for T. Mareva – 2.5 sq. m.[[43]](#footnote-43) These discrepancies are significant and are most likely due to the inclusion of different numbers and types of clothing, rather than some regional peculiarities.

Regrettably, the information in the literature is too imprcise and contradictory. Instead, to estimate the the average annual consumption of cloth per person we resorted to a procedure, which could be called "experimental ethnography". Nine museums from most of the former textile regions of Bulgaria kindly responded to our request to measure and weigh different traditional clothes.[[44]](#footnote-44) As far as possible, garments produced in the second half of the nineteenth century were selected in this experiment. In such a way we were able to get a relatively accurate idea of ​​the size of each attire and of the average weight of the pair of socks. Needless to say, the square footage of the cloth in one set of garments depends on the measurements (the height and the weight) of the person. With more observations at hand, however, these variations are likely to balance each other out.

Based on 37 observations for women's and 34 for men's clothing from across the country, the average square footage of a suit is 5.4 square meters. The men’s costume includes poturi (trousers), antheria also known as mente, kaplama of aba (jacket-like outer garment), poyas (belt), navushta (footcloth) and vest – all together with an average footage of 5.2 sq. m.[[45]](#footnote-45) Women's costume with an average of 4.9 square meters, had three regional varieties: the apron, the sukman (dress) and the saena for which reason the round-up was made not by clothes (sukman, fusta (skirt, karlyanka), apron, vest, saltamarka (kyurkche) and poyas), but by regional types. When determining the square footage of the suit for both sexes, we have provided 10 percent loss of cloth during its cutting, i.e. we increased the above two figures by 1/10 to get the national annual consumption of 5.4 sq. m. per person.[[46]](#footnote-46)

**Table 1.3 Experimental Ethnography on Men’s and Women’s Costume**

|  |  |  |
| --- | --- | --- |
| Garment | Footage, sq. m. | Source |
| *Men’s Costume* |  |  |
| yamurluk | 3.92 | REM-Plovdiv |
| yamurluk | 2.70 | RIM-Sliven |
| yamurluk | 2.10 | RIM-Ruse |
| yamurluk | 2.37 | REM-V.Tarnovo |
| *yamurluk* | *2.77* | *Average* |
|  |  |  |
| anteriya | 1.16 | RIM-St. Zagora |
| mente | 1.26 | EMIEF-BAS |
| anteriya | 0.93 | RIM-Smolyan |
| anteriya | 0.67 | RIM-Smolyan |
| anteriya | 1.70 | RIM-Sliven |
| kaplama | 1.39 | RIM-Sliven |
| anteriya | 1.11 | RIM-Sliven |
| anteriya | 1.75 | RIM-V. Tarnovo |
| aba | 0.91 | RIM-V. Tarnovo |
| anteriya | 1.16 | REM-V. St. Zagora |
| *jacket-like outer garment* | *1.21* | *Average* |
|  |  |  |
| poturi | 1.20 | REM-V. St. Zagora |
| poturi | 1.31 | REM-V. St. Zagora |
| poturi | 1.22 | REM-V. St. Zagora |
| poturi | 0.98 | RIM-Smolyan |
| poturi | 1.21 | RIM-Smolyan |
| cheshiri | 0.82 | EMIEF-BAS |
| poturi | 2.76 | RIM-Smolyan |
| poturi | 1.66 | RIM-Ruse |
| poturi | 1.18 | RIM-V. Tarnovo |
| *trousers* | *1.44* | *Average* |
|  |  |  |
| elek | 0.49 | RIM-St. Zagora |
| elek | 0.62 | RIM-Smolyan |
| elek | 0.56 | RIM-Smolyan |
| *vest* | *0.56* | *Average* |
|  |  |  |
| poyas | 1.55 | RIM-St. Zagora |
| poyas | 0.74 | EMIEF-BAS |
| poyas | 1.17 | RIM-Sliven |
| poyas | 1.14 | RIM-Smolyan |
| poyas | 0.96 | RIM-Smolyan |
| poyas | 1.20 | RIM-V. Tarnovo |
| *belt* | *1.13* | *Average* |
|  |  |  |
| navushta | 1.12 | RIM-St. Zagora |
| navushta | 0.30 | RIM-Smolyan |
| navushta | 0.64 | RIM-Sliven |
| footcloth | 0.69 | *average* |
|  |  |  |
| *Women’s Costume* |  |  |
| sukman | 1.99 | RIM-St. Zagora |
| sukman | 1.52 | RIM-St. Zagora |
| sukman | 2.05 | RIM-St. Zagora |
| sukman | 1.50 | EMIEF-BAS |
| sukman | 3.06 | RIM-Smolyan |
| sukman | 1.98 | RIM-Sliven |
| sukman | 1.32 | RIM-Sliven |
| sukman | 1.20 | RIM-V. Tarnovo |
| *sukman dress* | *1.83* | *Average* |
|  |  |  |
| fusta | 3.60 | RIM-V. Tarnovo |
| karlyanka | 2.71 | RIM-Ruse |
| peshtemal | 3.75 | RIM-Ruse |
| *dress* | *3.35* | *Average* |
|  |  |  |
| prestilka | 0.32 | EMIEF-BAS |
| prestilka | 0.61 | RIM-Ruse |
| prestilka | 0.30 | RIM-V. Tarnovo |
| *apron* | *0.41* | *Average* |
|  |  |  |
| elek | 0.64 | RIM-Sliven |
| elek | 0.60 | RIM-Sliven |
| elek | 0.60 | RIM-Sliven |
| elek | 0.96 | RIM-Sliven |
| elek | 0.49 | RIM-V. Tarnovo |
| elek | 0.41 | RIM-V. Tarnovo |
| *vest* | *0.62* | *Average* |
|  |  |  |
| saltamarka | 0.71 | RIM-Smolyan |
| kyurkche | 1.21 | RIM-Sliven |
| *jacket-like outer garment* | *0.96* | *Average* |
|  |  |  |
| poyas | 0.98 | REM-Plovdiv |
| poyas | 0.98 | REM-Plovdiv |
| poyas | 1.02 | RIM-Smolyan |
| *belt* | *0.99* | *Average* |
|  |  |  |
| Average men’s costume by clothes, incl. 10% loss in cutting | | |
| Men’s Costume | *5.52* |  |
|  | | |
| Average women’s costume by clothes, incl. 10% loss in cutting | | |
| Sukman type | *4.89* |  |
| Apron type | *5.93* |  |
|  |  |  |
| Average women’s costume by museums (regions), incl. 10% loss in cutting | | |
| Ruse | 4.27 |  |
| V. Tarnovo | 6.22 |  |
| Sliven | 3.95 |  |
| Smolyan | 5.32 |  |
| St. Zagora | 2.06 |  |
| Avrage by towns | *4.36* |  |
| Average Women’s Costume | *5.06* |  |
|  |  |  |
| Average Men’s and Women’s Costume | *5.92* |  |

*Source*: Cf. the text.

Durability of clothes is the last unknown parameter in the equation for calculating the level of self-sufficiency with wool. It has already been said that according to V. Dechev the clothes were worn out in "one or at most two years". Petar Tsonchev, the Plovdiv Commercial-Industrial Chamber’s Report for 1895-1896[[47]](#footnote-47), and V. Kanchov in a letter from Constantinople[[48]](#footnote-48) also point to two years of durability. Instead, B. Primovski gives a much longer period of "3-4-5 years".[[49]](#footnote-49) Obviously, none of these assessments is based on systematic research. Thanks to two French researchers who studied a Bulgarian family from Samokov in 1848, we know that clothing was changed approximately every second year (at 1.89 years).[[50]](#footnote-50) About 60 years later, a survey of ten households in the village of Kasilak painted a bleak picture of a significant increase in duration of garments’ usage, jumping from 1.89 to 4.29 years.[[51]](#footnote-51) With this information we are now able to determine all the variables (the number of self-sufficient population, the size of the costume and its durability), necessary to estimate the degree of self-sufficiency with wool.

For a robustness check we used two alternative methods for verification of our measurements of self-sufficiency with wool. Both of them have been proposed by the long-serving director of Bulgarian statistics Kiril G. Popov and were published in his well-known "Economic Bulgaria" book[[52]](#footnote-52). The first of these methods multiplies the number of self-sufficient households by the average amount of wool that each of them processes for personal needs. Unfortunately, we have only indirect information about the size of families prior 1878. According to Sh. Shterionov[[53]](#footnote-53), immediately before the Liberation, the average family consisted of an average of 5 people, just as much as the "Barkan’s multiplier", widely used in the demographic literature of the Ottoman Empire.[[54]](#footnote-54) Applying it to the already established number of nearly 2 million people who meet their own clothing needs, we reach the approximate figure of 415-416 thousand self-sufficient households. The only information for the amount of wool that was processed annually are from much later times. The already mentioned 1906 study of the village of Kasilak found that ten surveyed households used on average 26 kg of wool per year for their own clothing. It is almost impossible to say how representative these data are for the time 3-4 decades earlier. Moreover, if we assume a constant amount of wool in 1870 and 1906, we would actually predetermine the final result. A first calculation gave an unbelievable figure of a 108 percent share of self-sufficiency ca. 1870.

The second method proposed by Popov and later used by Asen Chakalov in his calculations of national income[[55]](#footnote-55), is based on the average time that a household (whose size we have already established above) spend annually for production of own garments. The only information available is again from Kasilak, which indicates 103 working days.[[56]](#footnote-56) How representative it is for ca. 1870 is debatable. Our first calculations, however, returned a reassuring match with our initial results based on the Muslims and the urban population. In all the years after studied here (1886, 1896, 1900, 1904, 1909, 1911 and 1912) the calculations by these two methods (the Muslims plus urban population and the time spend for self-sufficiency) practically overlapped with a difference of about 1/3 only for 1870.[[57]](#footnote-57)

The above-mentioned survey of Kasilak offers another, third robustness check of our estimates of self-sufficiency in wool. Its careful study reveals that only families with owned less than six sheep bought clothes because they had not enough wool. Needless to say, this only applies to the Christian population, while the Turks dressed mainly from the market. All our attempts to collect data on the number of households with up to five sheep from the animal censuses[[58]](#footnote-58) unfortunately returned suspiciously low results and had to be abandoned.

In conclusion, the results obtained by the method originally proposed here for assessing wool self-sufficiency (Muslims plus urban population) are largely confirmed by the second method of K. G. Popov (time spent for the production of own garments) and seem to be significantly more convincing than the previously proposed assessments of M. Palairet.[[59]](#footnote-59) The latter seem far too low for the Ottoman period and it is difficult to imagine, as Palairet claims, that self-sufficiency has increased fivefold in just over a decade (from the late 1860s to the early 1880s).

After deducting net exports and the raw material used for self-sufficiency from the total amount of wool, we distributed the residual wool among the various woollens produced by Bulgarian proto-industry – braids, carpets, socks, blankets, aba and shayak. As early as the beginning of the nineteenth century, hand-knitting of braid was completely mechanized. The approximate number of water-powered knitting machines (charks), as well as their average productivity, are well documented in the literature[[60]](#footnote-60), which allows us to obtain a fairly accurate estimate of the volume of production and the wool required for this purpose. It should be noted, however, that the figures of Ivan Sakazov about the number charks seem greatly exaggerated. To correct them we have collected more precise data which is presented table 1.4. We should only note that our figure of 6,000 charks is also confirmed by M. Palairet, S. P. Staneff and partly - by Zanetov.[[61]](#footnote-61)

Although well documented, the number of braiding machines varies widely. For example, for Gabrovo the estimates are between 750 and 1,000 charks[[62]](#footnote-62), for Karlovo - between 1,000 and 2,000[[63]](#footnote-63), for Kalofer - from 700 to 1,200[[64]](#footnote-64), for Sopot - 700 to 900[[65]](#footnote-65), for Samokov - 350 to 600[[66]](#footnote-66), for Pirdop - 650 to 800[[67]](#footnote-67) and 170 in Kazanlak.[[68]](#footnote-68) The unweighted average of the lower and upper bounds of these estimates is 5,500 knitting machines. In addition to these main centres, the literature mentions mechanical braiding in several other places such as Tatar Pazardzhik[[69]](#footnote-69) (now Pazardzhik), Sliven, Tarnovo, Elena and Tryavna[[70]](#footnote-70). To account for production in these smaller production locations we have increased the total to 6,000 charks ca. 1870.

After carefully studying all available sources, we collected 43 observations of braid prices from the period between the early 1830s and 1877, 27 of which from around 1870. The unweighted average braid price for the years around 1870 is 5.60 Levs per kg., which is significantly lower than the one indicated by Staneff[[71]](#footnote-71) (9 Levs/kg) and slightly below that given by Palairet (6.79 Levs/kg).[[72]](#footnote-72) These differences explain about one quarter of the discrepancy between our results for the braiding production on the eve of the Liberation and those of Palairet. Instead of using varying prices for different locations, which probably did both Palairet and Staneff, we used all price observations from different settlements and years to form an average national Gaytan price.

Unlike braiding, we know very little about the production of kebe (also known as kopa, yambolia, kitenik, vlasat guber, or kozyak). To this day kebes’ exact purpose is debatable. According to Peyssonel in 1787[[73]](#footnote-73) and Hochstetter from 1869[[74]](#footnote-74), these are "woollen blankets" bearing the name of the town of Yambol near Sliven. Citing a Russian study from the 1830s, however, N. Todorov points out that the kebe is a carpet with an almost square shape (0.9 x 1.15 m).[[75]](#footnote-75) A recent study found out that the kebe is a "short woollen cloak for the needs of the army", but since the sixteenth century "it is probable… that the meaning of the Yambol kebe changed, and is already identified with a type of woollen blanket still used for the army, but also among civilians as well."[[76]](#footnote-76) It is also known that the kitenik has a face of long hips (vlasi) and is exported to Crimea, Georgia, Persia and Arabia.[[77]](#footnote-77) Quantitative information on production is quite fragmented. At the end of the eighteenth century there are reports of export of 13-15 thousand blankets to the North Black Sea coast and the Caucasus.[[78]](#footnote-78) In the nineteenth century, it seems, the center of production shifted from Yambol to Kotel and Sliven and decreased in volume to 4-5 thousand units.[[79]](#footnote-79) In the absence of more complete information on prices and volumes produced, here we apply Hochstetter's estimate for an annual production of 100,000 Austrian florins, approximately equal to 220,000 Levs.[[80]](#footnote-80) To include the production of other smaller centres such as Karlovo, Sopot, Dryanovo, Gabrovo, etc.[[81]](#footnote-81) we increase this figure by 250,000 Leva. The information about the wool processed in kebes is taken from Poyet (60 thousand kg)[[82]](#footnote-82), which we increase to 70,000 kg to account for smaller output localities.

In the Bulgarian lands carpets have been made at least since the late Middle Ages. During the eighteenth and nineteenth centuries, the regions of Chiprovtsi-Berkovitsa, Kotel-Sliven and Pirdop-Zlatitsa were established as the main output centres.[[83]](#footnote-83) Information about weaving rugs and carpets, on a much more limited scale, is also available for Elena, Gabrovo, Tarnovo, Kazanlak, Kalofer, Vratsa, Samokov, St. Zagora, Kula, Haskovo, Shumen etc.[[84]](#footnote-84) The technology of making and decorating the traditional Bulgarian carpets is well documented in the literature. Unfortunately, however, we know close to nothing about the quantitative aspects of production. Several consular reports, reproduced in the volumes of N. Michoff, fragmentally present the output in quantitative terms.[[85]](#footnote-85) In 1858, for example, 2,750-3,750 pieces were sold at the two largest market fairs in Bulgarian lands - Uzundzhovo and Eski Djumaya (now Targovishte). Almost ten years later, in 1870, sales at the Uzundzhovo Fair alone reached about 3,500 Berkovitsa, Chiprovtsi and Haskovo carpets worth 700,000 kuruş (about 155,000 levs). The following year, carpets worth of 20,000 kuruş (4,400 Levs) were placed at the Seres Fair. The last available information shows that in 1867 mats for 200,000 kuruş (about 45 thousand Levs) were exported from the Plovdiv Sandjk. The above data are extremely insufficient for a direct calculation of the carpet production around 1870. Instead, we had to resort to the cited information about the sales in 1870 at the Uzundzhovo Fair which was worth 700,000 kuruş.[[86]](#footnote-86) To take into account the production of other carpet centres we round up the total carpet output to 1 million kuruş (approx. 222,000 Levs).

In order to get even a rough idea of ​​carpet output around 1870, we also need information about the prices and weight per piece or per square metrte.[[87]](#footnote-87) With the help of 24 observations of "experimental ethnography" we found out an average weight 0.9 kg per square meter. This ratio is fully confirmed by combining the instructions of St. Hristov[[88]](#footnote-88), for the amount of wool used for one batal type of Chiprovtsi carpet[[89]](#footnote-89) (12 oka) with that of Manolov[[90]](#footnote-90) for its surface, In such a way we reach an average weight of 0.89 kg per sq. m. The available information on carpet prices is very fragmentary. We have only a few quotations form the early 1830s[[91]](#footnote-91) and one from 1863.[[92]](#footnote-92) Even these are not easily comparable, because some of them are prices per piece while others - per linear arshin. Instead, we had to use wool price fluctuations between 1870 and 1900 as an indication of carpet price based on the fact that daily wage of carpet-makers hardly changed over time.[[93]](#footnote-93). In such an indirect way we were able to connect pre and post-Liberation carpet prices.

The least is known for the pre-1878 output of socks and other knitwear (e.g. terlitsi, gloves, mittens, etc.). Fragmentary data points to Koprivshtitsa[[94]](#footnote-94), Pirdop[[95]](#footnote-95), the village of Dermendere near Plovdiv[[96]](#footnote-96), Peshtera[[97]](#footnote-97) as the main production centres of socks. The only quantitative indication comes from the yearbook of the Edirne vilayet for 1871, which accounted for 900,000 pairs of socks made in 1870. This number, however, seems too large, against the background of the information from Govedarov and Oslekov[[98]](#footnote-98) for only 20,000 dozens (about 240,000 pairs) annual output in the largest production centre (Koprivshtitsa). Instead of using the clearly inflated sālnāme data we made a bold assumption of marketed output of 300,000 pairs.[[99]](#footnote-99) Using the indications from "experimental ethnography" about the weight (average 0.217 kg per pair) and from Madjarov for their price[[100]](#footnote-100) we produced a rough guestimate of the socks output around 1870. In his assessments, M. Palaret fails to value the production of hosiery and carpet weaving, which lowers its final result by at least 5%.

So far, we have approximated the market consumption of wool around 1870 (total production, reduced by the net export and the wool used for self-sufficiency of the rural population). Based on more (braids) or less (kebes, carpets, socks) solid data, we then calculated what part of the marketed wool was processed into any of these four commodities. All residual wool is diverted to manual or factory production of cloth. From the literature it is apparent that since the late 1860s and early 1870s the aba coarse cloth went out of fashion and more and more people turned their preference to the relatively thinner shayak. For the distribution between the two cloth-types in ca. 1870, we use the ratios reported in the 1871 Edirne Sālnāme[[101]](#footnote-101) – 85 percent share for the hand-made aba and 15 percent for the manually produced shayak. If we also add the factory production, which in the absence of more precise information we assume to be entirely of shayak, then the ratio between the two fabrics becomes 68:32 in favour of the aba, close to that pretended by M. Palairet (63 : 37).[[102]](#footnote-102)

To calculate the amount of handmade coarse cloth (aba and yamurluk) we used the information obtained from "experimental ethnography" about its weight. Seventeen observations from all over the country show that the aba usually weighs 0.95 kg per square meter while the yamurluk was 1.16 kg. The reason for combining these two coarse woollens is the lack of sufficient data for calculation of yamurluk production. The 77 individual prices collected (after the review of a huge amount of literature) (24 for aba and 53 for yamurluk) show an average value of 3.81 Levs per sq. m. of cloth.

Palairet[[103]](#footnote-103) rightfully points out that before Liberation shayak was mainly used by the urban elite and until 1878 it had only a limited market throughout the Ottoman Empire and its neighbouring countries. Unlike the aba, the output of which was concentrated in the Rhodope area and the Sliven region, the hand-made shayak was produced on the southern and northern slopes of Balkan Mountains range (Panagyurishte, Kotel, Gabrovo, Tarnovo, Elena, Troyan), as well as in the west (Samokov and Kyustendil). Such a widespread production prevented shayak from standardization in thickness and weight. Sixteen observations from "experimental ethnography" show at least two types of shayak. One, popular mainly in Danube Bulgaria (museums in Ruse and Etara), but also one of the Sliven specimens are 0.37 kg/sq. m. With its 0.93 kg/sq. m, the cloth made in the Rhodope, Sofia and Thracian lowlands was almost identical to the coarse aba. We can assume that the stronger foreign influence in Northern Bulgaria[[104]](#footnote-104) probably had an impact on local preferences for finer and lighter fabrics.[[105]](#footnote-105) In summary, all available data from "experimental ethnography" show 0.79 kg/sq. m. for shayak, almost twice the weight assumed by M. Palaret (0.34 kg).[[106]](#footnote-106)

After mid-1830s, a very small part of the cloth had been produced in a handful of factories equipped with European machinery. Until the Liberation, at least six factories with mechanized weaving looms were built, four of which - before 1870: the Sliven State Factory, Gümüşgerdan works in the village of Dermendere, the Bali Effendi State Factory (in the outskirts of Sofia) and the second and smaller Sliven mill belonging to the Hadjimanolovs brothers. After summarizing all available quantitative information in combination with the guidelines on the number of looms and workers, we estimated an industrial output of approximately 115,000 square meters of fabric.[[107]](#footnote-107) Needless to say this estimate is rough and is based mainly on the information by Kanitz about the 1872 production of the Sliven State Mill[[108]](#footnote-108) and by Hochstetter for the Gümüşgerdan factory in 1868.[[109]](#footnote-109) We made a bold estimate for the remaining two industrial ventures (approx. 15 thousand square meters). Applying the ratio of 1 kg of greasy wool equal to 0.618 kg of yarn and allowing 5 percent loss of wool during weaving we could roughly determine the consumption of wool for cloth given that the average weight of the fabric was 0.8 kg per sq. m.

