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Publisher: Routledge

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Iranian Studies

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/cist20>

The volume of Iranian raw silk exports in the Safavid period

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Published online: 02 Jan 2007.

To cite this article: Edmund M. Herzig (1992) The volume of Iranian raw silk exports in the Safavid period, *Iranian Studies*, 25:1-2, 61-79, DOI: [10.1080/00210869208701769](https://doi.org/10.1080/00210869208701769)

To link to this article: <http://dx.doi.org/10.1080/00210869208701769>

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Introduction

Pre-nineteenth century Iranian history is short on numbers, or at least on reliable ones. Lack of quantitative data is perhaps the greatest obstacle confronting historians of pre-modern Iranian economy and society, and the Safavid period is scarcely better provided than earlier ages. The Safavid archives were destroyed, the Persian histories provide few hard facts, and the accounts of visiting Europeans, though often full of comment on social and economic matters, are generally unreliable when it comes to quantitative information. Safavid Iran thus presents a depressing contrast to its neighbours to East and West, where the earlier and deeper European penetration has left a rich record in the archives of several European countries, while in the case of the Ottoman Empire, the survival of extensive state archives can only remind the historian of Iran of how much was lost through the destruction of their Safavid counterparts.

The darkness shrouding Safavid economic history is not, however, impenetrable, and in some areas it is possible to piece together the surviving shreds of information. This paper will attempt such a reconstruction of the quantitative data on the export of raw silk. The undertaking is possible only because we do not have to rely on Iranian sources, but can look also at the records of the importers — in this case the silk manufacturing countries of Western Europe. This essay is not the fruit of exhaustive archival research. Most of the data comes from published sources, and further research would undoubtedly yield more information, but there is sufficient information to hand to produce at least an outline.

Sixteenth and seventeenth century Iran was one of the world's major producers of raw silk, supplying a considerable domestic industry and exports to India, the Ottoman Empire and Europe. There is insufficient data to deal here with the export to the Ottoman and Mughal industries, so it is primarily the export to Europe that concerns us. This was a period of considerable development in European silk manufacture in terms of technology, distribution and capacity, so we may anticipate a stimulus to growth in the silk trade from the demand side. For Iran, contemporary observers all agree that raw silk was the most important export, playing a vital role in the economy and in state finances by bringing silver into the country, to supply the mints, swell the treasury, and offset the perpetual trade deficit with India.

Silk was produced in many parts of Iran, but the main sources for the export to the West were Gilan and Shirvan/Karabagh. The varieties of raw silk most frequently mentioned in European sources are *legi* (*Lāhijānī*, from Gilan) and *ardass*¹ (from Shirvan and Karabagh). Less common is *canary*² (from Karabagh). In later seventeenth

The Volume of Iranian Raw Silk Exports in the Safavid Period

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¹ The name may be derived from the city of Aras/Aresh on the river Turianchay near to present day Khalad and Agdash in Soviet Azerbaijan. S.B. Ashurbeili, *Gosudarstvo Shirvanshakhov* (Baku, 1983), p. 285; Geiderov, M.Kh., *Gorodai gorodskoe remeslo Azerbaidzhana XIII-XVII vekov* (Baku, 1982), pp. 108-109.

² A sixteenth century Italian account mentions "a large fortress named Canar, subject to which are many villages famous for the culture of silk, which from this place is named *canarese*", which might perhaps be the same place as the Kenderah (?) mentioned by Evliya Chelebi as an Armenian village across the river Kura from a Muslim village, Mekuchurud, which was famous for its silk: *A Narrative of Italian Travels in Persia in the Fifteenth and Sixteenth Centuries*, trans. and ed. C. Grey (London, 1873), 203; Evliya Çelebi, *Seyahatnamesi*, ed. A. Cevdet (Istanbul, 1314/1896), II, p. 287.

century terminology the emphasis shifts to distinguishing quality rather than provenance, and we find mention of *sharbufti* (*sha'rbāfti* or weaving silk) and *ardassine* silk (superior grades from Gilan and Shirvan respectively).

The raw silk could follow a number of different routes from the production areas to Europe: 1) overland to Bursa and Istanbul and onward by sea, or by land across the Balkan peninsula to the Adriatic; 2) overland to Aleppo in Syria from where it was transported to the port of Iskanderun and onward by sea; 3) overland to Izmir and onward by sea; 4) across the Caspian to Astrakhan from either Rasht/Anzali in Gilan or Shamakha/Niyazabad in Shirvan, then up the Volga to Moscow and onward either overland to Central Europe or by way of the Baltic or White Seas to Holland and England; 5) overland across Iran via Isfahan to Bandar 'Abbas and onward by sea via the Cape route.