Finally, a few words suffice to say about the prices and the different currencies in which they were quoted. After a painstaking research, we constructed a database with 134 prices of different woollens - handmade and factory aba and shayak, gaytan, carpets, socks, kebe etc. for the period from about 1780 to 1877 (128 of which for the years around 1870), and 163 prices of greasy wool and wool yarn (51 from about 1870). Ottoman prices, usually given in kuruş (or para[[110]](#footnote-110)), were then converted into Bulgarian Levs (equal to the French franc[[111]](#footnote-111)), using the annual exchange rates between the kuruş and the franc, that we have meticulously collected from consular reports and other sources and then compared with the exchange rate between the two currencies prevailing in Constantinople.[[112]](#footnote-112)

**Thus we obtained an estimate for the production of the wool textile industry around 1870 of 16.4 million Leva (at constant 1911 prices). Then we added the production of the non-wool textile subsectors (processing cotton, linen, hemp and silk) which amounted to approximately 0.47 million Levs, plus fulling and dying (1.776 million Leva). All in all Bulgarian textile output ca. 1870 equalled to 18.646 million Levs at 1911 prices.**

S. Yaneva is quite right to insist that in the 1850s and 1860s silkworm breeding was one of the most dynamic proto-industrial sectors in Ottoman Bulgaria.[[113]](#footnote-113) Summarizing the rather rich information provided by foreign consular reports and by Bulgarian historiography[[114]](#footnote-114), we can assume a production of little over 1.325 million kg of raw cocoons in the late 1850s and early 1860s and only 420 thousand kg in the next crisis-driven decade. This drastic reduction to one third of the initial level between 1860 and 1870 is based mainly on the information published by N. Michoff about Lovech (from 50,000 in 1865 to 15,000 oka in 1876[[115]](#footnote-115)), as well as on the data of K. Kosev for the reduction of the reeled silk from the Tarnovo Factory of St. Karagiozov (from 2,000 kg in 1862 to 700 kg in 1871).[[116]](#footnote-116) It seems that in the south (Edirne and inland Thrace the collapse was milder (about one halve), as can be seen from a French trade report (from about 400 to about 200 thousand oka).[[117]](#footnote-117) Due to the lower relative weight of the region in the national silk output (between a quarter and a third) to calculate the total decrease we applied Michoff’s and Kosev’s information of a reduction to one third of the initial level. Such a reduction is stronger than what D. Quataert testified about the Asia Minor provinces and especially about the region around Bursa which could be contributed probably to climatic and other reasons.[[118]](#footnote-118)

After the arrival of Italian and French cocoon agents immediately after the Crimean War, the industry quickly transformed from the production of raw silk, exported mainly through Constantinople, to the export of dried cocoons and silk-worm eggs. What remained from the harvest was used as raw material by the four silk factories - the two larger ones in Tarnovo (of Doino Vicenti and Stefan Karagiozov) with a branch in Gabrovo and the second one in St. Zagora by Jean-Baptiste Bonal, as well as by the two smaller mills – owned by Stefan Sarafidi in Tarnovo and by Salomon Sapitay in Sofia. There are several smaller establishments (hadzzi Nikoli in Tarnovo, 229 installations in Gabrovo, etc.), but no quantitative information about them has survived. Undoubtedly, they were rather small with insignificant volumes of output against the background of the Kalragiozov’s and Bonal’s factories.

F. Kanitz, who visited Karagiozov's enterprise in 1871, claims that it annually processed 20,000 kg of cocoons.[[119]](#footnote-119) In the literature, the output ratio between cocoons and silk varies in a wide range - from 3.5:1 to 18:1 depending on the cocoons race, the technology used or the local characteristics. The average ratio of the available 13 observations is 9.7, which is why we assumed that 1 kg of raw silk could be made out of 10 kg of fresh cocoons.[[120]](#footnote-120) Thus, the production of Karagiozov in the early 1870s hardly exceeded 2,000 - 2,500 kg. After the appearance of the perbina silk-worm disease the production of the French factory in Stara Zagora also dropped from 1,800 kg to 900-1,000 kg.[[121]](#footnote-121) The scale of Salomon Sapitay's silk establishment in Sofia seems to be similar. If Kanitz is to be trusted, applying a much more primitive technology, it processed, the entire cocoon harvest in Vratsa kaza[[122]](#footnote-122) (approx. 10,000 kg[[123]](#footnote-123)) and therefore produced about 1,000 kg of reeled silk. All we know about the St. Sarafidi’s mill that was opened in 1868 is that it was "much smaller" than the Karagiozov's factory and it was driven by hand[[124]](#footnote-124). We estimate that the Sarafidi mill produced approximately 500 kg of silk per annum, equal to the output of the remaining small establishment in Tarnovo and Gabrovo.[[125]](#footnote-125) Given their outdated equipment, we envisaged a consumption of 10 to 12 kg of cocoons per kilo of silk.

The total factory production of reeled silk ca. 1870 can be estimated at about 6,000 kg, equal to the size of the exports recorded in the consular reports.[[126]](#footnote-126) We also estimated that not more than 900-1,000 kg of reeled silk were produced by the cottage industry. At the prevailing price of 315.08 kuruş per oka (54.05 Levs/kg)[[127]](#footnote-127) the entire silk industry produced less than 2 percent of the total textile output on the eve of the Liberation.

In the 1870s, the production of cotton textiles was already in a deep crisis. With the exception of the Pirdop towels, the Karlovo and Sopot printed head-kerchiefs (yazmi)[[128]](#footnote-128) and the surviving here and there in the urban artisan shops in Sofia, Kazanlak, Pleven, etc.[[129]](#footnote-129) most artisans have long since replaced cotton handicrafts with braiding or tailoring. The only attempt to open a large factory in Plovdiv by the journalist and writer Ivan Bogorov spectacularly failed.[[130]](#footnote-130) The deep recession of cotton handicrafts led to a gap in the literature, which mentions cotton processing only in passing, almost without giving any quantitative information. The only possibility for a rough approximation of cotton textiles is to combine the somewhat richer information about the post-Liberation period with the number and relative weight of the production centres prior 1878. The same technique was also applied to the hemp handicrafts (rope- and sack-making, mutafchiystvo, etc.). The reconstruction procedure will be described in more detail in the next chapter of this on-line appendix, as well as the way in which the assessment of dying, fulling and tailoring has been prepared.

**Summarizing all the indirectly or directly reconstructed estimates presented so far, it is evident that on the eve of the Liberation the total production of the Bulgarian textile industry reached a total of 18.647 million Lev at constant 1911 prices and represents 16 percent of the value added of the secondary sector and 2.3 percent of the total GDP around 1870.** Despite the significant difference in the calculation methods used, our results for the wool textile output of 16.4 million Levs at 1911 prices are reassuringly close to Palaret's estimate of 16.27 million Levs at 1910 prices (about 16.9 million Levs at 1911 prices). It should, however, be borne in mind, however, that Palairet figures omits the production of carpets and kebes, which according to my above data are just under 0.5 million.

Our estimate for Bulgarian textile industry output around 1870 could be slightly too high because we have defined the upper-bound limit of production to test whether the reindustrialization hypothesis for the period 1902-1912 still holds. For example, we made a fairly generous estimates of the available wool (the number of sheep), the daily output of the charks (1 oka) and the volume of reeled silk. At the same time, the level of self-sufficiency in wool is probably underestimated by one tenth, which also increase the total output of the commercial textile sector. The assessment of kebe production also seems somewhat underestimated, but they have a tiny share in the textile industry (1.1 percent). More significant seemed to be the effect of lumping together the making of aba and yamurluk. The latter is about 20 percent heavier and fifteen percent more expensive than the more commonly used aba. All in all, our additional checks revealed that these overestimations and underestimations are largely balanced and their total effect is a maximum of 5 percent overestimation of the output of the Bulgarian textile industry around 1870.

## The Post-Ottoman Textile Production, 1878-1912

The post-Liberation estimates follow closely the methodology already described above. For the period after 1878 (and especially for the years from 1900 onwards) we possess better information in both quantitative and qualitative terms, which was centrally collected by the national statistics, following the established international practice. All publication series by the General Directorate of Statistics (GDS) contain invaluable data on population, prices, trade and (for many of the years studied here) the volume of factory production. Naturally, the industrial surveys of 1904, 1909, 1911 and 1912, as well as the expert assessments for 1896[[131]](#footnote-131) and 1900[[132]](#footnote-132) published in the specialized press, predetermined the selection of the seven cross-sections, presented in Table 1.5 (and Table A.8.a-e). The choice of 1886 was driven by the availability of price and foreign trade data at the national level.

Despite their much more solid statistical foundations, the calculations given in Table 1.5 for the years after 1878 still remain approximate rather than precise measurements of textile production, outlining mainly general trends. However, in the light of the qualitative and quantitative data available, the possible errors seems small and the only question that still remains perhaps controversial is whether, by 1909, the textile sector exceeded its 1870 level and by how much.

Population data and its breakdowns along religious and local (urban/rural) lines is taken from official censuses in 1881/1884, 1887, 1892, 1900, 1905, and 1910. Approximately seven percent of the nowadays Bulgarian territory and about eight percent of the population are not included in the borders defined by the Berlin Congress of 1879 and revised after the Unification of North and South Bulgaria in 1885. A large part of the Rhodope, Pirin Macedonia (now Blagoevgrad region) and the southernmost parts of today's Haskovo, Yambol and Burgas regions remain outside the pre-WW I Bulgarian borders. In order to adapt population data to the present day territory the official censuses results are increased by 8 percent.[[133]](#footnote-133) The number of sheep is taken from the livestock censuses, supplemented by data on sheep tax (beglik) published in the specialized literature.[[134]](#footnote-134) The results obtained in this way were increased by about 7 percent[[135]](#footnote-135) and rounded off in order to take into account the animal population in the territories not included in the Bulgarian borders.

Official GDS publications are also used for prices, exchange rates, exports (raw wool, woollens, etc.) and imports (wool, yarn, machinery, etc.). For earlier years (1886 and partly for 1896 and 1900) the price information was supplemented with personally collected data from contemporary publications, daily press and archives.[[136]](#footnote-136) When possible, the wool price is a weighted average of imports and domestic prices prevailing in the market. This was done in order to account for the growing share of foreign yarn and wool in the factory textile production. Almost 60 observations on the gaytan price, an item not covered by national statistics, were collected from the press (newspapers Maritza, Targovski Far, etc.)[[137]](#footnote-137), contemporary publications[[138]](#footnote-138) and the archives of the Alexander factory. In several cases (socks, carpets, reeled silk) where only the export price was available, we used its ratio to random observations of domestic market prices in order to bridge the gap in the information.

Determining even the approximate level of self-sufficiency in textiles of the rural population is the most difficult task of this study. Its result can only be very general and indicative in nature. We follow closely the methodology described in detail in the previous sub-chapter of this on-line appendix, which is based on the share of the Turkish and urban population in settlements with more than 5,000 inhabitants and data from "experimental ethnography" for the size of traditional costumes. To double-check our result, we used the time spent by adult women (between 15 and 60 years) to produce clothes for their families. It has already been mentioned that the two alternative calculations showed practically identical results, with an insignificant difference of only 3.52 percent. The self-sufficiency in wool established here varies between 80 percent in the mid-1880s, 75 percent in the 1890s, and about 65 percent in the first decade of the twentieth century as compared with just over 50 percent in 1870. These values ​​are almost identical with earlier estimates in the literature – 66 percent according to Iv. Saranov and 80-88 percent according to G. Staynov.[[139]](#footnote-139) In general, our assessments are similar to Palairet, who, however, offered unconvincingly low levels of self-sufficiency for the Ottoman period.

Determining the wool processed in factories proved to be unexpectedly complex. Almost all industrial surveys (except the one from 1909) publish only data on the value of raw materials without specifying the costs of wool, lubricants, dyes, chemicals, etc. To deal with the problem, we applied the information for 1909 which indicate that wool represented approximately 95 percent of the value of all industrial raw materials. We then converted the value of wool into kilograms using the official prices for the respective years (1904, 1911 and 1912). To verify the 1904 results we compared them with the annual factory output (in sq. m. of fabric) of each of the factories personally collected or estimated for this study. Reassuringly, the figures of wool consumption ​​calculated in both ways almost coincided with only a 3 percent difference. The same approach was then used to assess the greasy wool processed by the mechanized industry in 1886, 1896 and 1900. For verification for 1896 we used the data by Y. Chakalov[[140]](#footnote-140), which were only 2 percent higher than ours.

The sub-sectoral assessments for the production of gaytan, carpets, socks, aba and shayak require some further explanation. According to one of the influential business dailies: "Gaitandjilak is the vanguard of the woollen industry."[[141]](#footnote-141) Therefore, its production is relatively well documented. The majority of authors assume that on average a chark produces 1 oka of braid[[142]](#footnote-142) and works 200 calendar days a year.[[143]](#footnote-143) Having the number of charks and the price of the braid, we are able to get a fairly accurate idea of ​​annual production. In order to determine the number of charks, we carefully studied all the contemporary literature and present day historiography. A comparison of our totals for 1896 with contemporary publications shows a complete coincidence. [[144]](#footnote-144)

**Table 1.4. Number of Charks, 1870-1912**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1870 | 1886 | 1896 | 1900 | 1904 | 1909 | 1911 | 1912 |
| Gabrovo | 875 | 627 | 600 | *700* | 800 | *800* | *800* | *800* |
| Karlovo | 1 500 | 300 | 350 | *400* | 466 | *470* | *470* | *470* |
| Kalofer | 950 | *200* | *160* | *100* | 80 | *80* | *80* | *80* |
| Sopot | 800 | 150 | *150* | *50* | 23 | *20* | *20* | *20* |
| Kazanlak | 170 | 70 | *65* | *65* | 63 | *60* | *60* | *60* |
| Samokov | 475 | *50* | 0 |  |  |  |  |  |
| Pirdop | 725 | *150* | 60 | *25* | 13 | 0 |  |  |
| Other towns | 505 | *33* | *5* | *5* | *5* | 0 |  |  |
| Total | 6 000 | 1 580 | 1 390 | 1 345 | 1 450 | 1 430 | 1 430 | 1 430 |

Source: *Gabrovo*: Gabenski and Gabenski, *Istoriya na grada Gabrovo*, p. 44; Sakazov, ‘Istoriya na Gabrovo kato stopanski tsentar. Gaytandjiistvo’, p. 18; Tsonchev, ‘Gaytandjiistvoto v Gabrovo’, p. 64; Tsonchev, *Iz stopanskoto minalo na Gabrovo*, p. 311; Martinov, *Gabrovo*, p. 13; *Kniga na gabrovskata industriya*, p. 10; Spisarevsky, ‘Edna obikolka v Gabrovo’, pp. 1-4; *Balgarski targovski vestnik*, IV, No. 121, 16 November 1896, p. 3; Konstantinov, ‘Stupanski formi’, p. 459; Vasilyov, ‘Belejki’, pp. 577-578; Adjera, ‘Zanayatiata’, p. 475; *Izlojenie Sevlevo* (1888), pp. 23-25; *Izlojenie Sevlevo* (1889), pp. 27-28; *Izlojenie Sevlevo* (1890), pp. 14-15; *Izlojenie Sevlevo* (1891), pp. 18-19; *Doklad Sevlevo* (1895), pp. 30-31; *Izlojenie Sevlevo* (1896), p. с. 76; *Izlojenie Sevlevo* (1897), pp. 39-41; *Izlojenie Sevlevo* (1898), p. 33; DA-Plovdiv, f. 147k, op. 1, a. e. 838, pp. 1-2; Sakazov, ‘Razvitie’, p. 693.

*Karlovo*: *Raport na komissiyata*, pp. 19-20; Sakazov, ‘Razvitie’, p. 693; Aleksandrov, ‘Iz istoriyata’, pp. 9, 13-14; Konstantinov, ‘Stupanski formi’, p. 459; Adjera, ‘Zanayatiata’, p. 475; *Izlojenie Plovdivskii okrag prez 1889-90 god.*, p. 21; Chakalov, ‘Belejki’, pp. 7-8.

*Kalofer*: Nachov, *Kalofer*, pp. 31, 269; Aleksandrov, ‘Iz istoriyata’, pp. 13-14; Konstantinov, ‘Stupanski formi’, p. 459; Adjera, ‘Zanayatiata’, p. 475; Arnaudov, ‘Kalofer’, p. 34; Undjiev, *Karlovo*, p. 59; *Raport na komissiyata*, pp. 19-20; Sakazov, ‘Razvitie’, p. 693.

*Sopot*: *Raport na komissiyata*, p. 19; Aleksandrov, ‘Iz istoriyata’, pp. 9, 13-14; Adjera, ‘Zanayatiata’, p. 475.; Pavlovska, *Vazrojdenskiyat Sopot*, pp. 75, 83-85; Kosev, *Za kapitalisticheskoto razvitie*, pp. 82-83; Sakazov, ‘Razvitie’, p. 693.

*Kazanlak*: Kosev, *Za kapitalisticheskoto razvitie*, pp. 84; Sakazov, ‘Razvitie’, p. 693; Minchev, ‘Iz istoriyata na ovtsevadstvoto v Kazanlashko’, p. 81; Pavlov, ‘Ikonomicheskoto razvitie’, pp. 291, 319; Pavlov, ‘Opit’, pp. 418, 439; T. B. and M. St. ‘Industriyata na Kazanlak’, p. 545; Adjera, ‘Zanayatiata’, p. 475.; *Doklad St. Zagora* (1889), p. 15; *Izlojenie St. Zagora* (1897), p. 29; *Izlojenie St. Zagora* (1901), p. 25; *Izlojenie St. Zagora* (1903), p. 21.

*Samokov*: Sakazov, ‘Razvitie’, p. 693; Manov, *Samokov-Zanayati*, p. 100; Semerdjiev, Samokov, pp. 214-215; Adjera, ‘Zanayatiata’, p. 475; *Izlojenie Sofia* (1897), p. 35; Kosev, *Za kapitalisticheskoto razvitie*, p. 84.

*Pirdop*: Kosev, *Za kapitalisticheskoto razvitie*, p. 85; Sakazov, ‘Razvitie’, p. 693; Stoyanov, *Grad Pirdop*, pp. 222, 227; Dodov, ‘Gaytandjiistvoto v Pirdop’, pp. 331, 337; Konstantinov, ‘Stupanski formi’, p. 459.; Adjera, ‘Zanayatiata’, p. 475; *Izlojenie Sofia* (1897), p. 35; Ivanov, I., ‘Kam vaprosa za stopanskoto razvitie na Zlatitsa i Pirdop’, p. 83.

*Other towns or total for all gaytan centers*: Batakliev, *Grad Tatar-Pazarjik*, p. 157; Zannetoff, D., *Haus- und fabrikmäßige*, р. 7; *Buletin*, I, No. 43, 24 January 1898, pp. 11-12.; ‘Otchet za polojenieto na industriyata ni’, pp. 323-324; *Izvlechenie ot stenograficheski protokoli*, pp. 12-13; *Maritza*, VII, No. 650, 15 September 1884; Staneff, *Das Gewerbewesen*, p. 59; Palairet, ‘Decline’, p. 334.

In a detailed study from 1895-1896, the Plovdiv Commercial and Industrial Chamber (PTIK) found out that about a third of the charks operate only part of the year. The total production is estimated at 228,200 kg of Gaytan.[[145]](#footnote-145) Unfortunately, no such data exists for other years which compelled us to assume full employment of charks. Such assumption would also compensate for the facilities in smaller braiding centres like Tryavna, Kyustendil, Sliven and few villages in the neighbourhood of Karlovo[[146]](#footnote-146), which due to lack of information are omitted in Table 1.4. To the "semi-industrial" chark output should be added the factory production, which appears in the surveys of the state encouraged industry. Indeed, the dividing line between the two organizational forms is very thin and is most likely based solely on the requested and received encouragements under the National Industry Promotion Act (ZNMI). Further investigation established that the industrial censuses taken between 1904 and 1912 actually included only one gaytan factory - that of "Yosif Batsurov & Son" in Kalofer, which was added to the chark production for the post-1904 period. For the earlier years (1896 and 1900) we made a bold assumption of "Batsurov & Son" output which was also included in the Gaytan totals.

Unlike the braids, the information about the production of the famous Sliven kebes is quite scarce. The only mentioning in the post-Liberation literature is in the already cited 1895- 1896 PTIK Report. It mentions the relatively lively production of kebe that survived only in the Rhodope Mountains, Gabrovo, Sliven, Karlovo and few other locations.[[147]](#footnote-147) With nothing else at hand it was boldly assumed that kebe output had fallen from 6,000 pieces in ca. 1870 to about 1,000 in 1880s reaching just a hundred pieces around 1900. Available data on the socks production indicate as well a decline. Here the crisis seems to be even steeper than in kebes. In the Plovdiv region, for example, from 250-300 thousand pairs before the Liberation[[148]](#footnote-148) in 1884 the output had fallen to just 28-30 thousand pairs[[149]](#footnote-149) only to decrease further to insignificant amount of 4-5 thousand around 1890.[[150]](#footnote-150) Except in the Plovdiv region, until the end of the 1880s and in the early 1890s socks were hand-knitted in the Rhodope, Lovech, St. Zagora, Chirpan, Shumen, Sofia, Vidin, Haskovo etc.[[151]](#footnote-151)

By the mid-1890s, hosiery production was partly mechanized in newly established knitting workshops across the country, some of which bearing the proud name of "factories". The abovementioned 1895-1896 study of PTIK spoke of 6 such enterprises with 100 knitting machines and 120 workers only in the Plovdiv region. In addition to socks, they made also sweaters, scarves and baby clothes.[[152]](#footnote-152) At about the same time, an article about the export of Bulgarian woollens claimed that three quarters of the Bosnian population still wears Rhodope-made socks.[[153]](#footnote-153) This information is clearly exaggerated, but still shows that, although with reduced volumes, hosiery managed to persist after the onset of the textile crisis. The magnitude of the downturn in the hosiery subsector we could judge only indirectly - through the exported quantities. Left with no other data, our results presented in Table 1.5 are based on the estimated production in the Rhodope area (about 40,000 pairs until 1905) and on the presumption of a stable ratio between exports and output (which was taken to be 1:4). It is very probable that these calculations does not fully take into account the quantities produced by the knitting enterprises not encouraged under the ZNMI slightly pushing downward the overall results of the textile industry.

Due to the attempt to replace the declining gaytan production with carpet weaving, its history is relatively well documented by contemporaries. Quantitative information is, however, scarce. All we have are a couple of output estimates for 1900 and 1907 in only one of the carpet centers (Chiprovtsi and the few surrounding villages).[[154]](#footnote-154) With the assistance of "experimental ethnography" we are able to translate the abovementioned volumes into square meters of carpets, but we have almost no data about the prices at which they are traded. Even the general trends in the carpet industry are not entirely clear. Staneff, who personally visited the Chiprovtsi region around 1900, claimed that after the Russo-Turkish War (1877-78) and especially after the Serbo-Bulgarian War (1885), carpet weaving fell into crisis.[[155]](#footnote-155) Official export statistics, however, shows an impressive 30-fold increase between the 1880s and 1912. It is also known that after the Liberation carpet weaving spread to new areas such as Tsaribrod, Tran, Breznik, Panagyurishte, etc. A new "Persian" type of knotted carpet was adopted which became an important export item.

Our calculations on the carpet output are based on Manolov's data for Chiprovtsi around 1900 (26-27 tons of yarn consumed), which, given that carpets are produced in at least another twenty localities but in much smaller volumes, we estimate to a little over 75,000 kg of yarn. Using the weight-to-square ratios obtained from "experimental ethnography" and the information in Boris Persiiski[[156]](#footnote-156) we estimate

71,000 square meters (64 tons of carpets) output in 1900. Therefore, exports in 1900 amounted to approximately 26 percent of the total quantity produced, a share that we apply for the remaining six years in review (1886, 1896, 1904, 1909, 1911 and 1912). To convert these physical volumes into values is not an easy task. Available carpet price information is scarce and difficult to compare.[[157]](#footnote-157) Instead, we used Manolov’s Chiprovtsi carpet price for 1900 and for the later years we have constructed an index of export carpet prices at 1900 = 100 which was then bridged with the 1900 internal price from Manolov. For robustness we compared production value in the Chiprovtsi area around 1900 with our assumed output/export ratios and prices which was 141,000 Levs and the information that S. P. Stanev received from a local merchant during his tour through the region (150,000 Levs).[[158]](#footnote-158) Despite this reassuring match it would be safe to say that our results presented in Table 1.5 probably underestimate the actual production.

After Liberation, the domestic proto-industrial production of woollens experienced a sharp decline because of the rapidly established factory production. In the Rhodope area, one of the main aba-making regions prior to 1878, hand spinning and weaving was preserved, but with a clear downward trend. The domestic shayak and aba proto-industry also survived to a limited extent in Samokov, Sopot, Karlovo, Kalofer, Gabrovo, Sliven and, in part, in Kotel and Gradets.[[159]](#footnote-159) After the admission of duty-free exports to Turkey under the 1899 Bulgarian-Turkish Trade Agreement proto-induatrial production revived, but did not reach the pre-Liberation levels.[[160]](#footnote-160)

The hand production of aba and shayak is defined as follows. Following the general trends indicated in the literature and using the information of T. Karayovov, we estimated 100,000 square meters of cloth, mostly aba, produced in the Rhodope Mountains area around 1900.[[161]](#footnote-161) Based on this information, we made the bold assumption that the rest of Bulgaria produced five times more in 1886 than in the Rhodope, two times more in 1896 and 1900 and four times more between 1904 and 1912.[[162]](#footnote-162)

From ten percent in 1870 and a little over a third in 1886, the share of factory production on the eve of the Balkan Wars has reached 82 percent of the total cloth output. For the most part, the activities of the state-sponsored modern sector are well covered by two industrial surveys conducted in 1904 and 1909.[[163]](#footnote-163) They are complemented by two other surveys organized by the General Directorate of Statistics in 1911 and 1912.[[164]](#footnote-164) All four above mentioned and published surveys cover only state-protected enterprises and not the entire factory sector. With the rather relaxed legal requirements for public subsidies under the ZNMI (minimum of 20 workers, later on reduced successively to 15 and 10, as well as machines with 5 horsepower, subsequently increased to 10 hp) almost all factories in the textile industry were practically included in the four statistical surveys. Outside probably remained only the smallest knitting and carpet establishments, which used mainly manual labour.

We have no official industrial statistics for 1886, 1896 and 1900. To fill in the gap, we used the information on the value of production and the amount of processed raw material (wool) presented in the publications of Yanko Chakalov and Stoil Stanev.[[165]](#footnote-165) These contemporary expert assessments were then double-checked with a database which we have constructed (henceforth refered to as factory production database, FPD). FPD employs all available quantitative information on the annual production in square meters of fabric of the thirty wool-textile factories for each of the years between 1880 and 1904. Its sources and data are available at request from the authors.

What type of fabric was actually produced by Bulgarian mechanized industry? It has already been mentioned that shayak successfully replaced aba in the end of the 1860s and the beginning of the 1870s. The pace at which these changes took place is unclear. It is very likely, however, that it evolved with different speed (and probably timing) in the different textile regions. In the Rhodope, for example, Karayovov show a ratio of 80:20 in favour of the aba around 1900.[[166]](#footnote-166) For the remaining parts of Bulgaria the information (and price quotations) about shayak massively predominates that about aba. Aba-making seems to survive mainly in Samokov[[167]](#footnote-167) and a villages near Kotel.[[168]](#footnote-168) Interestingly, the name this textile industry was publicly known also changed after 1878. From "abadzhiystvo" (aba-making) and "abyana stoka" (aba goods) to "shayachna industriya" (shayak industry).

The factory production mix is even more unclear. Almost interchangeable "sukno", "shayak" and "aba" are used to describe factory production. Sources also speak of casimir (most probably a Bulgarian form of the word cashmere), cheviot, flannel, fasonete, epingle, etc. It is clear, for example, that Sliven factories produced mainly aba, which they exported to Turkey, while other textile centres (Gabrovo, Kazanlak) were specialized in shayak. It was not until the beginning of the twentieth century that modern fabrics, known under the general name of "sukno", but often misleadingly referred to as shayak, began to became more popular. Lighter European-type fabrics were first produced only in Gabrovo, but were later introduced in Samokov, Sliven, Karlovo, Kazanlak and Sofia. However, as the surviving archival evidence shows, even in 1911, 60 to 90 percent of the production of the large Sliven enterprise "Nedev & Sariivanov" and the Samokov "Badashte" mill was shayak.[[169]](#footnote-169)

Regrettably, we did not find factory fabrics specimens in any of the Bulgarian museums to determine their type and physical parameters (weight per sq. m. and width). To fill in that gap we used the surviving archives of one Gabrovo and one Samokov textile mills.[[170]](#footnote-170) They produced fabrics which weighted 0.6 kg/sq. m, as well as lighter modern types of cloth (karo, melange, epingle, etc.) which were 0.31 kg/sq. m. The average weight of factory-made fabrics is 0.63 kg per square meter. The most popular item - the factory shayak (army overcoat, natural, natural achik, dyed and blue gendarme) has an average weight of 0.73 kg/sq. m. as compared with 0.79 kg/sq. m. for the hand-made shayak before 1878. The shayak weight is about the same in the indirect indications of T. Vasilyov.[[171]](#footnote-171) The almost identical weight of the factory and manual shayaks should not surprise us. D. Mishaykov[[172]](#footnote-172), one of the best-informed experts on the subject, directly stated that "our wool factories produce almost the same qualities as the cottage industry." Targeted at consumers with humble means, the price and cloth durability were the main advantages of Bulgarian textiles allowing them to successfully compete to foreign products. In order to maintain this comparative advantage, Bulgarian factories had to maintain high amounts of wool per square meter, which turns the factory shayak into nothing more than a mechanically produced version of the old hand-woven cloth.

In the post-1878 Bulgarian factories, at least four types of looms were in operation: ordinary wooden frames, which produced cloth about 35 cm wide; the advanced manual wooden looms with a flying shuttle, colloquially known as "planes" producing cloth with a width of 0.65-0.67 m[[173]](#footnote-173), the "narrow iron looms", which were imported in 1884 by the Alexander Gabrovo factory – making fabric with 0.75-0.8 m width[[174]](#footnote-174) and the standard power-looms weaving 1.4 m wide fabric.[[175]](#footnote-175) Often, the same company combines different systems of looms - manual, semi-mechanical and fully mechanized. In the early 1890s, for example, 20 percent of the output of the St. Saraivanov & Co. company in Sliven was made on the narrow 35-cm traditional looms and 80 percent - on "planes."[[176]](#footnote-176) Instead, from the beginning Gabrovo and other textile centres have relied on power-looms with 1.4 m of width. Over time, the various widths of the factory fabric were gradually standardized and since the mid-1890s almost all of the production have already been made with a 1.4 m width. The 1.4 m width have been applied to the entire factory production between 1878 and 1912.

To determine the share of hand-made aba and shayak we follow the export shares of these two main types of cloth. The share of aba had fallen from 54.2 percent in 1886 to 13.7 percent in 1900 and to 5-8 percent in 1911-1912. These shares were applied for determining what part of the available wool was used for each of the two types of cloth. As the cottage industry continued to employ archaic wooden looms, we have assumed that its entire production was with 35 cm width.

To sum up, in the post-Liberation era the declining manual domestic proto-industry shifted almost entirely to the production of shayak, although in some regions (the Rhodope, Kotel and Samokov) the coarser aba continued to be made. In general, factories followed that trend as well, and only the Sliven-based mills specialized in exports to the Turkish market continued to weave mostly aba. From the beginning of the twentieth century, Gabrovo, and later the other textile centres, introduced the production of lighter European types of worsted fabrics also known as sukno. Even in 1912, however, their share lagged far behind that of shayak. Based on export data, in combination with fragmentary information in the literature, it can be assumed that the ratio between shayak, aba and sukno was approximately 45:50:10 in 1885, and 80:10:10 on the eve of the Balkan Wars. The almost complete absence of aba and sukno prices after the Liberation and the impossibility to distinguish the share of different types of fabric in the highly aggregated official censuses made it necessary to define the entire factory production as shayak. In fact, however, as the used weights per square meter will also reveal, our figures actually reflect a gradual transition from coarser (and heavier) to finer (and lighter) fabrics.

After all these clarifications we can now focus on the exact way we reconstructed the production of the wool textile sector from 1878 to 1912. First, from all the available wool in a given year (domestic production and net imports) we subtracted the amount used by households for their own clothing production (self-sufficiency). In a second step, the remainder, (the so-called marketed wool) was distributed among factory production of fabric, gaytan and carpets. In the third stage, as described above, we determined the approximate cottage and factory production of braids, carpets, socks and kebe. Finally, after all these deductions, all the remaining wool was used for domestically made aba and shayak. For the ratio between these two types of cloth we applied their export shares in the specific year.

The calculation of the production and especially of the consumption of wool by large-scale industry (promoted under the ZNMI after 1895) needs several further clarifications. The estimates for 1904-1912 are based on the value of production reported by official statistics. Following the information from the 1909 census, we assumed that wool represented 95 percent of the total raw materials expenses. Applying wool prices we were able to determine the volume of wool used in kilograms. Following the already established indication that 0.618 kg of yarn comes out of 1 kg of greasy wool and that another 5 percent are lost during weaving, we can roughly determine the weight of the cloth. Applying a decreasing weighs per sq. m. (0.71-0.72 for 1904-1909 and 0.5 for 1911-1912) we arrived at the produced footage of fabric. In order to make a check, we divided the calculated square footage by the value of the production according to the surveys and got the unit price per square meter.

The 1896 assessment of factory production is based on the wool consumption given by Y. Chakalov.[[177]](#footnote-177) We estimated the footage of machine-produced fabric by applying the above-mentioned ratio between the final product and the raw material[[178]](#footnote-178) assuming an average of 0.88 kg per sq. m. of the fabric. To verify our results we compared them with our rough estimate of mechanized production in 1896 reached by combining all quantitative evidence in the literature (the so called factory production database). To determine the value of production, we used the prices collected from a variety of sources and then produced annual averages.

Short of any other evidence, we built our 1886 and 1900 estimates of factory output of woollen cloth solely on our factory production database. We made the same assumptions for the ratio between the fabric and the greasy wool (0,618 + 5 percent) and presumed the fabric’s weight of 0.9 kg per sq. m. for 1886 and of 0.73 kg for 1900. Finally, we multiplied the square footage of the factory cloth by the unit price of mechanically woven shayak in both years.

One of the important contributions of this study is that, along with the woollen sector, it attempts to evaluate the production of other textile industries. Already in late 1860s, the silk industry, incl. the silk worm cultivation was almost destroyed by the pandemic perbine disease. Coordinated steps have been taken by the authorities to turn cocoon growing into a substitute of the collapsing cash income from the vineyards that have been almost destroyed by the phylloxera disease during the 1890s. The measures took effect and around 1900 the production of cocoons reached its levels from the golden years of "silk fever" immediately after the Crimean War. In the first decade of the new century, the amount of cocoons grown doubled to 1,900 tons. However, most of it was exported to France, Italy and Austria-Hungary in the raw state or after primary processing (smoking, drying, and perforation). Only an insignificant part of the harvest turned into reeled silk in a single factory called Svila JSC established in 1892 near Stanimaka (now Asenovgrad). In 1906, however, it went bankrupt and it was not until 1911 that a new enterprise ‘Bulgarian Lion’ was founded by the former Macedonian revolutionary Kuzma Chekov.[[179]](#footnote-179) Along with these relatively large establishments, smaller workshops survived until the end of the 1890s in the old silk centres such as Vratsa, Perushtitsa, Dupnitsa, Lovech, Lukovit, Razgrad, Gabrovo and Stanimaka. By 1900 their production almost disappeared and in 1902 an anonymous article in the commercial press revealed that "if a visitor in Vratsa wished to see and buy such [silk] cloth, he would not be able to find them" because they were no longer produced for the market.[[180]](#footnote-180) Without any quantitative output information we are forced to assume that taken together the proto-industrial and artisan silk-textile production is only one tenth of that of Svila JSC in 1896, 1900 and 1904 and of Bulgarian Lion in 1911 and 1912. The estimate for the "pre-factory" year 1886 is based entirely on export data.

Unlike woollen weaving and silk-making, the cotton textile industry was never an important sector before the Interwar period. Traditional cotton-making centres such as Shumen, Tarnovo, Kazanlak, and Karlovo were the first to fell victim to foreign competition already before the Crimean War. The last surviving cotton artisan workshops in Pirdop also lost ground after the Russo-Turkish War. It was not until the 1890s, with the arrival of Armenian refugees after the pogroms of 1894-1896, that the cotton industry successfully revived. In Plovdiv, Varna, and Ruse several large semi-factory establishment have been established for the production of yazma (women's heads-kerchiefs, printed with various figures in bright colours). In the same way, a decade earlier, but on a much smaller scale, several dozen entrepreneurial merchants and craftsmen began to produce simple cotton cloth in Tsaribrod, Trun, Godech, Berkovitsa, Vratsa, Sopot and Pazardzhik. They outsourced the weaving process providing raw cotton or imported cotton yarn to female wavers working at their homes, and then marketed the coarse cotton cloth. Around 1900 the large-scale mechanized factory production of cotton yarn, and in 1903 of cotton fabrics finally started in Bulgaria.

We have only limited quantitative information for proto-industrial cotton cloth production. Perhaps the most detailed is the report of the Sofia Commercial and Industrial Chamber (STIK) from 1902, on the basis of which we have estimated an output in ca. 1900 of 320,000 sq. m. valued at 200,000 Levs.[[181]](#footnote-181) We accept that figure to be representative for cottage cotton production in both 1896 and 1900 and assume a somewhat smaller output of 150,000 Levs for 1886 and 1904. Due to the growing foreign, but also local factory competition on the eve of the Balkan Wars (1909-1912) we assume only 50,000 Levs of proto-induastrial cotton output. For the large-scale handicraft production (the above-mentioned Armenian "factories") we have partial data from the statistical censuses in 1904, 1909, 1911 and 1912. They cover only two, probably the largest, of the existing 8 establishments. In the absence of any other evidence, we decided to double the census values. Our detailed survey of industrial censuses revealed that the Ruse weaving mill of Ts. Startsev, was not included in the statistical observations. The factory operated between 1906 and 1911 and had 20 power-looms equal to about 10 percent of the total mechanized weaving capacity in the country.[[182]](#footnote-182) Thus, we have increased the official census results for 1909-1912 accordingly by 10 percent.

Information about the hemp and flax processing industry is not only incomplete but also contradictory. We were not even able to fully detect all the eight factories, which were promoted under ZNMI. Furthermore, there is almost no evidence of the existence of proto-industrial flax and hemp processing. In fact, the only evidence of its obviously limited activity is an anonymous publication in which the coarse linen and hemp cloths made in Trun, Tsaribrod and Dupnitsa are mentioned in passing.[[183]](#footnote-183) With all this in mind, we had to assume that at no time the hemp and flax proto-industry did exceed ten percent of total proto-industrial textile production. The data on the state encouraged segment of the industry are entirely based on statistical surveys, while the one for 1900 drew from the turnover of the only existing factory of Konop JSC in the village of Kurtovo Konare.[[184]](#footnote-184)

Dying, fulling, and tailoring were strongle connected with the textile industry. After Liberation the tastes changed and the woollens in their natural shades gave way to the modern fabrics in more bright colours. Partly, this was an effect of the new aniline dyes that became popular in the late 1880s. A study by K. G. Popov and P. Penchev, conducted in 1906 in the village of Kasilak show that eight out ten surveyed households annually spent 12.20 Levs for dying wool or cloth.[[185]](#footnote-185) A "typical household" from the village of Bunovo in 1887 also spends more or less similar sums of 10 Levs per year.[[186]](#footnote-186) In order to calculate the value of the cottage and artisan dying industry we used the instructions of the two above studies: 80 percent of self-sufficient households, spending about 10-12 Levs annually for dying which we have slightly increased for the following years. In the same way, and following the same logic, we determined the amounts paid to a fuller by the self-sufficient rural population. The realized income from the two state-sponsored dying factories is taken from the industrial censuses. No such large establishments existed in the fulling subsector. The data on the prices at which the tailors work and on the average number of clothes they produce per year are insufficient to make even the roughest estimate of their income and production volume. Instead, we resorted to the household budgets of Bunovo from 1887 and of Kasilak from 1906 indicating the amounts paid to tailors by self-sufficient families.[[187]](#footnote-187) The only difference is that here, along with these rural households, we include 90 percent of the urban families with the assumption that only few tailored their own clothes.

It has already been emphasized that the results presented in Table 1.5 do not claim absolute, but only approximate accuracy. They are intended to outline only the broad contours of the economic trends in the textile sector from ca. 1870 to 1912. As usual for such studies, estimation of self-sufficiency in wool runs the greatest risk of error. However, the error margin could not be too wide given the satisfactory results of the robustness check already reported above. It is only the self-sufficiency figures ​​for 1870 that may probably be debatable, but their possible correction would only strengthen the conclusions in our article.

Sub-sectoral estimates should be divided into three groups. There is a possible overestimation only in gaytan-making. The problems might arise from two directions. First, there is a probable duplication of charks in artisan and state-protected production. And, second, as the PTIK data show, there was no full capacity production in every year. In other words, even we were able to establish the number of charks correctly, possibly some of them were not operating throughout the production season. In case we reduce experimentally the gaytan production by one third, the total value of wool textile production would fall by one tenth in 1896-1900 and by 5-6 percent during the first decade of the twentieth century. We restrained from such adjustments, because it is clear that some of the secondary braid-making centres such as Tryavna, Kyustendil, Sliven and the villages near Karlovo, no matter how many charks operated there, have not been not included in our sub-sectoral estimate. Moreover, the occupational censuses taken in 1900, 1905 and 1910 give very reassuring results.[[188]](#footnote-188)

Some overestimations could be expected for factory fabrics for the years before the first industrial census in 1904. It stems mainly from the unclear width of the cloth - 0.35, 0.65, 0.75 or 1.40 m. As already mentioned, we have opted for the latter width of 1.40 m, but it is clear that in the first decade mostly narrower fabrics were produced. However, it should be stressed that this overestimation would mainly affect the physical volume (in square meters) and less so the values presented in Table 1.5.

Undoubtedly underestimated are the factory and proto-induatrial hosiery production, the yazma and carpet making, as well as the output of larger factories, which did not apply or did not recieve state encouragement under ZNMI. Proto-industrial hosiery is completely excluded from Table 1.5, while we only know from the occupational censuses that it employed between 100 and 1,200 people. The accepted duplication of volumes of the two state-supported yazma-making establishments probably also underestimates the quantities sold in this subsector. Lastly, it seems that the smaller carpet centres such as Elena, Gabrovo, Sliven, Vratsa, Vidin, Kula, Shumen, Pazardzhik, the Rhodope area, as well as the two carpet "factories" in Samokov were also omitted in our sub-sectoral results. The total effect of these underestimations is unclear, but hardly exceeds a few percents of the total textile output.