Our task in this paper is to collect information on the volume of trade along each of these routes, and to collate these findings to produce an overall total. The data comes from a range of sources whose disparate nature reflects the geographical spread of the silk trade transport network. Their diversity notwithstanding, the sources can be divided into two broad categories: 1) documentary records of the export of raw silk by individual merchants or companies, or through particular routes or ports; 2) estimates of the volume of Iranian silk production or export by merchants and travellers. While the first category is obviously preferable as a source of quantitative data, the surviving records are fragmentary and of uncertain reliability. We may be fairly confident that a merchant's account book will give accurate information about the goods he traded, but customs records cannot be so confidently relied on, since contraband trade will not be recorded and there is always the possibility of deliberate falsification. Even the apparently full information in, for example, the East India Company archives omits the unofficial private trade of company agents and may be incomplete in other respects also.³ If the documentary records tend to leave out a part of the picture, the estimates of merchants and travellers generally err in the other direction. The desire to impress the audience exerted a powerful influence on many commentators, and European preconceptions about the riches of the Orient provided an additional inflationary stimulus. Add to this the fact that many estimates were written not by disinterested observers but by people whose aim was to encourage governments, organisations or individuals to participate in the trade, and we can readily appreciate that the temptation to exaggerate the volume and value of the silk trade was often irresistible. As we will see, little reliance

³M.A.P. Meilink-Roelofs, "The structures of trade in Asia in the sixteenth and seventeenth centuries. A critical appraisal", *Mare Luso-Indicum*, vol. IV (1980), pp. 36-37.

can be placed on such estimates even when they come from sources generally reliable in other respects.

There is also the question of compatibility between the various sources. They refer to a wide variety of units, and in some cases it is difficult to establish with certainty even what unit is intended. Sixteenth and seventeenth century Iran had a number of different units of weight called *man* or *batman*, while several different *livres* were used in sixteenth and seventeenth century France. For Iranian units there is the additional difficulty of establishing metric equivalents.

Another difficulty is that most of the more reliable data on the silk trade relates to imports into Europe — to the last leg of the journey, when the silk export was already far from its point of production and widely dispersed among different routes. The data is, moreover, unevenly distributed. There is a relatively full series for Venetian imports from 1590 to 1613, for English and French Levant imports later in the seventeenth century, and for the trade via the Cape, but there is no data at all for such important centres as Livorno, or for Dutch imports from the Levant. Nor is there information for the route across the Balkans, or for the activity of non-European merchants (Armenians were active not only in bringing the silk from Iran to the Levant ports, but also in shipping it onward to Venice, Livorno, Marseille and Amsterdam). Customs records give some figures for imports through Astrakhan, which handled all the silk traded via Russia, but for no year is the data complete.

It should by now be clear that the information presented in the tables is a patchwork of scraps and certainly falls far short of being a full statistical series. Such information can only give a rough guide to the scale of Iran's raw silk export and to the long term trends.

*The Levant Route*⁴

Table 1 contains a considerably larger number of entries than any of the other tables (doubtless because the Levant route was the main channel for the Iranian raw silk export to Europe), but is the most difficult to use to assess the volume of trade. This is because the Levant trade comprised several different branches (through Bursa, Aleppo and Izmir), and was carried on by numerous private merchants of various nations. For no period do we have data for all of the branches or participating groups, so the picture necessarily remains incomplete.

There is, nevertheless, sufficient information to draw some broad conclusions. The data for the late fifteenth and early sixteenth centuries indicates a trade on a limited scale with overall volumes to be reckoned in at most a few tens of thousands of kilograms. Bursa and Aleppo were

⁴Refer to table 1 for figures and sources.