**Table 1.5. Textile Output 1870-1912 (at constant 1911 prices)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | c.1870 | 1886 | 1896 | 1900 | 1904 | 1909 | 1911 | 1912 |
| Population\* | 000 people | 3,280 | 3,370 | 3,793 | 4,033 | 4,283 | 4,608 | 4,743 | 4,811 |
| Turks\*\* | 000 people | 627 | 606 | 582 | 582 | 571 | 566 | 567 | 567 |
| Urban Pops., 5000+ | 000 people | 583 | 560 | 773 | 803 | 822 | 836 | 840 | 842 |
| Market Catering Pop. | 000 people | 1,210 | 1,165 | 1,355 | 1,385 | 1,390 | 1,400 | 1,405 | 1,410 |
| Self-Sufficient Pop. In Textiles | % | 63.1 | 65.4 | 64.3 | 65.7 | 67.6 | 69.7 | 70.4 | 70.7 |
|  |  |  |  |  |  |  |  |  |  |
| Sheep | 000 animals | 8,600 | 6,900 | 7,500 | 7,500 | 8,500 | 9,200 | 9,400 | 9,500 |
| Greasy Wool | 000 kg | 11,042 | 8,860 | 9,630 | 9,630 | 10,914 | 11,813 | 12,070 | 12,198 |
| Net Import of Wool | 000 kg | -3,250 | 198 | 149 | 32 | 924 | 1,152 | 1,715 | 2,182 |
| Wool for Self-Sufficiency | 000 kg | 4,187 | 7,509 | 7,198 | 7,642 | 8,362 | 8,248 | 9,301 | 9,844 |
| Marketed Wool | 000 kg | 3,605 | 1,548 | 2,581 | 2,021 | 3,477 | 4,717 | 4,484 | 4,537 |
| Wool for Factories | 000 kg | 141 | 326 | 1,631 | 1,009 | 2,369 | 3,606 | 3,379 | 3,460 |
| Residual Wool for Cottage Ind. | 000 kg | 3,464 | 1,222 | 950 | 1,011 | 1,108 | 1,111 | 1,105 | 1,076 |
|  |  |  |  |  |  |  |  |  |  |
| *Gaytan-making* |  |  |  |  |  |  |  |  |  |
| Charks | Pcs | 6,000 | 1,880 | 1,390 | 1,345 | 1,450 | 1,430 | 1,430 | 1,430 |
| Wool† | 000 kg | 2,623 | 822 | 711 | 680 | 634 | 625 | 625 | 625 |
| Gaytan | 000 kg | 1,541 | 483 | 357 | 345 | 372 | 367 | 367 | 367 |
| Chakrs’ Output | 000 Levs | 11,812 | 3,701 | 2,737 | 2,648 | 2,855 | 2,815 | 2,815 | 2,815 |
| Factory Output | 000 Levs |  |  | 466 | 413 | 776 | 810 | 1,773 | 1,292 |
| Total Output | 000 Levs | 11,812 | 3,701 | 3,202 | 3,061 | 3,061 | 3,625 | 4,588 | 4,107 |
|  |  |  |  |  |  |  |  |  |  |
| *Carpet-making* |  |  |  |  |  |  |  |  |  |
| Wool‡ | 000 kg | 63 | 52 | 42 | 121 | 145 | 130 | 155 | 138 |
| Carpet Output | 000 sq.m. | 37 | 30 | 25 | 71 | 85 | 76 | 91 | 81 |
| Cottage Ind. & Factory Output | 000 Levs | 279 | 232 | 189 | 540 | 648 | 578 | 690 | 613 |
|  |  |  |  |  |  |  |  |  |  |
| *Socks-knitting* |  |  |  |  |  |  |  |  |  |
| Wool‡ | 000 kg | 111 | 30 | 22 | 20 | 18 | 17 | 16 | 16 |
| Socks Output | 000 pairs | 300 | 80 | 60 | 55 | 50 | 45 | 42 | 42 |
| Cottage Ind. & Factory Output | 000 Levs | 290 | 77 | 58 | 53 | 48 | 43 | 41 | 41 |
|  |  |  |  |  |  |  |  |  |  |
| *Kebe (blankets, covers)* |  |  |  |  |  |  |  |  |  |
| Wool† | 000 kg | 70 | 11 | 3 | 1 |  |  |  |  |
| Kebe Output | 000 бр. | 6 | 1 | 0.3 | 0.1 |  |  |  |  |
| Output | 000 Levs | 212 | 26 | 13 | 6 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Residual Wool for Hand-Made Cloth | 000 kg | 597 | 307 | 172 | 189 | 310 | 339 | 310 | 298 |
|  |  |  |  |  |  |  |  |  |  |
| *Aba-making* |  |  |  |  |  |  |  |  |  |
| Wool† | 000 kg | 478 | 167 | 32 | 25 | 44 | 27 | 15 | 25 |
| Hand-made Cloth | 000 sq.m. | 944 | 329 | 62 | 51 | 88 | 53 | 30 | 49 |
| Hand-made Cloth | 000 Levs | 3,049 | 1,063 | 202 | 165 | 283 | 170 | 96 | 160 |
| year |  | c.1870 | 1886 | 1896 | 1900 | 1904 | 1909 | 1911 | 1912 |
| *Shayak-making* |  |  |  |  |  |  |  |  |  |
| Wool† | 000 kg | 120 | 141 | 140 | 163 | 266 | 312 | 294 | 273 |
| Hand-made Cloth | 000 Levs | 442 | 520 | 519 | 604 | 982 | 1,155 | 1,087 | 1,010 |
| Factory Cloth | 000 Levs | 381 | 830 | 4,165 | 4,436 | 6,399 | 9,744 | 13,758 | 13,801 |
| Total Output | 000 Levs | 824 | 1,350 | 4,684 | 5,039 | 7,382 | 10,899 | 14,845 | 14,811 |
|  | 000 Levs |  |  |  |  |  |  |  |  |
| Woollens | 000 Levs | 16,400 | 6,450 | 8,348 | 8,864 | 11,991 | 15,316 | 20,260 | 19,733 |
| Hand-made | 000 Levs | 16,084 | 5,620 | 3,717 | 4,015 | 4 816 | 4,762 | 4,729 | 4,639 |
| Factory | 000 Levs | 316 | 830 | 4,631 | 4,849 | 7 175 | 10,554 | 15,531 | 15,093 |
| Output per Person | Levs | 5.00 | 1.91 | 2.20 | 2.20 | 2.80 | 3.32 | 4.27 | 4.10 |
|  |  |  |  |  |  |  |  |  |  |
| *Non-Wool Output* |  |  |  |  |  |  |  |  |  |
| Hand-made Silk | 000 Levs | 63 | 25 | 36 | 40 | 33 | 29 | 20 | 21 |
| Hand-made Cotton | 000 Levs | 178 | 173 | 245 | 236 | 152 | 58 | 50 | 46 |
| Yasma-making | 000 Levs |  |  | 123 | 295 | 404 | 690 | 1,200 | 925 |
| Hand-made Hemp & Linen | 000 Levs | 19 | 14 | 15 | 13 | 17 | 27 | 16 | 30 |
| Factory Silk | 000 Levs | 210 | 251 | 352 | 376 | 305 | 41 | 50 | 11 |
| Factory Cotton | 000 Levs |  |  |  | 2,967 | 1,841 | 4,098 | 3,920 | 4 036 |
| Factory Hemp & Linen | 000 Levs |  |  |  | 126 | 165 | 1,422 | 1,576 | 2,305 |
| Factory Yazma | 000 Levs |  |  |  |  |  | 105 | 85 | 94 |
| Factory Dying | 000 Levs |  | 2 | 16 | 26 | 84 | 189 | 231 | 383 |
| Hand-made Fulling & Dying | 000 Levs | 1,776 | 1,867 | 2,069 | 2,261 | 2,438 | 2,746 | 2,861 | 2,909 |
|  |  |  |  |  |  |  |  |  |  |
| Total Textile Output | 000 Levs | 18,646 | 8 782 | 11,203 | 15,203 | 17,430 | 24,720 | 30,268 | 30,492 |
| Textile Output per Person | 000 Levs | 5.68 | 2.61 | 2.95 | 3.77 | 4.07 | 5.36 | 6.38 | 6.34 |
| Share of Non-Wool Output | % | 2.5 | 5.3 | 6.9 | 26.7 | 16.7 | 26.2 | 22.9 | 24.5 |
|  |  |  |  |  |  |  |  |  |  |
| Auxiliary Textile Activities |  |  |  |  |  |  |  |  |  |
| Tailoring (annual income) | 000 Levs | 6,808 | 7,158 | 7,930 | 8,666 | 9,347 | 10,525 | 10,966 | 11,150 |
|  |  |  |  |  |  |  |  |  |  |
| Physical Volume of Output |  |  |  |  |  |  |  |  |  |
| Hand-made Cloth | 000 sq.m. | 1,105 | 518 | 251 | 271 | 445 | 473 | 425 | 417 |
| Factory Cloth | 000 sq.m. | 115 | 250 | 1,050 | 900 | 1,950 | 2,950 | 4,000 | 4,100 |
| Total Cloth | 000 sq.m. | 1,220 | 768 | 1,301 | 1,171 | 2,395 | 3,423 | 4,425 | 4,517 |
| Gaytan | 000 kg | 1,541 | 483 | 418 | 399 | 474 | 473 | 598 | 536 |
| Carpets | 000 kg | 37 | 31 | 25 | 71 | 85 | 76 | 91 | 81 |
| Socks | 000 kg | 65 | 17 | 13 | 12 | 11 | 10 | 9 | 9 |
| Kebe | 000 kg | 41 | 7 | 2 | 1 |  |  |  |  |
| Aba | 000 kg | 887 | 309 | 59 | 15 | 82 | 50 | 28 | 46 |
| Shayak | 000 kg | 219 | 362 | 1,073 | 710 | 1,674 | 2,450 | 2,297 | 2,323 |
| Total Weight | 000 kg | 2,790 | 1,209 | 1,589 | 1,207 | 2,326 | 3,059 | 3,024 | 2,995 |
| Weight per Person | kg | 0.9 | 0.4 | 0.4 | 0.3 | 0.5 | 0.7 | 0.6 | 0.6 |
|  |  |  |  |  |  |  |  |  |  |
| Added Value | 000 Levs | 8,793 | 3,183 | 2,902 | 4,601 | 4,656 | 5,364 | 10,800 | 10,161 |

*Source*: See the text.

## II. Bulgarian Foreign Trade, c. 1838-1912

Estimates of Bulgarian imports and exports before the Russo-Turkish War of 1877-178 were mainly based on consular reports[[189]](#footnote-189), reproduced in the six volumes and a series of papers edited by N. Michoff. Because of this invaluable source, which reports commercial outflows from Varna and all Danubian ports we were able to compile an annual series of Bulgarian exports in French franc from 1840 onwards. During the 1880s when the first official national statistics were collected these ports had a share of above 50 percent of total Bulgarian exports. To our regret, Varna port left aside, available consular reports were considerably less reliable on foreign imports offering only fragmentary information. For that reason we had to resort to an indirect assessments based on the annual ratios between imports and exports at the port of Varna, which we then extrapolated at the national level.

Needless to say, both commercial series only broadly reflect the foreign trade flows from the 1840s to the late 1870s. Moreover, they fail to capture the inland trade - to Constantinople, Salonika, Belgrade, etc., as well as the shipments on the Maritsa River. It is very probable that a number of key export items like wool textiles, cocoons, silk, rose oil, leather, etc. have been exported primarily through these uncovered channels. In order to verify, amend and improve the above annual export totals we constructed a second set of estimates for the six leading export goods - wool, woollens, cereals, rose oil, cocoons and raw silk. Their share never felt below 69 percent of the total exports, both before and after 1878. This additional set of export estimates should allow us to establish in a more complete way the approximate volume of intra-imperial inland traffic departing from Bulgarian lands. Finally, in the way described above, we applied to the new export series the ratio between imports and exports from the port of Varna in order to revise import flows.

Several additional clarifications on the calculations of the second set of annual exports figures differentiated according to products are necessary and presented below.

#### Cereals

Available information on grain exports before 1878 is incomplete to say the least. We used various methods to fill the existing data gaps. First, drawing from the Hapsburg, French, Belgian and Italian consular reports reproduced in N. Mihov we have collected all available figures on the export of wheat, barley, rye, oats, maize, and other cereals that have less commercial significance like millet or buckwheat. Second, the original volumes given in various units of measurement were standardized in kilograms (see the notes to Table 2.1). Third, we formed averages for all ports for the periods 1839-1841, 1842-1849, 1850-1852, 1858-1860, 1861-1865, 1866-1870 and 1871-1876. We have tried to have periods of approximately five years, but important events like the full implementation of the free-trade in grain exports in 1842, the Crimean War (1853-1856) and the Russo-Turkish War (1877-1878) understandably disrupted the five-year cycles and left their mark on the chronology. Fourth, values ​​for grain exports in kilograms broken down by ports were added up by periods. Missing data was extrapolated on the basis of exports from other ports in the same year. Regrettably, these grain export estimates fail to capture the overland transport, which given the bulky nature of cereals was anyway minimal. Fifth, our export figures by periods and ports have been additionally supplemented and verified using the well documented grain exports from the port of Varna – without doubt, the most important trading place for exports and imports in the Bulgarian lands. The average share of Varna in the total grain exports during the first post-Liberation decade (nearly a quarter of all exported cereals), was projected backwards. We calculated the average of both series to get a reasonably accurate picture of Bulgarian ​​grain exports before 1878. For the period after theLiberation, we used this method only until for the years until the late 1880s. Afterwards national statistics of the modern Bulgarian state provided unified and standardized data on export outflows.

**2.1. Bulgarian Grain Export (in thousand ton and within present day borders)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Varna | Burgas, Balchik, Anhialo etc. | Enos, Rodosto, Dedeagach | Danubain ports | Total (sum of all ports) | Total export based on 20 percent share of Varna port | Average of col. (5) and (6) |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1839-1841 | 14,000 | 2,500 | 10,000 | 2,800 | 29,300 | 70,000 | 49,650 |
| 1842-1849 | 70,000 | 68,000 | 9,000 | 45 000 | 192,000 | 400,000 | 296,000 |
| 1850-1852 | 88,000 | 66,500 | 12,000 | 38,500 | 205,000 | 440,000 | 322,500 |
| 1853-1857 | 28,000 | 35,500 | 5,000 | 30,000 | 98,500 | 140,000 | 119,250 |
| 1858-1860 | 25,000 | 53,000 | 8,000 | 36,000 | 122,000 | 125,000 | 123,500 |
| 1861-1865 | 40,000 | 38,000 | 10,000 | 54,500 | 142,500 | 200,000 | 171,250 |
| 1866-1870 | 47,000 | 61,500 | 14,000 | 55,000 | 177,500 | 230,000 | 203,750 |
| 1871-1876 | 45,000 | 53,000 | 30,000 | 41,000 | 169,000 | 225,000 | 197,000 |
| 1880-1885 | 73,000 | 42,000 | 25,000 | 127,000 | 267,000 | 293,000 | 280,000 |
| 1886-1889 | 62,000 | 62,000 | 30,000 | 158,000 | 312,000 | 377,000 | 344,500 |

*Sources*:

*Ottoman Period (1839-1876)*

*Varna*: Michoff, *Contribution* (1941), pp. 4-5, 7, 12, 17, 21, 24, 27, 29, 31, 34, 39, 46, 55, 63, 74, 78, 84, 89; Michoff, *Beiträge* (1943), pp. 50, 88, 92, 100, 118-119, 189, 207, 263, 311, 323-324; Michoff, *Beiträge* (1953), pp. 187-188, 261, 314, 330, 350-351, 354, 398, 404, 548; Michoff, *Contribution* (1950), pp. 162, 173, 516; Michoff, ‘Contribution’, (1948), p. 21; Michoff, *Prinos*, pp. 305, 330, 353, 363.

*Burgas and other Black Sea ports*: Michoff, *Contribution* (1941), pp. 6, 13; Michoff, *Beiträge* (1943), pp. 153, 247, 309-310, 326; Michoff, *Contribution* (1950), pp. 162, 173; Michoff, *Prinos*, pp. 305, 332, 334, 393.

*Enos, Rodosto, Dedeagach, Edirne*: Michoff, *Beiträge* (1943), pp. 50; Michoff, *Beiträge* (1953), p. 529; Michoff, *Contribution* (1950), pp. 393, 426, 433-434, 641, 704, 717; Michoff, *Prinos*, pp. 390, 392.

*Dabnubian ports (from Vidin to Silistra)*: Michoff, *Beiträge* (1943), pp. 27, 30-31, 48, 51- 52, 77, 87, 98-99, 176, 184, 198, 230-231, 236, 245-253, 259, 261, 300, 351, 355, 398-399; Michoff, *Beiträge* (1953), pp. 20, 42, 54-55, 60-61, 163, 188-189, 223, 233, 257, 261, 289, 332, 355, 406-407, 422-423, 462-467, 476, 492, 517, 543, 552; Michoff, *Contribution* (1950), p. 686.; Michoff, *Prinos*, pp. 334, 336, 351.

*Other export points (Plovdiv, Rumelia, Nish Eyalet, Sofia etc.)*: Michoff, *Beiträge* (1943), p. 249; Michoff, *Beiträge* (1953), p. 308; Michoff, *Contribution* (1950), pp. 557, 581-582, 732; Michoff, *Prinos*, pp. 290, 337, 355, 386, 395, 398, 426.

*Post-Liberation Period (1878-1889)*

*Godishna statistika na Iztochna Rumeliya za 1883*, p. 5; *Statistika na targoviyata na Balgarskoto Knyajestvo* s *chujdite darjavi* (various years).

*Notes*:

For the most part, the Ottoman measurement units and other traditional units of measurement mentioned here are collected from Michoff's volumes. Surprisingly, some of the Ottoman units of measurement differed significantly from what was stated in the often quoted book of L. Berov "Price Movement", who also claimed to rely mainly on the information from Michoff.[[190]](#footnote-190)

The following ratios were used to convert the original units into metric measurements:

oka – 1.284 kg

Istanbul kile – 20 oka = 25.68 kg

Burgas kile – 40 oka = 51.36 kg

Seres kile – 45 oka = 57.78 kg

Plovdiv kile – 55 oka = 77.62 kg

Varna and Dobrudja kile – 80 oka = 102.72 kg

Salonika kile – 90 oka = 115.56 kg

Lom and Vidin kile – 100 oka = 128.40 kg

Ruse and Svishtov kile – 120 oka = 154.08 kg

Shumen and Razgrad kile – 160 oka = 205.44 kg

Silistra kile – 300 oka = 385.20 kg

Kjustendja and Valachia kile – 400 oka = 513.60 kg

Center (Zenter) – 56.496 kg

Cantar – 56.565 kg

Quintal – 56.41 kg

Trieste Star – 64.2 kg

Metzen – 46.609 kg

Wiener Pfund – 0,564 kg

charges de Marseille – 1,6 hectoliters (116,844 kg at the prevailing hectoliter weight of Bulgarian wheat, cf. below)

hectoliter – 73,188 kg. It measures the volume of cereal and is equal to 100 litters. The unit is popular mainly in France. Information about the hectolitre weight immediately before the Liberation were given by the Italian and Russian vice-consuls in Ruse. They reported 79-80 kg per hectolitre for wheat. At the same time, they point out that "in good years" the grains from Pleven, Tarnovo, Belene and Lovech regions "reach 82 kg" per hectolitre.[[191]](#footnote-191) The values are more or less similar in 1846-1847, resp. 73.3 and 75.9 kg.[[192]](#footnote-192) For the years after 1878, again the Italian vice-consul in Ruse calculated the hectolitre weight of wheat at 74.1 kg, of barley at 73.1 kg, of rye at 7.3 kg and of oats at 2.4 kg. According to the same source, the first-class grains from the regions of Tarnovo, Vidin, Sofia, Pleven, Berkovitsa, Vratsa, Lovech, Svishtov, Sevlievo and E. Djumaya (now Targovishte) were usually 78-79 kg per 100 liters. The second quality varied between 76-77 kg (mostly from the Provadia, Shumen, Varna, Novo Selo and Yeni Pazar (now Novi Pazar) kaza, while the third quality wheat weighted 75 kg per hectolitre. There are areas such as Balbunar (now Kubrat) and Tutrakan, where wheat was even worse, reaching only 69-71 kg per 100 litters.[[193]](#footnote-193) The value given here of 73.188 kg per hectolitre is based on Michoff's indication of 0.35 hectolitres in each Istanbul kilo of 20 oka (25.68 kg).[[194]](#footnote-194)

#### Greasy Wool

We estimated the volume of exported greasy wool on the basis of the number of sheep (see chapter 1). The approximate flock size in North Bulgaria in 1848, according to contemporary sources was 4 million and in 1870 5.34 million heads.[[195]](#footnote-195) To check the robustness of these figures we use the annual rate of increase in the number of sheep of 1.49 percent (1828-end of 1860s) in the Danubian Bulgaria north of the Balkan Mountains range[[196]](#footnote-196) as compared with 1.29 percent for Bulgaria, within today's borders between 1886 and 1912.[[197]](#footnote-197) To determine the annual output of greasy wool we apply the average weight of the fleece of 1 oka (1,284 kg) which was established above. Based on the instructions in Michoff for 1870, we predicted that around approx. 30 percent of the annual wool production have been exported abroad. It is also known that during earlier decades, exports were higher and the needs of the local woollen industry were lower. For this reason, we provisioned 35 percent export in the 1860s, 40 percent - in the 1850s and 42% - in the 1840s. Finally, we applied the annual wool prices to these export quantities that we have collected from the number of sources.[[198]](#footnote-198)

#### Woollens

We employ a different procedure for determining the export of woollen textiles. Using published Ottoman archival sources we were able to estimate the approximate volume of military orders for cloth to local Bulgarian producers which around 1830 stood at about 570 thousand square meters.[[199]](#footnote-199) We also assumed that military supplies represented about two thirds of the total production during the 1830s. Under this assumption total output of woollen textiles was roughly about 850 thousand sq. m. around 1830. Given that around 1870 the woollen output has already been estimated at 1.2 mil. sq. m.[[200]](#footnote-200) the annual growth rate for the three decades between 1840 and 1870 should have been around 1 percent. However, if we also take into account the impressive boom of gaytan-making[[201]](#footnote-201), then we are safe to say that the annual growth rate in woollens production probably reached about 2 percent. We should also recall the already established population growth rate of 1.69 percent, which should probably increase by about a quarter (up to 2 percent per annum) in order to account the significant “foreign” clientele of Bulgarian textiles in Anatolia, Bosnia and Herzegovina, Macedonia, Aegean Thrace, the Greek islands, Constantinople, Serbia, Wallachia, Moldova, etc. By back-casting the 2 percent annual growth rate we were able to approximate the volume of production for each of the years between 1840 and 1876. Finally, we have deducted 40 percent for exports.

#### Rose Oil, Cocoons, Reeled Silk

The export of rose oil is based entirely on consular information for the volume of production. As the entire harvest was destined for the European market, foreign consuls showed a keen interest and regularly assessed the volume and the value of production.[[202]](#footnote-202) The situation is similar in the production of cocoons, silk-worm eggs and reeled silk which were also almost entirely exported abroad. Consular reports estimated the cocoon harvest in 1848, 1851, 1860, 1871 and 1876.[[203]](#footnote-203) Their volume in the remaining years was roughly reconstructed as follows: between 1840 and 1847 output was considered equal to the 1848-value, between 1850 and 1852 to be equal to the 1851-value, between 1857-1868 to the 1860-value, and in 1870-1876 it was determined by an average of harvest figures for 1871 and 1876. To these quantities we apply annual prices that we have specially collected for this study.

All prices and export values were reported by foreign consuls in variying currencies - kuruş, Turkish and Italian liras, French francs, British pounds, and Austrian Florins, Gulden, Thalers or Mintz. All of them we converted into French francs (which were equal to Levs) at the exchange rates published by Denzel.[[204]](#footnote-204) It should also be noted that the first few post-Liberation years posed a number of challenges. First of all, data on the foreign trade of Eastern Rumelia is available for only two (1882 and 1883) out of seven years of the existence of this autonomous province. We took 1882 as representative for 1879-1881, and 1883 for 1884-1885. Second, the statistics of the Principality of Bulgaria for 1879-1881 fail to provide information on the commercial exchange with Eastern Rumelia. To correct this problem we had to use again the 1882 data as representative for the preceding three years. In this way we were able to deduct commercial flows between the two Bulgarian regions which, according to the territorial concept adopted here (present day Bulgarian borders) should be treated as internal trade.

**Table 2.2. Bulgarian Foreign Trade, 1840-1912 (in current prices)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Main Export Items (000 Levs) | | | | | | Total Exports (000 Levs) | Total Imports (000 Levs) |
|  | Woollens | Grain | Rose Oil | Wool | Silk\* | Total |
| 1840 | 3 961 | 2 974 | 300 | 3 163 | 50 | 10 448 | 14 511 | 16 071 |
| 1841 | 4 042 | 3 172 | 300 | 3 205 | 50 | 10 769 | 14 957 | 16 605 |
| 1842 | 4 124 | 26 223 | 500 | 3 247 | 50 | 34 145 | 47 423 | 46 637 |
| 1843 | 4 209 | 19 149 | 500 | 3 290 | 50 | 27 197 | 37 774 | 37 297 |
| 1844 | 4 295 | 10 622 | 700 | 3 333 | 50 | 19 000 | 26 389 | 26 292 |
| 1845 | 4 382 | 23 445 | 800 | 3 242 | 50 | 31 919 | 44 332 | 43 689 |
| 1846 | 4 472 | 20 175 | 800 | 2 806 | 50 | 28 302 | 39 308 | 36 702 |
| 1847 | 4 563 | 35 772 | 1 000 | 2 392 | 50 | 43 776 | 60 800 | 68 524 |
| 1848 | 4 656 | 5 002 | 1 129 | 2 669 | 55 | 13 511 | 18 765 | 18 916 |
| 1849 | 4 751 | 17 272 | 565 | 3 096 | 500 | 26 184 | 36 366 | 37 334 |
| 1850 | 4 848 | 27 482 | 500 | 2 163 | 1 000 | 35 993 | 47 091 | 51 420 |
| 1851 | 4 947 | 29 975 | 241 | 3 896 | 1 010 | 40 068 | 58 183 | 61 464 |
| 1852 | 5 048 | 23 756 | 250 | 2 961 | 1 000 | 32 064 | 44 765 | 42 143 |
| 1857 | 5 151 | 8 767 | 563 | 4 779 | 3 060 | 22 320 | 32 349 | 30 731 |
| 1858 | 5 256 | 7 896 | 949 | 3 660 | 2 882 | 20 643 | 28 488 | 30 281 |
| 1859 | 5 363 | 10 266 | 611 | 5 408 | 2 140 | 23 788 | 31 117 | 25 533 |
| 1860 | 5 473 | 5 046 | 355 | 3 698 | 2 093 | 16 665 | 23 723 | 28 424 |
| 1861 | 5 584 | 13 466 | 843 | 4 025 | 1 767 | 25 686 | 35 365 | 32 155 |
| 1862 | 5 698 | 22 121 | 1 364 | 4 394 | 2 097 | 35 675 | 48 160 | 37 400 |
| 1863 | 5 815 | 11 989 | 1 373 | 5 449 | 1 169 | 25 795 | 33 624 | 25 377 |
| 1864 | 5 933 | 20 152 | 228 | 7 469 | 1 455 | 35 239 | 43 825 | 31 050 |
| 1865 | 6 054 | 10 846 | 1 038 | 7 275 | 956 | 26 170 | 37 467 | 23 745 |
| 1866 | 6 178 | 21 408 | 2 220 | 8 001 | 769 | 38 576 | 52 209 | 39 499 |
| 1867 | 6 304 | 23 600 | 889 | 6 155 | 810 | 37 758 | 52 578 | 48 988 |
|  | Woollens | Grain | Rose Oil | Wool | Silk\* | Total | Exports | Imports |
| 1868 | 6 433 | 16 466 | 289 | 5 437 | 942 | 29 567 | 41 111 | 37 582 |
| 1869 | 6 564 | 18 940 | 167 | 7 705 | 800 | 34 175 | 49 119 | 51 236 |
| 1870 | 6 698 | 5 793 | 324 | 6 305 | 781 | 19 902 | 28 049 | 31 133 |
| 1871 | 6 698 | 8 324 | 602 | 5 321 | 500 | 21 444 | 30 611 | 24 678 |
| 1872 | 6 698 | 16 392 | 761 | 6 866 | 400 | 31 118 | 44 312 | 38 842 |
| 1873 | 6 363 | 15 115 | 3 533 | 6 921 | 300 | 32 231 | 44 756 | 39 088 |
| 1874 | 6 363 | 8 256 | 1 005 | 6 517 | 250 | 22 392 | 31 221 | 21 409 |
| 1875 | 6 028 | 21 711 | 2 514 | 6 424 | 250 | 36 927 | 50 809 | 44 446 |
| 1876 | 5 358 | 16 805 | 1 889 | 6 471 | 257 | 30 780 | 41 667 | 37 778 |
| 1879 | n/a | n/a | n/a | n/a | n/a | n/a | 18 325 | 31 776 |
| 1880 | 1 572 | 27 698 | n/a | 1 000 | 396 | 30 666 | 30 204 | 47 680 |
| 1881 | 949 | 21 693 | n/a | 486 | 534 | 23 662 | 29 020 | 48 370 |
| 1882 | 988 | 22 170 | n/a | 102 | 174 | 23 434 | 32 888 | 41 877 |
| 1883 | 1 310 | 31 555 | n/a | 98 | 384 | 33 347 | 46 272 | 53 358 |
| 1884 | 1 192 | 23 232 | n/a | 68 | 455 | 24 946 | 32 329 | 48 539 |
| 1885 | 173 | 36 363 | 606 | 97 | 196 | 37 436 | 41 016 | 41 148 |
| 1886 | 2 048 | 32 573 | 784 | 135 | 889 | 36 429 | 50 404 | 64 285 |
| 1887 | 2 353 | 25 092 | 2 092 | 391 | 974 | 30 902 | 45 747 | 64 742 |
| 1888 | 2 153 | 45 852 | 1 876 | 349 | 321 | 50 550 | 61 199 | 66 362 |
| 1889 | 2 399 | 62 185 | 1 566 | 341 | 644 | 67 135 | 80 581 | 72 869 |
| 1890 | 2 390 | 54 161 | 1 799 | 190 | 380 | 58 919 | 71 051 | 84 530 |
| 1891 | 3 306 | 52 696 | 1 913 | 163 | 605 | 58 682 | 71 065 | 81 348 |
| 1892 | 2 344 | 56 745 | 1 615 | 95 | 640 | 61 406 | 74 640 | 77 303 |
| 1893 | 2 557 | 73 566 | 1 555 | 80 | 785 | 78 544 | 91 464 | 90 868 |
| 1894 | 2 575 | 54 889 | 1 755 | 30 | 750 | 59 999 | 72 851 | 99 229 |
| 1895 | 2 186 | 42 928 | 1 747 | 66 | 677 | 47 604 | 77 686 | 69 020 |
| 1896 | 1 717 | 92 889 | 1 859 | 86 | 766 | 97 318 | 108 740 | 76 530 |
| 1897 | 2 016 | 45 279 | 1 798 | 24 | 831 | 49 946 | 59 791 | 83 994 |
| 1898 | 2 516 | 45 763 | 2 589 | 27 | 1 025 | 51 919 | 66 537 | 72 730 |
| 1899 | 2 226 | 31 285 | 2 663 | 40 | 1 740 | 37 954 | 53 467 | 60 178 |
| 1900 | 2 342 | 24 985 | 3 719 | 115 | 1 747 | 32 907 | 53 983 | 46 342 |
| 1901 | 2 794 | 47 823 | 3 122 | 58 | 1 809 | 55 606 | 82 770 | 70 044 |
| 1902 | 2 915 | 60 342 | 2 703 | 86 | 2 373 | 68 419 | 103 685 | 71 246 |
| 1903 | 2 884 | 67 822 | 3 753 | 65 | 2 578 | 77 103 | 108 074 | 81 803 |
| 1904 | 2 912 | 116 650 | 2 755 | 51 | 3 221 | 125 588 | 157 619 | 129 690 |
| 1905 | 2 909 | 94 538 | 3 726 | 91 | 3 882 | 105 146 | 147 961 | 122 250 |
| 1906 | 3 791 | 63 886 | 4 532 | 838 | 2 830 | 75 878 | 114 573 | 108 474 |
| 1907 | 3 729 | 74 365 | 4 655 | 278 | 3 316 | 86 343 | 125 595 | 124 661 |
| 1908 | 3 000 | 65 617 | 4 245 | 175 | 3 230 | 76 267 | 112 357 | 130 151 |
| 1909 | 5 006 | 59 033 | 5 343 | 163 | 3 866 | 73 411 | 111 434 | 160 430 |
| 1910 | 6 167 | 63 853 | 5 523 | 105 | 3 727 | 79 375 | 129 052 | 177 357 |
| 1911 | 3 628 | 106 826 | 7 429 | 115 | 3 072 | 121 069 | 184 634 | 199 345 |
| 1912 | 2 260 | 95 267 | 11 673 | 39 | 1 423 | 110 662 | 156 407 | 213 110 |

*Source*: Cf. the text.

*Note*: \* reeled silk, cocoons and, and silk-worm eggs.

## III. Bulgarian Net Barter Terms of Trade

**Figure 3.1. *Bulgarian net barter terms of trade, 1840-1912***

*Source*: Cf. the text.

Drawing from a variety of sources we were able to calculate Bulgarian net barter terms of trade (Fisher index) from 1840 onwards. In our reconstruction procedure we follow closely Williamson as well as Pamuk and Williamson.[[205]](#footnote-205) On the export side, our weights are based on consular reports from Varna and all the main ports on the Bulgarian bank of the Danube reproduced in Michoff’s six volumes and a series of articles.[[206]](#footnote-206) About half of Bulgarian exports went through these harbours during the early post-liberation period (1886-95) and their share was arguably even bigger before the advent of railways. To check the robustness of our results, we additionally produced estimates for the six leading export articles (woollens, greasy wool, grains, rose oil, cocoons, and reeled silk), the share of which in all exports never went below 69 percent. These key items also served to double-check the export weights. Drawing from Michoff, Berov, and various other sources we were able to collect f.o.b. price data for all important Bulgarian export commodities.[[207]](#footnote-207) Current prices were then converted to British pounds using the *kuruş*/pound exchange rates from Denzel.[[208]](#footnote-208) Due to better price information for 1887 (the first year with official price data from the Statistical Office) we have selected it as a base year, instead of 1880 used by Pamuk and Williamson. On the import side, we employed two alternative techniques. First, due to the much inferior data on import weights and prices we followed Pamuk and Williamson and proxied to Bulgarian import prices by using British export price indices.[[209]](#footnote-209) In addition, we also followed Federico and Tena-Junguito who suggest to base terms of trade calculations on polity-specific import prices, rather than British export indices.[[210]](#footnote-210) Reassuringly, both methods yielded similar results (figure 3.1 and table A.5).

## IV. Gross Domestic Product, c. 1870-1912

The GDP estimates that have been employed in this study are a slightly improved version of the recently published figures by Ivanov.[[211]](#footnote-211) The current estimates represent an important step forward because the GDP-estimations for 1870 and 1880 have improved substantially. By using more reliable population numbers and employment figures for artisans they present a more plausible aggregate output value for the late Ottoman period and the first post-1878 decades. Partly, these revised GDP estimates have been recently published online by the Bulgarian National Statistical Institute.[[212]](#footnote-212) Drawing on our new textile output and employment figures (section one in this appendix) we are now able to present an additional improvement in the early Bulgarian GDP estimates from ca. 1870 to 1912.

As a template for the construction of Bulgarian GDP estimates Ivanov draws heavily on the pathbreaking work of Asen Chakalov who have calculated the national income from 1924 to 1945.[[213]](#footnote-213) His estimates have become a standard reference in the literature amongst others for Maddison.[[214]](#footnote-214) Given the high quality of Chakalov’s estimates his approach, which combines what is known today as the production-method with the income-method, is closely replicated by Ivanov on the basis of original statistical sources for the period 1887 to 1912 and on personally collected quantitative data for the two spot estimates for the two yerars 1870 and 1880.

#### Cereals

Just like in the original calculations by Chakalov, production of cereals emerges as the largest component of Ivanov’s GDP-estimate. For the 1887-1912 period Ivanov multiplies output volumes with farm-gate prices both reported in statistical yearbooks. It should be mentioned that Bulgarian agricultural statistics are very detailed for the period 1889–1892, 1897–1900, and 1903–1912. They provide sufficient information to estimate the agricultural net income. For the missing years (1887-1888, 1893-1896, and 1901-1902) the output has been assessed on the basis of grain exports. Needless to say, that this approach is far from being ideal but it showed a reasonable correlation of above 70 percent for the earlier years in which both output and export series were available (1889-1892 and 1897-1900). IN addition, following Chakalov Ivanov also has deducted feed and sowing seeds.

Calculating the yield of major grains around 1870 makes a number of assumptions necessary. Just like Palairet[[215]](#footnote-215), the quantitative information is drawn from two regional *sālnāme* – that of the Edirne vilayet from 1871 (1287 according to Hidjra) and of the Danubian vilayet from 1869 (1286).[[216]](#footnote-216) The latter was later reprinted with few corrections by a Russian source.[[217]](#footnote-217) The Edirne figures were then adjusted, as much as possible to the present day Bulgarian territory on the basis of the tithe revenues which the above-mentioned *sālnāme* reports on sub-provincial level (kaza). Ottoman regional yearbooks enjoy a good standing among researchers.[[218]](#footnote-218)

Measuring agricultural production around 1880 requires a slightly different approach. For the Principality (North Bulgaria) all we have are approximate assessments of the tithe (all grains, excluding rice). The regional Statistical Yearbook for Eastern Rumelia (South Bulgaria) published yield-data for a variety of crops including some fruits, vegetables and tobacco. For a full territorial compatibility, however, the so-called southern outskirts and Pirin Macedonia, which became part of Bulgaria after the Balkan Wars should also be taken into consideration. The grain output of these “new lands” was estimated on the basis of their share in the total production between 1919 and 1921.

#### Industrial Crops

Information on the output of industrial crops is far more fragmentary than for grains. Statistical yearbooks offer only few annual observations on their yields (1897-1900 and 1902-1912). Instead, for the post-Liberation period Ivanov rested his assessments on the data for tobacco crop (1880-1912) published in the Bulgarski Tutun magazine. These data was very likely collected by the Bulgarian fiscal authorities.[[219]](#footnote-219) All remaining industrial plants were proxied using their ratio in the tobacco output in the earliest period for which data was available (1903–1911). Due to luck of data for the late Ottoman period production of industrial crops was estimated based on their average share in the value of wheat output during the 1880s and 1890s.

#### Grapes, Fruits, Alcoholic Beverages, Vegetables, Legumes, Roses, Fodder

Regrettably, output statistics of grapes and fruits started only in 1897 and run continuously until 1912 with just one small interruption (1901-1902). Their production from the 1870s to late 1890s was proxied by the ratio of grapes to the value of the wheat harvest (1897-1910) and the share of exports of fresh fruits in grapes. The latter correlation probably leads to a certain degree of underestimation for the earlier years because it does not take into account the philloxera disease that has ravaged Bulgarian vineyards since the early-1890s. To estimate the grape harvest around 1880 Ivanov resorted to data on the wine output in South Bulgarian[[220]](#footnote-220) published in the Yearbook of Eastern Rumelia which he then doubled in order to obtain an approximate figure for the entire country. To assess the income from alcoholic beverages (wine and rakiya) internal consumption of fresh grapes and fruits had to be determined first. This was done by using its share of total output in 1924 as reported by Chakalov. The same ratio was then used for the 1870-1912 period. The remaining harvest was assumed to be distilled into rakiya or used for wine-making. Using the instruction of the 1903 Law of Excise Duty it was assumed that 10 liters of forty percent alcohol were made out of 100 kg of rakiya-marc. The annual output of the remaining crops of lesser importance (legumes, vegetables, roses, fodder) were either taken from statistical yearbooks or proxied by their export.

#### Stockbreeding, Non Food Rural Household Production, Domestic Servants, Implicit Rent, Interest on Agricultural Credits

The calculation of value added in livestock farming rested on the number of livestock in key census years and average milk and meat yields minus the costs of feed supplied from the arable sector. To maintain consistency Ivanov has applied the milk and meat yields used by Chakalov with a downward adjustment for the earlier period. He used information from the Veterinarna Sreshta journal (1892–1925), Mliako i Meso journal (1936–1943), and Hladilno-Klanninchno Delo journal (1933–1944), as well as some other expert publications.[[221]](#footnote-221) The same method was also applied for wool and other animal hair products.[[222]](#footnote-222) The output of eggs was estimated using the transport statistics. The production of forestry and fishing was derived from official figures published by the General Directorate of Statistics. The income out of of Non food rural household production as an important by-empoyment was calculated by multiplying the number of females, aged between 16 and 60 years by the average number of days spent for home work based on peasant account books and contemporary surveys.[[223]](#footnote-223) A similar procedure was applied for servants who almost exclusively came from rural families. Implicit rental income from both rural and urban dwellings was based on census information about the number of buildings and annual data on rents. Interest payments on agricultural credits has been subtracted, following Chakalov’s methodology. The necessary information was derived from balance-sheets published in a wide variety of sources: journals, commercial press, company brochures and academic publications. 168 newspapers and magazines in the six national deposit libraries have been studied to collect balance-sheet information for 187 private banks and non-banking (savings) companies as well as for all state owned financial institutions.

#### Large Industry and Mining

Because of the Bulgarian government’s protectionist policy to promote the domestic industry we possess fairly detailed but discontinuous statistical information about the production of large-scale industry and mining. Industrial censuses from 1904 and 1909 have been supplemented by two annual publications for 1911 and 1912. This is sufficient material for a handful of reliable spot estimates[[224]](#footnote-224) but not for the reconstruction of a continuous annual output series for the period 1870 to 1912. For the intermediary years between censuses Ivanov used coal consumption and the number of factories to arrive at a reasonable estimate of industrial output. Value added has been calculated by deducting input costs from sales figures. For the non-census years these deductions rested on their proportions as reported in the 1909 industrial survey, by-far the most detailed statistical study of Bulgarian protected industry before 1912. To conform to the definition of GNP (Gross National Product) we also deducted interest payments. Given their insignificant amount before 1887 in the two early spot estimates for 1870 and 1880 the output of larger factories is lumped together with petty industry and proxied on their share at the total of handicrafts and construction, the two subsectors with better data coverage in these early years.

#### Handicrafts and Small Scale Industry

Available statistics does not reflect the importance of handicrafts production. A first quantitative survey was carried out only in 1936 and is not of any use for earlier assessments. Following Chakalov Ivanov estimated the income of proto-industrial activities on the basis of the number of craftsmen reported in the occupation censuses to which he applied the masons’ daily wage (for the masters) and day-labourers wage (for the journeymen and the apprentices). Annual income was received on the assumption of 250 working days. The same technique was applied to determine the income of petty industry. The number of employed people in this sub-sector was again gained from population censuses after deducting all those occupied in handcrafts and in large protected industry (censuses tend to lump all those occupations together).

A forthcoming study on Bulgarian occupational censuses[[225]](#footnote-225) reveals the dubious nature of the secondary sector employment figures in the 1888 and the 1892 surveys. Hence, instead of taking 1888 and 1892 census results at face value as in Ivanov (2012) we have constructed a completely new series of the number of artisans (ca. 1870-1912) which rested on our estimates of textile employment produced for this study. For the rough 1870-estimate we have collected all available *sālnāme* figures for northern and southern Bulgaria on urban artisan workshops and estimated the numbers for few missing proto-industrial localities like Panagyurishte, Zheravna, and the Rhodope Mountains area. Using the approximate total of 40,000 urban workshop we assumed an equal number of master artisans and a ratio of 2.1 journeymen and apprentices to one master. We established this ratio from a number of observations in the contemporary literature for the largest wool-textile producing centres. According to Berov, the total of 85,000 urban craftsmen (40 thousand masters and 45 thousand assistants) should be then doubled in order to capture also the rural artisans.[[226]](#footnote-226) However, the obtained result of 170,000 craftsmen around 1870 seemed far too high. Instead, we have corrected downward that figure to receive approximately 155 thousand artisans (55 thousand masters, 55 thousand apprentices and 45 thousand journeymen).

Our new estimate of the number of artisans in 1880 employs the data in the early occupational censuses for the Principality (North Bulgaria) and Eastern Rumelia (South Bulgaria). The total of 108,000 craftsmen is then broken down into 53,000 masters, 30,000 journeymen, and 25,000 apprentices. From 1887 onwards to the first reliable census in 1900 we extrapolated the 1870, 1880 and 1900 results using the share of masters among all other craftsmen.

Just like Chakalov the income of small-scale industrial entrepreneurs was estimated by tripling the day-labourer’s wage under the assumption of 240 working days. The remuneration of the workers in petty industry was taken to be equal to the salary of a day-labourer. The added value of mining and manufacturing (both large and small-scale) in 1870 and 1880 was approximated only very roughly using their ratio to the net income earned from handcrafts and construction as a reference point. During the late 1880s it varied between 12 to 15 percent, which is why 10 percent was applied to 1880 and 8 percent to 1870.

#### Construction

Figures for public construction were taken from central and local government budgets published in the State Gazette. The values of the private construction projects were obtained by taking the number of newly-constructed buildings (the difference between two consecutive censuses), which was then multiplied by the average value of a building. For the years 1899, 1906 and 1911 this value was taken from K. G. Popov.[[227]](#footnote-227) For the remaining post-Liberation years the average value was determined by the price fluctuations of lime. The income of the self-employed construction workers was calculated by interpolating their number in the population censuses to which the mason’s daily wage was applied. As suggested by Chakalov the length of the working year is supposed to be 155 work days.

For 1870 much more assumptions were required because no quantitative data was available. The number of builders in 1870 was estimated by extrapolating back the figures from occupational censuses during the 1890s. The 10:8 ratio between the net income of investors and of construction workers witnessed in the calculations for the late 1880s and the early 1890s was presumed to hold also for 1870. Public constructions were presumed to be equal to zero.

#### Transport, Communications, Financial Services

Due to significant state activities in the transport and communication sector we have at our disposal very detailed data on the income in this sector net of labour costs. The same applies to a large extent to the financial services sector. Only for private banking and insurance institutions Ivanov was compelled to resort to profit and loss accounts published in the State Gazette or preserved in the archives. Data on the tertiary sector in ca. 1870 is particularly scant. When no robust data was available Ivanov used the net income of grain as a yardstick for a rough approximation of the added value of financial services, transport and communications. Given the dominant role of grain production in the economy, its direct link to those services is justified.

#### Trade

The relatively low level of marketization of the economy created serious problem for the calculation of income from trade. Following Chakalov Ivanov constructed a proxy by assuming a fixed mark-up on the sales of agricultural goods, the value added of industry, and the import trades. The flow of traded agricultural goods is approximated by summing up the value of exports and the value of commodities transported by the railways. The industrial and craft figure has been calculated in the same way like for agricultural production. To avoid double counting, industrial output was netted of local raw material consumption and of excises and taxes paid. The income of trade is taken to be a fixed 15 percent share of the total sales figures for agriculture, industry, and crafts.

#### Free-lance Professions, Public Services and Pensions

Aggregate incomes of freelance professionals and public services were estimated by applying estimated salary levels to occupation census data. For lack of alternative information, the salary levels were derived from masons’ wages, adjusted for salary differentials and the longer working year of white-collar employees. Earnings of public servants and pensions were taken directly from budget data for wage bills and the public works expenditure of national and local government as well as autonomous state agencies. The population censuses (1881 and 1884) and the regional Ottoman Statistical Yearbooks were used by Ivanov to determine the net income earned by free-lancers. Eventhough of somewhat inferior quality budgetary statistics for 1880 of the Principality of Bulgaria and Eastern Rumelia together with that of Edirne and the Danubian vilayets for 1870 are sufficient to approximate incomes of civil servants and pensioners in 1870 and 1880.

#### Robustness Checks

Ivanov was able to compare his GDP figures to previous estimates of the Bulgarian national accounts compiled by A. Manushev and I. E. Geshov for 1889-1891, and by K. G. Popov for 1892 and 1911. With a difference varied between 1 and 8 percent results were reassuring. This speaks in favour of the new set of GDP estimates published by Ivanov in 2012.

**Table 4.1. Selected Components of Bulgarian GDP at Current Prices, in mil. Levs (unless otherwise stated)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Primary Sector | Cereals | Rural by-employment | Secondary Sector | Factory Production | Handcrafts | Tertiary Sector | Total GDP | GDP p.c., Levs |
| 1887 | 540.2 | 187.2 | 96.6 | 70.0 | 0.3 | 52.9 | 146.2 | 756.4 | 222.1 |
| 1888 | 551.6 | 213.1 | 94.2 | 69.7 | 0.3 | 52.2 | 138.2 | 759.5 | 220.7 |
| 1889 | 484.6 | 148.5 | 97.3 | 71.3 | 0.3 | 53.1 | 164.1 | 720.0 | 207.2 |
| 1890 | 502.8 | 151.6 | 99.8 | 73.6 | 0.4 | 54.5 | 183.3 | 759.6 | 216.5 |
| 1891 | 680.2 | 300.2 | 96.7 | 71.1 | 0.7 | 51.9 | 194.2 | 945.5 | 266.9 |
| 1892 | 635.1 | 245.6 | 101.0 | 75.2 | 1.6 | 53.4 | 204.0 | 914.3 | 255.6 |
| 1893 | 583.0 | 175.3 | 109.8 | 83.6 | 1.8 | 59.0 | 228.0 | 894.7 | 247.0 |
| 1894 | 571.5 | 156.4 | 110.7 | 85.4 | 1.6 | 60.6 | 228.4 | 885.3 | 240.7 |
| 1895 | 551.1 | 146.8 | 104.5 | 84.4 | 2.1 | 60.2 | 228.5 | 864.1 | 231.4 |
| 1896 | 568.7 | 166.0 | 101.1 | 83.6 | 2.0 | 59.7 | 240.3 | 892.6 | 235.3 |
| 1897 | 596.4 | 182.5 | 121.7 | 90.7 | 2.3 | 63.1 | 236.8 | 923.9 | 239.9 |
| 1898 | 659.3 | 212.0 | 103.7 | 90.0 | 2.2 | 64.7 | 240.4 | 989.7 | 253.1 |
| 1899 | 564.6 | 130.3 | 92.0 | 81.5 | 4.8 | 56.3 | 239.1 | 885.1 | 222.8 |
| 1900 | 546.8 | 173.3 | 90.7 | 80.2 | 4.5 | 56.0 | 227.5 | 854.6 | 211.9 |
| 1901 | 562.9 | 185.5 | 91.2 | 79.9 | 4.9 | 53.4 | 248.8 | 891.6 | 217.7 |
| 1902 | 630.0 | 206.6 | 94.9 | 79.4 | 5.3 | 51.2 | 260.2 | 969.6 | 233.2 |
| 1903 | 646.6 | 194.4 | 98.8 | 80.2 | 6.6 | 51.0 | 271.9 | 998.8 | 236.7 |
| 1904 | 673.3 | 199.0 | 102.6 | 85.9 | 8.8 | 52.3 | 310.1 | 1,069.3 | 249.7 |
| 1905 | 703.8 | 188.3 | 114.2 | 93.8 | 10.4 | 55.9 | 330.8 | 1,128.3 | 259.5 |
| 1906 | 770.6 | 215.5 | 123.0 | 100.2 | 9.1 | 62.5 | 355.2 | 1,226.1 | 277.8 |
| 1907 | 699.8 | 129.5 | 128.5 | 115.8 | 15.6 | 68.4 | 389.8 | 1,205.5 | 269.3 |
| 1908 | 893.9 | 250.6 | 131.3 | 121.8 | 18.0 | 70.7 | 399.9 | 1,415.6 | 311.7 |
| 1909 | 882.9 | 235.4 | 139.9 | 131.7 | 22.3 | 73.7 | 429.8 | 1,444.4 | 313.5 |
| 1910 | 896.2 | 276.0 | 150.2 | 141.1 | 24.7 | 77.8 | 447.3 | 1,484.5 | 317.5 |
| 1911 | 1,004.5 | 294.0 | 162.3 | 162.2 | 33.4 | 83.1 | 506.7 | 1,673.3 | 352.9 |
| 1912 | 1,042.9 | 310.3 | 186.6 | 168.5 | 29.9 | 92.2 | 509.6 | 1,720.9 | 357.7 |

*Source*: See the text.

#### GDP at Constant Prices and Territory

To provide a meaningful comparison over the long run between 1870 and 1912, we must consider differing price developments depending on the economic sector or type of commodity. In addition we have to adjust for territorial changes affceting as well population numbers in the course of the Balkan Wars and World War I. Instead of deflating the nominal national income figures using the retail price index Ivanov applied specific price series to each GDP component. Several sector-specific price indices have been constructed for industrial prices, transport and communications costs, rents, civil servants’ daily wage etc.[[228]](#footnote-228) These indices are calculated for two different base years: 1911 and 1939. The latter

base year in Chakalov’s series have been used by Maddison to produce his estimates in Geary-Khamis international dollars at the 1990 purchasing power parity. It should be noted that due to scarce price information c. 1870 and 1880 both estimates have been produced only in constant 1911 and 1939 prices. To compare 1870 with 1912, Ivanov had also to allow for territorial changes taking present day Bulgarian borders as a reference point. Fortunately, in most of the cases Ottoman statistics were presented in regionally disaggregated form permitting Ivanov to separate directly or indirectly the areas that fall within present day borders.

**Table 4.2. Selected Components of Bulgarian GDP at Constant 1911 Prices, in mil. Levs (unless otherwise stated)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Primary Sector | Cereals | Rural by-employment | Secondary Sector | Factory Industry | Hand-crafts | Tertiary Sector | Total GDP | Total GDP, m. 1990 intl. $ | GDP p.c., 1990 intl. $ |
| c.1870 | 533.8 | 122.1 | 96.7 | 102.4 | \* | 91.8 | 142.4 | 778.6 | 3,073.8 | 937.1 |
| c.1880 | 588.2 | 157.7 | 108.8 | 89.2 | \* | 77.6 | 172.5 | 849.9 | 3,264.5 | 1,054.4 |
| 1887 | 728.2 | 210.1 | 117.7 | 94.4 | 0.4 | 73.8 | 209.4 | 1032.0 | 3,411.9 | 1,001.7 |
| 1888 | 821.6 | 291.2 | 118.7 | 95.6 | 0.4 | 73.8 | 208.7 | 1125.9 | 4,263.2 | 1,238.9 |
| 1889 | 730.1 | 223.8 | 119.8 | 96.0 | 0.3 | 73.8 | 244.5 | 1070.7 | 4,070.5 | 1,171.7 |
| 1890 | 685.8 | 183.5 | 120.9 | 96.4 | 0.5 | 73.5 | 258.0 | 1040.2 | 3,449.9 | 983.4 |
| 1891 | 814.1 | 287.4 | 121.9 | 96.0 | 0.9 | 72.1 | 265.0 | 1175.1 | 4,439.9 | 1,253.5 |
| 1892 | 811.8 | 287.7 | 123.0 | 97.9 | 2.1 | 71.8 | 273.1 | 1182.8 | 4,452.0 | 1,244.6 |
| 1893 | 745.9 | 233.9 | 124.6 | 99.1 | 2.3 | 71.8 | 291.2 | 1136.2 | 3,727.5 | 1,029.1 |
| 1894 | 748.6 | 232.7 | 126.3 | 102.4 | 1.9 | 74.8 | 298.2 | 1149.1 | 4,338.1 | 1,179.5 |
| 1895 | 737.1 | 212.3 | 128.0 | 106.9 | 2.6 | 77.9 | 303.6 | 1147.6 | 4,375.0 | 1,171.4 |
| 1896 | 798.5 | 235.8 | 129.7 | 109.3 | 2.4 | 79.6 | 327.3 | 1235.1 | 4,086.9 | 1,077.5 |
| 1897 | 732.6 | 203.7 | 131.3 | 112.8 | 2.8 | 82.6 | 316.5 | 1161.9 | 4,417.4 | 1,147.1 |
| 1898 | 852.1 | 239.9 | 133.0 | 117.7 | 2.7 | 86.0 | 326.8 | 1296.5 | 4,974.8 | 1,272.0 |
| 1899 | 758.7 | 134.7 | 134.7 | 124.3 | 6.0 | 89.1 | 347.1 | 1230.2 | 4,059.4 | 1,022.0 |
| 1900 | 758.8 | 184.7 | 136.3 | 125.6 | 5.7 | 90.8 | 339.6 | 1224.0 | 4,716.6 | 1,169.5 |
| 1901 | 796.5 | 212.9 | 139.1 | 126.7 | 6.4 | 88.3 | 371.3 | 1294.5 | 4,955.3 | 1,210.1 |
| 1902 | 856.4 | 238.1 | 141.8 | 126.2 | 6.9 | 85.8 | 379.3 | 1361.9 | 4,551.3 | 1,094.9 |
| 1903 | 900.4 | 231.7 | 144.5 | 124.2 | 8.5 | 83.3 | 386.1 | 1410.7 | 5,434.8 | 1,287.9 |
| 1904 | 910.2 | 240.8 | 147.2 | 126.4 | 10.6 | 81.2 | 422.0 | 1458.6 | 5,558.9 | 1,297.9 |
| 1905 | 882.2 | 207.6 | 149.9 | 125.2 | 11.3 | 78.5 | 414.5 | 1422.0 | 4,678.1 | 1,075.9 |
| 1906 | 948.3 | 248.6 | 152.4 | 124.8 | 9.9 | 79.5 | 423.4 | 1496.5 | 5,749.1 | 1,302.8 |
| 1907 | 770.0 | 122.7 | 154.8 | 133.6 | 15.8 | 80.5 | 444.2 | 1347.9 | 5,134.2 | 1,146.8 |
| 1908 | 929.2 | 210.9 | 157.2 | 138.0 | 18.3 | 81.5 | 447.8 | 1515.0 | 5,002.4 | 1,101.4 |
| 1909 | 901.4 | 188.8 | 159.7 | 144.0 | 22.3 | 82.3 | 462.6 | 1508.0 | 5,738.8 | 1,245.4 |
| 1910 | 929.8 | 262.4 | 162.1 | 148.1 | 24.6 | 82.5 | 468.4 | 1546.2 | 5,894.6 | 1,260.9 |
| 1911 | 1,002.7 | 294.0 | 162.3 | 162.0 | 33.4 | 83.1 | 506.7 | 1671.3 | 5,578.7 | 1,176.5 |
| 1912 | 942.2 | 264.3 | 169.5 | 153.7 | 28.0 | 83.5 | 475.0 | 1570.9 | 6,012.1 | 1,249.7 |

*Source*: See the text.

*Note*: \* Lumped together with small-scale industry.

#### GDP Per Capita

All population figures since 1880 were taken from official sources.[[229]](#footnote-229) In the course of the present study the 1870 population figure has been considerably improved. In his initial 2012 publication Ivanov used the standard reference study by McEverdy and Jones.[[230]](#footnote-230) At closer inspection their 1870 population figure seems suspicious. On the one hand, they do not take into account the population decrease due to the Bulgarian uprising from 1876, the Russo-Turkish War in 1877-1878 and the mass flight of the Moslems to the Ottoman Empire which followed suite. However, the lower population number resulted in dubiously high per capita GDP of Bulgaria in comparison to neighbouring Greece, Romania, Serbia or the Ottoman Empire which all had very similar economic structure. For this reason a new population number has been employed here, which reflects the recent study by Sterionov and take more into consideration the detailed investigation by Teplov.[[231]](#footnote-231)

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1. Cf. for example Mitev and Ivanov, ‘Parvata valna’, pp. 90-135. [↑](#footnote-ref-1)
2. Ivanov, *Bulgarian GDP.* [↑](#footnote-ref-2)
3. Lyberatos, ‘From Imperial Lands’. [↑](#footnote-ref-3)
4. Berov, ‘Promeni’; Berov, ‘Ikonomikata na Balgarskite zemi’. [↑](#footnote-ref-4)
5. Palairet, ‘Farm Productivity’. [↑](#footnote-ref-5)
6. Berov, ‘Ikonomikata na Balgarskite zemi’. [↑](#footnote-ref-6)
7. In order to make the two estimates roughly comparable we have constructed an unweighted industrial price index for the period 1870-1911. It includes the following industrial goods and raw materials: lime, coal, greasy wool, gas, sugar, tiles, soap and bread. The 1870 prices of these commodities were collected from various sources, while those for 1911 are from the official statistics. The average market exchange rate of 5 kuruş for 1 Lev, prevailing during 1870s was used in order to convert the kuruş prices into Levs. [↑](#footnote-ref-7)
8. Nachov, *Kalofer*, p. 269.; Stoyanov, *Grad Pirdop*, pp. 227-228. [↑](#footnote-ref-8)
9. Dodov, ‘Gaytandjiistvoto v Pirdop’, pp. 332-333. [↑](#footnote-ref-9)
10. Semerdjiev, *Samokov*, p. 213. [↑](#footnote-ref-10)
11. Aleksandrov, ‘Iz istoriyata’, pp. 9-10; *Raport na komissiyata ,* p. 19. [↑](#footnote-ref-11)
12. Sakazov, ‘Razvitie’, p. 693.; Staneff, *Das Gewerbewesen*, p. 59. [↑](#footnote-ref-12)
13. Palairet, ‘Decline’, pp. 331-332, 343, 350-354. [↑](#footnote-ref-13)
14. Palairet, *Balkan Economies*, pp. 69-72, 186-197. [↑](#footnote-ref-14)
15. In his 1983 article, apparently after editorial intervention, the sources under numbers 1, 2, 3, etc., to the tables were omitted. Furthermore, in his book, Palairet refers to an unknown BALKSTAT database. In personal contact, he explained to us that these were microfilmed Bulgarian and foreign sources, which he had deposited in the library of the University of Edinburgh. This, of course, does not solve the problem of how exactly the textile production was estimated, nor which of the many titles in BALKSTAT served as source material for one or another calculation. [↑](#footnote-ref-15)
16. Pamuk, and Williamson, ‘Ottoman De-Industrialization’, pp. 166, 168; Lampe, and Jackson, *Balkan Economic History,* pp. 141-143. [↑](#footnote-ref-16)
17. Lyberatos, A. ‘From Imperial Lands’, p. 139-147, 149-153. [↑](#footnote-ref-17)
18. Deane, and Cole, *British Economic Growth*, pp. 192-201. Pamuk, *Ottoman Empire*, pp. 113-117. [↑](#footnote-ref-18)
19. In 1879 Vladimir A. Teplov served as second secretary at the Russian Embassy in Constantinople and was later posted as a Consul General in New York. He published more than 30 studies on the Bulgarian-Greek religious dispute, the Russian diplomatic representatives in Constantinople from 1496 to 1891, and biographies of Kapodistria and Prince Alexei Lobanov-Rostovsky among many others. http://az.lib.ru/t/teplow\_w\_a/text\_2012\_bibliografia.shtml (last visited on June 1, 2020). [↑](#footnote-ref-19)
20. Teplov, *Materialii.* Teplov's data are presented by kazas (communities), which makes it relatively easy to separate the territories falling within present day Bulgarian borders. [↑](#footnote-ref-20)
21. Todorov, *Balkanskiyat grad*, pp. 296, 307.; Shterionov, *Demografsko*, p.306. According to N. Todorov, the annual population growth rate between 1831 and 1870 was 16.9 persons per thousand. For 1865-1871 Shterionov gave 1.08 and 1.58 % for 1871-1875. It is highly improbable that after the beginning of the Long Depression in the early 1870s Bulgarians reproduced faster than during the economically favourable years of the end of 1860s. Instead, we apply an annual rate of 13.5 per thousand which is an average of Todorov’s (1831-71) and Shterionov’s (1865-71) estimates. In practice our figure means 1.45 % annual reproduction rate for Christians and 1.1% for Muslims. [↑](#footnote-ref-21)
22. Shterionov, *Demografsko*, p. 306; McEvedy and Jones, *Atlas*, Europe Areas 14 a-e. [↑](#footnote-ref-22)
23. *Sālnāme-i vilāyet-i Tuna, sene 1289* [1869], def’a 1, p. 106.; ‘Statiya Moshnina’, pp. 79-82. With few exceptions, the two sources report almost identical results. In our calculations we exclude the sheep in Nish Sandjak (region), but we include the flocks in Tulcha Sandjak most of which belonged to Kotel shepherds and their wool was used mainly by Bulgarian artisans. [↑](#footnote-ref-23)
24. *Sālnāme-i vilāyet-i Edirne, sene 1287* [1870], def’a 1, pp. 161-162.; Michoff, *Contribution* (1950), p. 606; Michoff, *Beiträge* (1953), p. 453. Michoff's figures seem more probable than those in the *sālnāme* (4.5 and 2.4 million heads, respectively). Thus we base our calculations on Michoff and approximate that entire sheep population of Sliven and Plovdiv Sandjaks and one half of those in the Edirne Sandjak fall within present day Bulgarian territory. [↑](#footnote-ref-24)
25. *Sālnāme-i vilāyet-i Selānik, sene 1287* [1870], def’a 1, pp. 82-83.; *Sālnāme, 1288* [Sālnāme-i vilāyet-i Selānik 1871], def’a 2, pp. 94-95.; *Sālnāme-i vilāyet-i Selānik, sene 1291* [1874], def’a 4 [3], p. 97. For lack of more accurate information, we assume that half of the sheep flocks in the Seres and Drama Sanjaks were owned by people living in today's Bulgarian territory. The high share of 50 percent could be explained by the fact that the majority of herd owners live in the mountainous regions falling within Bulgarian territory. [↑](#footnote-ref-25)
26. *Rezultati ot prebroyavaneto na dobitaka*, 1888; *Rezultati ot prebroyavaneto na dobitaka* (1890); *Rezultati ot prebroyavaneto na dobitaka* (1894); *Rezultati ot prebroyavaneto na dobitaka* (1900); *Rezultati ot prebroyavaneto na dobitaka* (1906); *Rezultati ot prebroyavaneto na dobitaka* (1910); *Rezultati ot prebroyavaneto na dobitaka* (1918). [↑](#footnote-ref-26)
27. Geshov, ‘Danatsi i budjet’, p. 3; ‘Ovtsi i kozi’, p. 2.; Saranov, ‘Novata’, p. 5; Mishaykov, ‘Ocherk’, p. 491; Georgiev, *Zemledelcheskata proizvoditelnost*, pp. 22-65. [↑](#footnote-ref-27)
28. Palairet, M., ‘Decline’, p. 339. [↑](#footnote-ref-28)
29. Michoff, *Contribution* (1950), pp. 415, 609-610. [↑](#footnote-ref-29)
30. Chakalov, *Natisonalniyat dohod*, p. 32; Staynov, ‘Problemata za valnata’, p. 63.; Spirkov, *Tekstilnata industriya*, p. 33.; *Anketa na nasardchavanata ot darjavata industriya* (1912), p. 50. [↑](#footnote-ref-30)
31. It is obvious from the consular reports reproduced by N. Michoff that from the beginning of the 1870s the export of wool began to decline rapidly. In his annual report for 1873, for example, the Austro-Hungarian diplomat in Ruschuk (now Ruse) noted a "remarkable reduction in wool exports" caused by "increased domestic demand for the production of Bulgarian fabrics [aba] and shayak." Michoff, *Beiträge* (1953), p. 407. Therefore, instead of 33 percent (one third), we predict that net exports amount to 29 percent of the total 11 million kg of wool produced ca. 1870. [↑](#footnote-ref-31)
32. Without citing his source, S. P. Staneff pointed out that wool was imported "all the way from Algeria" Staneff, *Das Gewerbewesen*, p. 60. The consular reports do not confirm this information and mentions only one case of wool imports in 1876, most probably for the needs of the factory in Bali Effendi (Knyajevo). Michoff, *Beiträge* (1953), p. 481-484. [↑](#footnote-ref-32)
33. Damyanov, *Frantsiya*, p. 36.; Michoff, *Contribution* (1950), pp. 515, 609-610; Michoff, N., *Prinos*,pp. 372-373. [↑](#footnote-ref-33)
34. Mishaykov, ‘Belejki’, p. 529; Sakazov, ‘Razvitie’, p. 691; Adjera, ‘Zanayatiata’, p. 472.; *Elenski sbornik,* p.170; Tsonchev, *Iz stopanskoto minalo na Gabrovo*, pp. 95-96.; Staneff, *Das Gewerbewesen*, pp. 11, 22.; Zannetoff, *Die Haus- und fabrikmäßige*, p. 6. [↑](#footnote-ref-34)
35. Michoff, *Contribution* (1941); Michoff, N., *Contribution* (1950); Michoff, *Beiträge* (1943); Michoff, *Beiträge*, (1953); Michoff, *Prinos*, as well as documents, collected by Michoff, published in *Narodostopanski Arhiv* journal in 1946, 1948, 1949 and in *Izvestiya na Vishiya finansovo-stopanski insitut-Svishtov* in 1953, 1955, 1957. [↑](#footnote-ref-35)
36. Shterionov, *Demografsko*, pp. 299-320. [↑](#footnote-ref-36)
37. Ibid, p. 293. Calculated data of Teplov for today's Bulgarian lands give 28.3 percent. [↑](#footnote-ref-37)
38. Popov, *Stopanska Balgaria*, p. 23. [↑](#footnote-ref-38)
39. These towns and cities are: Aytos, Balchik, Batak, Berkovitsa, Bratsigovo, Burgas, Varna, Vidin, Vratsa, Gabrovo, Gorna Djumaya (now Blagoevgrad), Dupnitsa, Eski Dzhumaya (now Targovishte), Kavakli (now Topolovgrad), Kazanlak, Kalofer, Karlovo , Karnobat, Koprivshtitsa, Kotel, Kyustendil, Lovech, Lom Palanka (now Lom), Lyaskovets, Malko Tarnovo, Melik, Mustafa Pasha (now Svilengrad), Nevrokop (now Gotse Delchev), Nikopol, Panagyurishte, Petrich, Peshtera Pleven, Plovdiv, Provadya, Razgrad, Ruschuk (now Ruse), Samokov, Svishtov, Sevlievo, Silistra, Sliven, Sofia, Smolyan (Gorno and Dolno Raykovo and Pashmakli), St. Zagora, Tatar Pazardjik (now Pazardjik), Tetetven, Troyan, Tutrakan, Tarnovo (now V. Tarnovo), Hadjioglu Pazardjik (now Dobrich), Haskovo, Chirpan, Shumen and Yambol. [↑](#footnote-ref-39)
40. Todorov, *Balkanskiyat grad*, p. 232. [↑](#footnote-ref-40)
41. Dechev, V., ‘Srednorodopskoto ovcharstvo’, pp. 11-12. [↑](#footnote-ref-41)
42. Kanev, *Momchilovtsi*, p. 507. [↑](#footnote-ref-42)
43. Mareva, T., ‘Spomenite‘, p. 551. [↑](#footnote-ref-43)
44. We would like to express our deep gratitude to the curators of the Architectural and Ethnographic Complex "Etara", the Regional Ethnographic Museum in Plovdiv, the Museum of Textile Industry in Sliven, the Ethnographic Museum at the Institute of Ethnology and Folklore at Bulgarian Academy of Sciences, as well as to their colleagues from the Regional History Museums in Stara Zagora, Ruse, V. Tarnovo, Sliven and Smolyan, without the invaluable help of whom this research would not have been possible. [↑](#footnote-ref-44)
45. We have not included the *yamurluk* (hooded overcoat), which most Bulgarians probably owned and whose footage, with the loss during the cutting, according to "experimental ethnography" is 3 sq. m. This was made in order to compensate for the smaller sizes of children’s and adolescents’ clothes. [↑](#footnote-ref-45)
46. Indirect indication of the loss of cloth in the process of cutting provided only Tsonchev, P., ‘Nashata tekstilna industriya’, p. 46. According to him, cutting 4.5 million kg of cloth, the rags "cannot be less than 400,000 kg", or 8.8 percent. [↑](#footnote-ref-46)
47. *Do ministara na targoviyata*, p.67. [↑](#footnote-ref-47)
48. Kanchov, V., ‘Pisma ot Tsarigrad’, p. 240. [↑](#footnote-ref-48)
49. Primovsky, A., ‘Bit i kultura’, p. 380. [↑](#footnote-ref-49)
50. Daux A., Le Play, Forgeron bulgare des usines à fer de Samokowa (Turquie Centrale). Quoted in: Todorov, ‘Budjetat’, p. 388. [↑](#footnote-ref-50)
51. Popov and Penchev, *Selo Kasi-lak*, pp. 102-313. [↑](#footnote-ref-51)
52. Popov, *Stopanska Balgaria*, p. 301. [↑](#footnote-ref-52)
53. Shterionov, *Demografsko*, p. 252ff. [↑](#footnote-ref-53)
54. Cf. for example: Todorova and Todorov, ‘Problemi’, p. 22 and Barkan’s 1964 publication quoted there. [↑](#footnote-ref-54)
55. Chakalov, *Natisonalniyat dohod*, pp. 38-40. [↑](#footnote-ref-55)
56. Popov and Penchev, *Selo Kasi-lak*, pp., pp. 1-316. [↑](#footnote-ref-56)
57. It cannot be fully ruled out that these methods lead to a probable underestimation for wool self-consumption around 1870. Compared to the 2.28 kg of woollens per capita during the years of the textile recession (1873-1902) and 2.56 kg during the period of reindustrialization after 1902, the established values ​​for the late Ottoman period of 1.94 kg seemed to be too low. However, if we experimentally increase consumption in the 1870s to about 2.5-2.6 kg, then the volume of domestic consumption increases far too much and instead of a crisis, for which there is enough contemporary evidences, there will be a slow growth or, in the worst case – a stagnation from 1878 to 1900. [↑](#footnote-ref-57)
58. The census of 1887 does not contain information on the number of sheep, and that of 1892 - does not provide data on the number of animals per family. For that reason we had to back-cast the results of the later censuses in 1900, 1905 and 1910. All livestock censuses have been quoted in footnote 21 of this on-line appendix. [↑](#footnote-ref-58)
59. Palairet, M., ‘Decline’, pp. 339, 352, 361. [↑](#footnote-ref-59)
60. Sakazov, ‘Razvitie’, p. 693.; Dodov, ‘Gaytandjiistvoto v Pirdop’, pp. 332-333; Aleksandrov, ‘Iz istoriyata’, pp. 13-14; Nachov, *Kalofer*, pp. 270-271.; *Raport na komissiyata,* p. 20; Undjiev, *Karlovo*, pp. 59-60; Stoyanov, *Grad Pirdop*, pp. 228-230; Semerdjiev, *Samokov*, pp. 213-214; Tsonchev*, Iz stopanskoto minalo na Gabrovo*, pp. 294-309; Staneff, S., *Das Gewerbewesen*, p. 59. [↑](#footnote-ref-60)
61. Ibid; Palairet, M., ‘Decline’, p. 334. Both Staneff and Palairet used 6,000 charks; Zannetoff, G., *Die Haus- und fabrikmäßige*, p. 7., gives 7-8 thousand charks as compared with 9-10 thousand charks in Сакъзов, Ив. Развитие на градския живот, с. 693. The 3-4 thousand charks difference between Sakazov and most other scholars stems mainly from his very generous figure of the number of charkas outside the seven main gaytan centres (Gabrovo, Karlovo, Kalofer, Sopot, Samokov, Pirdop and Kazanlak). It seems doubtful that nearly 50 percent of the total capacity was installed in places that were completely or partially omitted from the rather rich and detailed literature of the time and later local lore studies. [↑](#footnote-ref-61)
62. *Kniga na gabrovskata industriya*, p. 10; Tsonchev*, Iz stopanskoto minalo na Gabrovo*, p. 311; *Raport na komissiyata,* p. 20; Aleksandrov, ‘Iz istoriyata’, p. 9. [↑](#footnote-ref-62)
63. *Raport na komissiyata,* p. 20; Aleksandrov, ‘Iz istoriyata’, p. 9. [↑](#footnote-ref-63)
64. Ibid; Nachov, *Kalofer*, p. 31; Adjera, ‘Zanayatiata’, p. 475. [↑](#footnote-ref-64)
65. Ibid; Aleksandrov, ‘Iz istoriyata’, p. 9. [↑](#footnote-ref-65)
66. Manov, ‘Samokov‘, p. 100; Semerdjiev, *Samokov*, pp. 214-215. [↑](#footnote-ref-66)
67. Stoyanov, Grad Pirdop, pp. 222, 227; Dodov, ‘Gaytandjiistvoto v Pirdop’, p. 331; Adjera, ‘Zanayatiata’, p. 475. [↑](#footnote-ref-67)
68. Pavlov, ‘Opit’, pp. 418, 439; T. B. and M. St. ‘Industriyata na Kazanlak’, p. 545. [↑](#footnote-ref-68)
69. Batakliev, *Grad Tatar-Pazardjik*, p. 157. [↑](#footnote-ref-69)
70. *Svedeniya po ikonomicheskoto sastoyanie na Balgaria*, pp. 75-93. [↑](#footnote-ref-70)
71. Staneff, *Das Gewerbewesen*, p. 59. [↑](#footnote-ref-71)
72. Palairet, ‘Decline’, pp. 331. [↑](#footnote-ref-72)
73. Michoff, *Contribution* (1950), pp. 27-29. [↑](#footnote-ref-73)
74. Michoff, *Prinos*, p. 395. [↑](#footnote-ref-74)
75. Todorov, ‘Svedeniya za tehnologiyata’, p. 407. [↑](#footnote-ref-75)
76. <http://yambol-life.com/news.php?id=3791> (visited on 3rd of June 2020). [↑](#footnote-ref-76)
77. Rusev, *Firmi i manifakturi*, p. 41. [↑](#footnote-ref-77)
78. Michoff, *Contribution* (1950), pp. 27, 29. [↑](#footnote-ref-78)
79. *Dokumenti za balgarskata istoriya*, p. 180. [↑](#footnote-ref-79)
80. Michoff, *Prinos*, pp. 395, 397. It should be noted that Hochstetter's estimate for the production of kebe of 100,000 florins or 1 million kuruş is for the Plovdiv Sandzak and excludes the main production centers like Kotel, Sliven and Yambol. For these localities, Poyet claims that in 1848 they processed 60,000 kg. wool for making kebes. Using an average kebe weight of 6.5 kg established by "experimental ethnography", as well as the price given by Hochstetter (200-1,000 kuruş per piece) the Sliven region production should have been 5,5 thousand kebes worth of over 650,000 Levs. If we sum up Hochstetter and Poyet data the national total of 8,000 kebes worth approx. 1 million Leva seems far too high. Considering that the yearbook of the Edirne vilayet for 1871 (Sālnāme-i vilāyet-i Edirne, sene 1287 [1871], def'a 2, pp. 161-162) gave only 4,000 kebes, we estimate a total national output in ca. 1870 was 6,327 kebes which cost approximately 250,000 Leva and were made from 70,000 kg of wool. [↑](#footnote-ref-80)
81. Tsonchev*, Iz stopanskoto minalo na Gabrovo*, p. 52; Cholov, *Istoriya na grad Dryanovo*, p. 37; <http://yambol-life.com/news.php?id=3791> (visited on 3rd of June 2020). [↑](#footnote-ref-81)
82. Michoff, *Contribution* (1950), pp. 338-339. Also reproduced in: Tabakov, *Opit*, p. 475. [↑](#footnote-ref-82)
83. Michoff, *Beiträge* (1953), pp. 304, 306, 354; Michoff, *Contribution* (1941), pp. 4, 127, 130, 133-134; Tsvetkova, B., ‘Obshetsveno-ikonomichesko razvitie na Elena’, p. 157; Irecek, *Knyajestvo Balgaria*, pp. 196-197; *Svedeniya po ikonomicheskoto sastoyanie na Balgaria*, p. 97. [↑](#footnote-ref-83)
84. Tabakov, *Opit*, pp. 475-476; Tsonchev, ‘Kam istoriyata na kotlenskiya kilim‘, pp. 321-326; Stankov, *Kotlenski kilimi*; Stankov, *Chiprovski kilim*; Todorov, ‘Svedeniya za tehnologiyata’, pp. 407-408; Manov, *Samokov – Zanayati*, pp. 110-112. [↑](#footnote-ref-84)
85. Michoff, *Prinos*, p. 397.; Michoff, *Beiträge* (1953), pp. 50, 73-75, 304, 306, 329. [↑](#footnote-ref-85)
86. Ibid, p. 306. [↑](#footnote-ref-86)
87. Usually, the price of the carpet depends on its surface in *arshins*. [↑](#footnote-ref-87)
88. Hristov, H., ‘Lihvarstvoto’, p. 52. [↑](#footnote-ref-88)
89. *Batal* is one of the seven types of carpets made in the Chiprovtsi region with dimensions, according to St. Hristov 5 to 6 arshins (3.40 x 4.10 m). Ivan Manolov reports a slightly larger surface of 3.85 x 4.62 m. [↑](#footnote-ref-89)
90. Manolov, ‘Kilimenata industriya v Chiprovtsi’, p. 270. [↑](#footnote-ref-90)
91. Todorov, ‘Svedeniya za tehnologiyata’, p. 407. [↑](#footnote-ref-91)
92. *Opis na osmanoturski dokumenti*, p. 250. [↑](#footnote-ref-92)
93. The patchy data we were able to collect from Staneff and Todorov show that wages in the Chiprovtsi region does not change significantly between 1850s and 1900s and remained in the range of 0.20 to 0.30 Levs per day. Staneff, S., *Das Gewerbewesen*, p. 77 and Todorov, *Balkanskiyat grad*, p. 281; Manolov also claims that after the Crimean War, the price of carpets "remained more or less stable” Manolov, ‘Kilimenata industriya v Chiprovtsi’, с. 270. [↑](#footnote-ref-93)
94. Madjarov, *Spomeni*, pp. 57-58. [↑](#footnote-ref-94)
95. Stoyanov, *Grad Pirdop*, p. 229. [↑](#footnote-ref-95)
96. *Targovski far*, I, № 45, 30 May 1909, p. 2. [↑](#footnote-ref-96)
97. *Stranitsi iz minaloto na grad Peshtera*, p. 221. [↑](#footnote-ref-97)
98. Govedarov, *Koprivshtitsa*, pp. 67-68.; Oslekov, ‘Koprivshtitsa’, p. 515. [↑](#footnote-ref-98)
99. 240,000 of them made in Koprivshtitsa, 25-30 thousand in Danube Bulgaria and approximately the same amount in the rest of Southern Bulgaria and the Rhodope Mountains. [↑](#footnote-ref-99)
100. Madjarov, *Spomeni*, pp. 57-58. His information about 2 to 5 kuruş per pair is fully confirmed by M. Stoyanov for Pirdop (3.8 kuruş per pair) and by S. Pranchov for Koprivshtitsa (4-5 kuruş). Стоянов, М. Пирдоп в миналото, с. 229.; Pranchov, ‘Koprivshtitsa’, p. 28. [↑](#footnote-ref-100)
101. *Sālnāme-i vilāyet-i Edirne, sene 1287* [1871], def’a 2, pp. 161-162. [↑](#footnote-ref-101)
102. Palairet, M., ‘Decline’, p. 331. [↑](#footnote-ref-102)
103. Ibid, p. 333. [↑](#footnote-ref-103)
104. For the Austrian textile export to Bulgaria cf. Paskaleva, ‘Ikonomicheskoto pronikvane na Avstria’, p. 216. [↑](#footnote-ref-104)
105. The possibility that these lighter specimen were not shayaks can be ruled out, as all measurements were made by museum curators. In addition, the type of cloth is mentioned in the museum documentation, which was filled in when accepting the cloth in the museum collection. [↑](#footnote-ref-105)
106. Palairet, M., *Balkan Economies*, p. 70. [↑](#footnote-ref-106)
107. Palairet gives a significantly higher production of 26,000 square meters in Northern Bulgaria (the factory in Bali Effendi) and 170.2 thousand square meters in the South, a total of about 200,000 square meters. Palairet, M., 'Decline ', p. 331. It is unclear how Palairet reached such a high figure. However, it can be assumed that his estimate is based on S. Tabakov and K. Irecek for 200 and 230 thousand meters in 1876 and 1882, which converted into square meters equals 130 and 150 thousand. Tabakov, *Opit*, p. 418.; Irecek, *Knyajestvo Balgaria***,** p. 708. When all available data for the annual production of the Sliven State Factory are juxtaposed that all other sources report 55-60,000 sq. m. between 1872 and 1887 later reduced to 30-40,000 during the1890s. It is difficult to imagine that just around the Russo-Turkish War, production doubled once and then returned to normal. [↑](#footnote-ref-107)
108. Michoff, *Prinos*, p. 447. [↑](#footnote-ref-108)
109. Idib, pp. 394-395. [↑](#footnote-ref-109)
110. 1 kuruş consists of 40 para. [↑](#footnote-ref-110)
111. Following Berov, L., *Dvijenieto na tsenite*, p. 192 when converting the kuruş into post-1878 Bulgarian Levs, the agio in Sofia was not taken into account. Agio appeared as a result of the insufficient gold reserves of the Bulgarian National Bank. Thus, when exchanging silver Levs in foreign gold currencies, such as the franc or the British pound, a premium (called agio) was paid, which reached up to 13 percent in some years. On average for the period 1886-1906 the agio was 4.01 percent. With the help of several foreign loans in 1907, agio was finally eliminated. Dimitrova, and Ivanov. ‘Bulgaria: from 1879 to 1947’, pp. 199-242. The main reason for not using agio when converting a kuruş into a franc and then into the Lev is purely technical. Most often, the exchange of money has to be made in a post-Liberation Bulgarian currency and not in Leva from a particular year. The significant changes in agio even in neighbouring years (e.g. 0.68 percent in 1891 and 3.17 percent in 1892), the use of an average of 4.01 percent can significantly distort the result. That is why the legal value of the Lev, which is equal to one franc, is used throughout in this study. [↑](#footnote-ref-111)
112. Denzel, *Handbook*, pp. 387-397. [↑](#footnote-ref-112)
113. Yaneva, ‘Patishta na industrializatsiyata’, pp. 111-113. [↑](#footnote-ref-113)
114. Michoff, *Contibution* (1941), pp. 69, 127-128, 130; Michoff, *Beiträge* (1943), pp. 22, 37, 125, 157, 204, 295, 298-299, 350; Michoff, *Beiträge* (1953), pp. 129-132, 184-185, 262-265, 377, 381, 393, 453, 498-499; Michoff, *Contibution*, (1950), pp. 190, 331, 515-517, 568, 583, 620-624, 641, 704, 723-724; Michoff, *Prinos*, pp. 351, 394, 446-447; Tsvetkova, ‘Obshetsveno-ikonomichesko razvitie na Elena’, p. 157; Kosev, *Za kapitalisticheskoto razvitie*, p. 92; Palairet, M. *Balkan Economies*, р. 185; Tsonchev*, Iz stopanskoto minalo na Gabrovo*, p. 325. [↑](#footnote-ref-114)
115. Michoff, *Contibution* (1941), p. 130. [↑](#footnote-ref-115)
116. Kosev, *Za kapitalisticheskoto razvitie*, pp. 68-69. [↑](#footnote-ref-116)
117. Michoff, *Contibution* (1950), pp. 620-621. It is important to emphasize that according to the same report the decline in Edirne and Thrace was also to one third, but there the crisis began earlier, in 1858, and respectively in 1860 the level has dropped by more than a halve. [↑](#footnote-ref-117)
118. Quataert, ‘The Silk Industry of Bursa, 1880-1914’, p. 286, where he estimates an 80 percent decline in cocoon production between the 1850s and 1881. [↑](#footnote-ref-118)
119. Michoff, *Beiträge* (1953), p. 498. Encountering a clear difficulty in the translation, K. Kosev, who refers to the same text, claims that "in 1871 the factory processed 20,000 kg of cocoons, from which 700 kg of raw silk was obtained." Kosev, *Za kapitalisticheskoto razvitie*, p. 89. In fact, Kanitz's original text is: "In total, the silk mill in Tarnovo processed in 1871 20,000 kg of cocoons, including 700 kg of own cocoons [from the factory]." The sentence was read correctly by Sokerov, *Koprinenata industriya v Balgaria*, p. 6; *Razvitie na industriyata v Balgaria*, p. 31; Mladenov, *Poyava na fabrichen proletariyat*, pp. 16-17. [↑](#footnote-ref-119)
120. Tsonchev*, Iz stopanskoto minalo na Gabrovo*, p. 323, 349; T. B. and M. St. ‘Industriyata na Kazanlak’, p. 542; Michoff, *Contibution* (1950), pp. 623-624; Michoff, *Beiträge* (1943), pp. 21, 37.; Michoff, *Beiträge* (1953), pp. 129, 498; Sokerov, *Koprinenata industriya v Balgaria*, p. 6.; Do ministara na targoviyata, p. 93. [↑](#footnote-ref-120)
121. Michoff, *Contibution* (1950), pp. 583. [↑](#footnote-ref-121)
122. Michoff, *Beiträge* (1953), p. 498. [↑](#footnote-ref-122)
123. Ibid, p. 499. [↑](#footnote-ref-123)
124. Kosev, *Za kapitalisticheskoto razvitie*, p. 89. [↑](#footnote-ref-124)
125. Ibid, pp. 87-88. [↑](#footnote-ref-125)
126. In 1873 120 centres (approx. 6,800 kg) were exported through the Danubian port of Svishtov and 96 centres (a little over 5,400 kg) in 1876. Michoff, *Beiträge* (1953), pp. 406, 466. [↑](#footnote-ref-126)
127. This is the average of four price observations for 1871 Michoff, *Prinos*, p. 447 (3 observations).; N. ‘Nasheto koprinarstvo’, p. 198. [↑](#footnote-ref-127)
128. Adjera, ‘Zanayatiata’, p. 473; Stoyanov, *Grad Pirdop*, p. 219; Konstantinov, ‘Stupanski formi’, pp. 462-463; *Raport na komissiyata*, pp. 9-11, 28-29; Undjiev, *Karlovo*, pp. 52-54; Pavlovska, *Vazrojdenskiyat Sopot*, pp. 82-83, 85-87, 101. [↑](#footnote-ref-128)
129. Kosev, *Za kapitalisticheskoto razvitie*, p. 67; Pavlov, ‘Opit’, p. 422.; *Svedeniya po ikonomicheskoto sastoyanie na Balgaria*, p. 95. [↑](#footnote-ref-129)
130. Jurdanov, ‘Parvata proektirana pamuchna fabrika‘, с. 395-400. [↑](#footnote-ref-130)
131. Chakalov, ‘Belejki za nashata fabrichna valnena industriya’, p. 6. According to Yanko Chakalov in 1896 there were 28 wool textile factories with 118 mechanical and 280 wooden looms, as well as 16,126 spindles and 1,550 workers, 750 of whom were women. The annual consumption of local wool was 1.2 million kg. Along with them, 350 tons of imported wool and 50 tons of imported yarn were used in the production process. It is very likely that these data were collected in a study conducted by Chakalov in his capacity as secretary of the Plovdiv Commercial and Industrial Chamber, an area which included most of Bulgarian textile centres (Gabrovo, Sliven, Kotel, Kazanlak, and Karlovo). [↑](#footnote-ref-131)
132. In his doctoral dissertation Staneff, S., *Das Gewerbewesen*, pp. 126-127 indicated that in 1900 there were 24 operating wool textile factories (and three mills that were not operating), whose total production was "approximately 6 - 6.6 million francs". These industrial facilities had 14,637 spindles, 144 mechanical and 145 wooden looms. The total number of workers employed was 1,582, and the wool used reached 2 million oka (approx. 2,568 tons). However, a detailed examination of these data showed that while Staneff's estimate of the value of factory production can be accepted, his information on the 2.6 million kg of raw materials is unrealistically high. The industrial survey for 1904, a few years after the end of the crisis, which had its trough around 1900, showed consumption of 2.34 million kg of wool by the wool-textile industry. Moreover, in 1900 the import of wool and yarn was insignificant - only 32,000 kg compared to 150 thousand in 1896 and 1 million in 1904. Staneff himself seems to be also aware of these problems as he admitted that his "figures for the wool used are only relatively true". Instead of drawing from the unclear figures of Staneff, our 1900 estimate for the raw material used by the factories is based on the aggregated data on the factories operating in the country at that time. [↑](#footnote-ref-132)
133. As already mentioned, before the First World War 8 percent of population lived in territories that were not included in the present day Bulgarian borders. [↑](#footnote-ref-133)
134. Geshov, ‘Danatsi i budjet’, pp. 2-3; Mishaykov, ‘Ocherk’, p. 491; Saranov, ‘Novata’, pp. 5-6.; Kalchev, H., ‘Po povod reformata’, p. 311; Popov, *Stopanska Balgaria*, pp. 245-246. [↑](#footnote-ref-134)
135. As already stated 7 percent of the present day Bulgarian territory were not included in the pre-WW I Bulgarian borders. [↑](#footnote-ref-135)
136. Particularly valuable for filling some gaps in the information during 1880s and early 1890s were: *for prices*: the archive of the Alexander textile mill, deposited in RIM-Gabrovo; *Darjaven vestnik*, III, № 87, 20 November 1881, p. 705; *Darjaven vestnik*, III, № 89, 28 November 1881, p. 729; *Darjaven vestnik*, IV, № 15, 11 February 1882, p. 115; *Darjaven vestnik*, IV, № 23, 4 March 1882, p. 180; *Darjaven vestnik*, IV, № 30, 20 March 1882, p. 247; *Darjaven vestnik*, IV, № 37, 13 April 1882, p. 306; *Darjaven vestnik*, IV, 20 May 1882, № 52, p. 401; *Darjaven vestnik*, IV, № 72,8 July 1882, p. 559; *Darjaven vestnik*, IV, № 88, 14 August 1882, p. 682; Iliev, *Staro-Zagorskii okrag*, pp. 26-37; Mollov and Totev, *Tseni na zemedelskite produkti*; *for the exchange rates between kuruş, Turkish lira and Lev*: Krusev, *Istoriya na V.-Tarnovskiya terziiski esnaf*. [↑](#footnote-ref-136)
137. *Maritza*, VI, № 526, 23 September 1883, p. 3; *Maritza*, VII, № 650, 15 September 1884; *Maritza*, VII, № 684, 22 January 1885, pp. 3-4; *Targovski far*, I, № 45, 30 May 1909, p. 2. [↑](#footnote-ref-137)
138. For example: *Izlojenie Plovdivskii okrag prez 1889-90 god.*, p. 21; *Svedeniya po ikonomicheskoto sastoyanie na Balgaria*, p. 94; Chakalov, ‘Belejki za nashata fabrichna valnena industriya’, pp. 7-9; ‘Vdiganie zapreshtenieto iznosa na gaytandjiiski charkove’ etc. [↑](#footnote-ref-138)
139. Two thirds according to Saranov, ‘Novata’, p. 5; From the total wool output of 12.5 mil. kg of greasy wool peasants retain 10-11 mil. kg. Staynov, ‘Problemata za valnata’, p. 63. [↑](#footnote-ref-139)
140. Chakalov, ‘Belejki za nashata fabrichna valnena industriya’, p. 6. See also footnote 145 in this on-line appendix for the excessively high values given by S. P. Staneff for factory wool consumption in 1900. [↑](#footnote-ref-140)
141. Ankov, M., ‘Edin begal pogled’, p. 1. [↑](#footnote-ref-141)
142. Daily output: *1.5 oka gaytan:* Semerdjiev, *Samokov*, pp. 214-215; Aleksandrov, ‘Iz istoriyata’, pp. 9-10; *1 oka gaytan*: Semerdjiev, *Samokov*, pp. 214-215; Adjera, ‘Zanayatiata’, p. 475; Dodov, ‘Gaytandjiistvoto v Pirdop’, pp. 332-333; *0.95 oka gaytan*: *Raport na komissiyata*, p. 20; *0.75 oka gaytan*: Stoyanov, *Grad Pirdop*, pp. 227-228; *0.6 oka gaytan*: Nachov, *Kalofer*, p. 270; *0.57 oka gaytan*: Staneff, S., *Das Gewerbewesen*, p. 59; *0.53 oka gaytan*: Tsonchev, *Iz stopanskoto minalo na Gabrovo*, pp. 309, 311. [↑](#footnote-ref-142)
143. *232 working days*: Staneff, S., *Das Gewerbewesen*, p. 59; *250 working days*: Semerdjiev, *Samokov*, pp. 214-215; *220 working days*: Dodov, ‘Gaytandjiistvoto v Pirdop’, pp. 332-333; *200 working days*: Aleksandrov, ‘Iz istoriyata’, pp. 9-10; *Raport na komissiyata*, p. 20; Stoyanov, *Grad Pirdop*, pp. 227-228.; *192 working days*: Tsonchev, *Iz stopanskoto minalo na Gabrovo*, p. 309. [↑](#footnote-ref-143)
144. *Buletin*, I, 24 January 1898, № 43, pp. 11-12.; ‘Otchet za polojenieto na industriyata ni’, pp. 323-324.; *Izvlechenie ot stenograficheski protokoli*, pp. 12-13. [↑](#footnote-ref-144)
145. *Do ministara na targoviyata*, p. 69. [↑](#footnote-ref-145)
146. This is most probably the reason for the difference between our estimates presented in Table 1.5 and those of PTIK for 1896 and of Staneff for 1870. [↑](#footnote-ref-146)
147. *Do ministara na targoviyata*, p.103. [↑](#footnote-ref-147)
148. According to Iv. Govedarov only in Koprivshtitsa, the main center of the sock domestic industry in Bulgarian lands, 20,000 decks of 12 pairs were annually produced. Govedarov, Koprivshtitsa, pp. 67-68; Oslekov. ‘Koprivshtitsa’, p. 515. [↑](#footnote-ref-148)
149. *Maritza*, VI, № 526, 23 September 1883, p. 3; *Maritza*, VII, № 650, 15 September 1884. [↑](#footnote-ref-149)
150. In 1890 socks were not produced for sale in any other settlements of the Plovdiv district except in Karlovo where all of these 4,650 pairs were made. *Izlojenie Plovdivskii okrag prez 1889-90 god*, p. 21. [↑](#footnote-ref-150)
151. *Svedeniya po ikonomicheskoto sastoyanie na Balgaria*, pp. 94, 97, 308; *Balgarski targovski vestnik*, I, № 11, 10 October 1893, p. 1; *Targovski far*, I, № 45, 30 May 1909, p. 2; ‘Povdigane na tekstilnata industriya u nas’, pp. 2-3; Iliev, *Staro-Zagorskii okrag*, pp. 91, 93. [↑](#footnote-ref-151)
152. *Do ministara na targoviyata*, p.83. [↑](#footnote-ref-152)
153. ‘Po iznosa na nashite shayatsi i gaytani’, pp. 510-511. [↑](#footnote-ref-153)
154. According to Manolov, ‘Kilimenata industriya’, p. 270. around 1900, 25,380 kg of carpets were produced in the Chiprovtsi area, which, after accounting for the 5 percent loss of yarn during weaving, should have been equal to 26-27 tons of yarn. Persiiski, *Kilimenata industriya* (p. 23) in turn claimed that around 1907 in the area of Chiprovtsi 30-35 tons of yarn were annually woven. [↑](#footnote-ref-154)
155. Staneff, *Das Gewerbewesen*, p. 73. [↑](#footnote-ref-155)
156. From Persiiski, *Kilimenata industriya*, p. 22 we know that 1 kg of yarn is used to make 0.29-0.33 square meters of carpet: “Nearly 30-35 thousand kilograms of woollen yarn, from which, can be made approximately 10 thousand square meters of carpets.” [↑](#footnote-ref-156)
157. Usually, prices are quoted for "large", "small" and "medium" carpet, which does not allow to calculate their value per square meter. Prices also vary between production centres due to the different types of items that were made there. For example, we are aware that the Persian carpets of Panagyurishte were far more expensive than the Chiprovtsi rugs, which in turn were more in demand than those mats woven in Kotel and Tsaribrod. [↑](#footnote-ref-157)
158. Staneff, *Das Gewerbewesen*, p. 79. Staneff himself, however, claimed that this amount seems small to him and assumed a total annual production of about 200,000 Levs. Manev, in turn, estimates the production of Chiprovtsi rugs at 127,000 Levs in 1900. [↑](#footnote-ref-158)
159. Manev, S., ‘Vatreshen pregled’, pp. 512-513; Staneff, *Das Gewerbewesen*, p. 67. [↑](#footnote-ref-159)
160. Mishaykov, ‘Ocherk’, pp. 547, 550. Mishaikov claimed that by 1899 in the village of Banya the aba export had completely stopped, but in 1900 1,700 rolls of aba were sold. In 1902, the volume reached 2,200 rolls, but remained well below the 10,000 rolls produced before 1878. [↑](#footnote-ref-160)
161. Karayovov, T., ‘Materiali za izuchavane na Odrinskiya vilayet’, p. 48. He reckons the total output in the Aha-chelebi kaza 250,000 linear meters of aba in 1897 and 210,000 m a year later. Shayak output for 1897 and 1898 according to the same source was respectively 58 and 56 thousand m. Given that the average width of the hand-made cloth was 35 cm, this makes approximately 100,000 square meters of fabric. [↑](#footnote-ref-161)
162. Far from certainty, it seems highly probable that the Rhodope production remained stable during the first decade of the twentieth century. As this mountainous region remained outside the Bulgarian borders, it should not have been affected by the abolition of import duties on woollens in Turkey. In addition, the Austrian consular reports from 1902 and 1905 used by Palairet also points to a stable volumes of output (250,000 sq. m). Palairet, *Balkan Economies*, p. 349. Cf. particularly his footnote 54. It is possible, of course, that the Austrian consul simply repeated the same old data due to the lack of newer ones. [↑](#footnote-ref-162)
163. *Prebroyavane na industriite nasardchavani ot darjavata ot darjavata (31 December 1904)*; *Anketa na nasardchavanata ot darjavata industriya prez 1909 god.* [↑](#footnote-ref-163)
164. *Statistichesky godishnik* (1914), pp. 207-211; *Statistichesky godishnik* (1915), pp. 181-188. [↑](#footnote-ref-164)
165. Chakalov, ‘Belejki za nashata fabrichna valnena industriya’, p. 6; Staneff, *Das Gewerbewesen*, pp. 126-127. For the drawbacks of Staneff’s data cf. footnote 127 in this on-line appendix. [↑](#footnote-ref-165)
166. In his book about the small Rhodope town of Ustovo published in 1885 St. Shishkov pointed out: "The only industry that supports the whole area is the aba, blue, black and teftik... Shayak is worked on very little". Shishkov, *Ustovo*, p. 41. Nedelev, who wrote a decade later insisted on a change in the ratio between the two types of cloth: "Until ten years ago, only aba, was made and very few shayaks, while nowadays multi-coloured and durable shayaks are being made, some in imitation of the factory ones". Nedelev, ‘Belejki’, p. 33. [↑](#footnote-ref-166)
167. ‘Abadjilakat v Samokov’, p. 7. [↑](#footnote-ref-167)
168. Manev, ‘Vatreshen pregled’, p. 512. [↑](#footnote-ref-168)
169. DA-Sliven, f. 23k, op. 1, a. e. 82, pp. 292-293; DA-Sofia, f. 81k, op. 1, а. е. 4, p. 3. [↑](#footnote-ref-169)
170. Ibid, pp. 3, 14-15; DA-Gabrovo, f. 30k, op. 1, а. е. 11, p. 84.; RIM-Gabrovo, Inv. No. 3880k, letter No. 108, 21 May 1903.; Ibid, Inv. No. 4303k, letters No. 2, 13 April 1909; No. 8, 28 April 1909. [↑](#footnote-ref-170)
171. Vasilyov, ‘Belejki’, pp. 578-579. According to him, the Napredak factory in Sliven annually processed 120,000 oka of wool (154,100 kg) and "produced up to 120,000 arshins [81,600 linear meters] of fabrics, sukno, casimir, shayak and aba". Calculated per square meter, the weight of the fabric should be about 0.79 kg. [↑](#footnote-ref-171)
172. Mishaykov, ‘Belejki’, p. 549. A similar conclusion was reached by Palairet that with the advent of mechanized production "handmade woollen fabrics were replaced by exactly the same [in type and quality] product made by the new factories." Palairet, M., ‘Decline’, p. 353. [↑](#footnote-ref-172)
173. *Do ministara na targoviyata*, p. 101; 1.4 m width according to other sources: Brodar, ‘Fabrikite za sukna v Sliven’, pp. 84-85. [↑](#footnote-ref-173)
174. Nikolchov, ‘Valneno-tekstilnata industriya v Balgaria’, p. 83.; Sliven, III, № 197, 12 September 1896, p. 2.; *Balgarski targovski vestnik*, V, № 232, 16 October 1897, pp. 2-3.; *Doklad za sastoyanieto na Sevlievskoto okrajie prez 1892-93 god.*, pp. 52-53. [↑](#footnote-ref-174)
175. Ibid; *Kniga na gabrovskata industriya*, p. 41; *Plovdivska targovsko-industrialna kamara 1903 g.*, pp. 41-42. [↑](#footnote-ref-175)
176. Brodar, ‘Fabrikite za sukna v Sliven’, pp. 84-85. [↑](#footnote-ref-176)
177. Chakalov, ‘Belejki za nashata fabrichna valnena industriya’, p. 6. [↑](#footnote-ref-177)
178. 0.618 kg of yarn produced from one kilo of greasy wool plus another 5 percent waste in the process of weaving. [↑](#footnote-ref-178)
179. *Do ministara na targoviyata*, pp. 93-94. [↑](#footnote-ref-179)
180. ‘Platnarstvoto v g. Vratsa’, pp. 5-6. [↑](#footnote-ref-180)
181. *Doklad do ministara na targoviyata i zemledelieto za ikonomicheskoto polojenie na rayona na Sofiiskata targosko-industrialna kamara prez 1902 god.*, pp. 99-103. [↑](#footnote-ref-181)
182. Velinova and Trifonova, *Industrialnite predpriyatiya v Ruse*, p. 78. [↑](#footnote-ref-182)
183. P. J. ‘Boyadisvanie na domashno konopeno platno’, pp. 2-3. [↑](#footnote-ref-183)
184. ‘Vajarska industriya’, p. 6. [↑](#footnote-ref-184)
185. Popov and Penchev, *Selo Kasi-lak*, pp. 102-313. [↑](#footnote-ref-185)
186. *Sbornik za statistichesky svedeniya*, pp. 33-35. [↑](#footnote-ref-186)
187. Of the ten rural budgets published by Popov and Penchev, only seven reported expenses for a tailor. Попов, Popov and Penchev, *Selo Kasi-lak*, pp. 102-313. [↑](#footnote-ref-187)
188. The three occupational censuses report resp. 270, 300 and 230 operators of charks. Form the contemporary literature it is clear that one operator was taking care of on average five gayatan-plating machines. Thus, charks in operation should have been 1,355, 1,500 and 1,135 in 1900, 1905 and 1910, which is astonishingly close to our estimates for most of these years: 1,345, 1,450 and 1,430. [↑](#footnote-ref-188)
189. With few notable exceptions the Hapsburg, the French, the Belgian, the Italian, and occasionally the British consular reports reprinted in Michoff start from early 1840s and run, in most cases annually, until the late 1870s. Consulates whose reports have been employed for the present study are primarily from Sofia, Philippopolis (now Plovdiv), Edirne, Rustchuk (now Ruse), Varna, Vidin and Tarnovo. [↑](#footnote-ref-189)
190. For example, Berov thinks the Varna and the Dobrudja kile equalled 60 oka (77 kg) but their weight, accoding to contemporary sources reproduced in Michoff was 80 oka (102.7 kg). Moreover, Berov claimed that the Kyustendja kile comprised 320 oka instead of 400 oka as reported in Michoff. Similar differences existed for the Silistra kile - resp. 320 and 300 oka, the Burgas kile - respectively 30 and 40 oka and at the Salonika kile - 84 and 90 oka. Berov, *Dvijenieto na tsenite*, pp. 181-182. [↑](#footnote-ref-190)
191. Michoff, *Contribution* (1950), p. 474. Cf. also: Lyberatos, ‘From Imperial Lands’, p. 42, as well as Berov, *Dvijenieto na tsenite*, pp. 201.; Moshnin, ‘Pri-dunaiskaya Bolgaria’, pp. 374-378. [↑](#footnote-ref-191)
192. Michoff, *Prinos*, p. 390. [↑](#footnote-ref-192)
193. Michoff, ‘Contribution’, (1949), p. 72. [↑](#footnote-ref-193)
194. Michoff, ‘Contribution’ (1948), p. 42. [↑](#footnote-ref-194)
195. Michoff, *Beiträge* (1943), p. 203; Michoff, *Beiträge* (1953), pр. 298, 383; *Sālnāme-i vilāyet-i Tuna, sene 1289* [1869], def’a 1, p. 106; ‘Statiya Moshnina’, pp. 79-82. To get the number of 8,685 mio sheep in 1870 for Bulgaria in today’s national borders we added to the 5.34 mio heads of sheep 3.047 heads from South Bulgaria (Eastern Rumelia), 0.196 heads from parts of the Seres vilayet, and 0.102 heads from parts of the Drama vilayet. [↑](#footnote-ref-195)
196. Michoff, *Beiträge* (1953), pр. 377, 453; Michoff, *Contribution* (1950), p. 606; *Sālnāme-i vilāyet-i Edirne, sene 1287* [1871], def’a 2, pp. 161-162. [↑](#footnote-ref-196)
197. Geshov, ‘Danatsi i budjet’, pp. 2-3. *Rezultati ot prebroyavaneto na dobitaka* (1918). Cf. also footnotes 23-25 in this online appendix. For the wool export from different maritime and river ports cf. also: Michoff, *Beiträge* (1943), pp. 203; Michoff, *Beiträge* (1953), pp. 298, 377, 383; Michoff, *Contribution* (1950), pp. 80, 606; Paskaleva, ‘Ikonomicheskoto pronikvane na Avstria’, p. 215; Paskaleva, ‘Za targovskite vrazki mejdu Frantsiya i balgarskite zemi’, pp. 64, 70.; Damyanov, *Frantsiya*, p. 35; Tsuhlev, D., ‘Zemedelieto vav Vidinski sandjak’, p. 75. [↑](#footnote-ref-197)
198. These prices are available at request from the authors. [↑](#footnote-ref-198)
199. *Dokumenti za balgarskata istoriya*, pp. 166, 199-201. [↑](#footnote-ref-199)
200. Cf. the first paragraph of this on-line appendix. [↑](#footnote-ref-200)
201. According to the data presented in first section of this on-line appendix, gaytan-maiking accounted for 58 percent of the total value of wool textile production around 1870. [↑](#footnote-ref-201)
202. Michoff, *Beiträge* (1943), pp. 159, 244; Michoff, *Beiträge* (1953), pp. 164-165, 388, 393, 432, 442, 488, 609-610; Michoff, *Prinos*, pp. 355, 397, 443; Michoff, *Contribution* (1950), pp. 189, 470, 517, 614-615, 723-724. [↑](#footnote-ref-202)
203. Ibid, pp. 69, 127-128, 130.; Michoff, *Beiträge* (1943), pp. 22, 37, 77, 86, 97, 125, 157, 174, 204, 249, 256-258, 295-296, 298-299, 350; Michoff, *Beiträge* (1953), pp. 66, 69, 118-119, 126, 129-130, 132, 135, 143, 160-161, 184-185, 190, 231, 262-265, 377, 393, 404, 498-499, 723-724; Michoff, *Contribution* (1950), pp. 190, 331, 498, 515-517, 568, 583, 620-621, 623-624, 641, 704.; Michoff, *Prinos*, pp. 386, 394, 446-447; Kosev, *Za kapitalisticheskoto razvitie*, pp. 88-89.; Adjera, ‘Zanayatiata’, p. 474. [↑](#footnote-ref-203)
204. Denzel, *Handbook*, pp. 15-23, 255-278, 285-289, 387-397. [↑](#footnote-ref-204)
205. Ibid; Pamuk and Williamson, ‘Ottoman De-industrialization’. [↑](#footnote-ref-205)
206. Cf. footnotes 24 and 35 in the first section of this online appendix. Price sources of all building-block figures of our calculations are available by request from the authors. [↑](#footnote-ref-206)
207. Berov, *Dvijenieto na tsenite*. [↑](#footnote-ref-207)
208. Denzel, *Handbook*. [↑](#footnote-ref-208)
209. Williamson, ‘Globalization’; Pamuk and Williamson, ‘Ottoman De-industrialization’; Mitchel and Deane, *Abstract*. [↑](#footnote-ref-209)
210. Federico and Tena-Junguito, ‘World trade’. [↑](#footnote-ref-210)
211. Ivanov, *Gross Domestic Product*. [↑](#footnote-ref-211)
212. https://nsi.bg/biblioteka/2018/04/23/the-gross-domestic-product-of-bulgaria-1870-1945/ [↑](#footnote-ref-212)
213. Chakalov, *Natsionalniyat dohod*. [↑](#footnote-ref-213)
214. Maddison, *World Economy*, p. 93. [↑](#footnote-ref-214)
215. Palairet, ‘Farm Productivity’, pp. 89-124. [↑](#footnote-ref-215)
216. NBKM–BIA, О-602; NBKM-BIA, О І 501. [↑](#footnote-ref-216)
217. *Materialii dlia izuchenia Bolgarii*, pp. 79–82. The verification showed that the two sources give the same data for all administrative districts with the sole exception of Tarnovo. In the case of Tarnovo we have used the original statistical information of the *sālnāme*. [↑](#footnote-ref-217)
218. Personal communication with Şevket Pamuk and M. Erdem Kabadayı. [↑](#footnote-ref-218)
219. *Balgarski tjutjun*, 3 (1938), 8–9, pp. 318–319. [↑](#footnote-ref-219)
220. *Godishna statistika na Iztochna Rumeliya za 1883*. [↑](#footnote-ref-220)
221. Germanov, P., *Domashniter jivotni*. and a series of studies by S. Petrov in the Yearbook of Sofia University [Годишник на СУ – Ветеринарно-медицински факултет 1938/39 and 1939/40]. [↑](#footnote-ref-221)
222. For more information on determining the fleece weight cf. the first paragraph of this online appendix. [↑](#footnote-ref-222)
223. According to Popov and Penchev a peasant woman on average worked 103 days per year to produce non-food commodities –most of all textiles– mainly for household consumption. A smaller part of non-food household production was sold as well; Popov and Penchev, *Selo Kasi-lak*, pp., pp. 1-316. Following the approach of Chakalov the working days are valued at the average rural daily wage for females; Ivanov, *Gross Domestic Product*, pp. 147-48, pp. 306-311. [↑](#footnote-ref-223)
224. Ivanov and Tooze, ‘Convergence or Decline’, pp. 672-704. [↑](#footnote-ref-224)
225. Ivanov and Stanev, ‘Bulgaria’. [↑](#footnote-ref-225)
226. Berov, L., ‘Ravnishteto na ikonomicheskoto razvitie’, p. 29. [↑](#footnote-ref-226)
227. Popov, *Stopanska Balgaria*, pp. 127–129. [↑](#footnote-ref-227)
228. Detailed data on prices and price indices are available at request. [↑](#footnote-ref-228)
229. For further details cf. data in the first paragraph of this on-line appendix. [↑](#footnote-ref-229)
230. McEvedy, C., R. Jones, *Atlas of World Population History*, Europe Areas 14 a-e. [↑](#footnote-ref-230)
231. Teplov, *Materialii*; Shterionov, *Demografsko*, p. 306. [↑](#footnote-ref-231)