Table 1. Raw Silk Export via the Levant Route

Date	Source	Details	Unit	Quantity	Kg 000
13th C.	1	Genoese imports via Black Sea (occasional consignments)	pound (lb)	1,000 s	< 5
1466	2	Florentine Levant import	80 kg bale	245	20
1479	3	Value of Iranian export to Bursa	ducat	150,000	37
c. 1480	4	Annual purchase of a Venetian firm in Syria	<i>raft</i>	≈ 8,000	≈ 4
c. 1500	5	Largest single consignment despatched by a Florentine firm operating in Bursa and Pera	90 kg bale	25	2
1501	5	Export by Genoese and Jewish merchants in Bursa	Florence lb	20,000	7
1556	6	Value of Iranian export to Aleppo	ducat	350,000	144
1560	7	English Levant import	great lb	12,000	8
1566	8	Export to Aleppo of "one village of the Armenians"	60 <i>man</i> load	400-500	69-87
1588	13	English Levant import	great lb	9,133	6
1589	9	Import of Aleppo silk yarn (<i>fil de soie d' Alep</i>) by a single French merchant	Marseille lb	72,026	28
1590-1600	10	Annual Venetian Levant import	90 kg bale	1,425	128
1598	13	English Levant import	bale	25-30	3
1600-1610	10	Annual Venetian Levant import	90 kg bale	845	76
1610-1612	10	Annual Venetian Levant import	90 kg bale	297	27
1612	11	Value of French purchases in Aleppo	ducat	800,000	210
1614	11	Available in Aleppo prior to arrival of new season's supply	bale	500	50
1620	13	Year's import to Aleppo	bale	4,000	400
1620	18	English purchase in Aleppo	bale	1,400	140
c. 1620	13	Annual English Levant import	bale	290	29
1621	13	French Levant import	Marseille lb	338,833	137
1621	7	English Levant import	great lb	118,000	80
1623	9	Regularly imported to Marseille on a single vessel	bale	1,000-2,000	100-200
1623	9	Lost from a single vessel to Mediterranean pirates by Armenian merchants	bale	400	40
1624	16	Export via Iskanderun	bale	544	54
1624	13	Brought to Izmir on a single caravan	load	300	60
1624-1626	10	Annual Venetian Levant import	90 kg bale	87	8
1625	18	Available in Aleppo	bale	1,000	100
1626-1628	16	Annual export via Iskanderun	bale	1,119	112
1629	13	Venetian import via Iskanderun	bale	650	65
1629	13	English import from Aleppo	bale	> 358	> 36
1634	18	Exported from Isfahan to Aleppo by Armenians	bale	250	25
c. 1634	12	Annual import to Marseille	bale	2,000-3,000	200-300

Table 1 continued. Raw Silk Export via the Levant Route

Date	Source	Details	Unit	Quantity	Kg 000
1635	13	English import from Aleppo	bale	270	27
1636	10	Venetian Levant import	Venice lb	100,000	30
1637	18	European import from the Levant	bale	≥ 700	≥ 70
1663	21	English Levant import	great lb	264,000	180
1668	22	English import from Izmir	great lb	249,502	170
1669	7	English Levant import	great lb	357,000	243
c. 1675	28	Annual Iranian export via Izmir	145.5 kg bale	2,900	422
c. 1675	28	Annual English import from Izmir	145.5 kg bale	1,000	146
1680	10	Venetian Levant import	90 kg bale	63	6
1698-1700	23	Annual English Levant import	great lb	201,602	137
1700-1710	23	Annual French import from Izmir	Marseille lb	82,326	32
1701-1710	23/21	Annual English Levant import	great lb	205,228	140
1702	32	Iranian export via Izmir	189 kg bale	2,000	378
1711-1716	23	Annual French import from Izmir	Marseille lb	91,471	35
1711-1720	23/21	Annual English Levant import	great lb	266,449	181
1716	31	Annual export from Aleppo	bale	1,400	140

List of Sources given in Tables 1 — 4

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- 2 M.E. Mallett, *The Florentine Galleys in the Fifteenth Century* (Oxford, 1967), pp. 63-72, 118-120.
- 3 H. Inalcik, "Bursa", *Encyclopedia of Islam* (new edition).
- 4 E. Ashtor, "The economic decline of the Middle East during the later Middle Ages: an outline", *Asian and African Studies* vol. XV (1981), p. 268.
- 5 G.R.B. Richards, *Florentine Merchants in the Age of the Medici* (Cambridge, Mass., 1932), p. 118.
- 6 Anonymous Venetian account in J. Chesneau, *Voyage de Monsieur d'Aramon*, ed. C. Shéfer (Paris, 1887), p. 254.
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- 9 *Histoire du commerce de Marseille*, ed. G. Rambert (Marseille, 1949-1959) vol. III, pp. 475-476; vol. IV, p. 66.
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- 11 G. Berchet, *Relazione dei consoli veneti nella Siria* (Turin, 1866), pp. 148, 158.
- 12 C.-D. Tékéian, "Marseille, la Provence, et les arméniens", *Mémoires de l'Institut Historique de Provence*, vol. VI (1929), pp. 18-19.
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- 14 T.S. Willan, *The Early History of the Russia Company 1553-1603* (Manchester, 1956), pp. 61, 151.
- 15 R.W. Ferrier, "An English view of the Persian trade in 1618", *Journal of the Economic and Social History of the Orient*, vol. XIX/2 (1976), pp. 198-199.

- 16 Gy Káldy Nágy, "Dannye k istorii levantinskoï torgovli v nachale XVII stoletiya", in *Vostochnye istochniki po istorii Yugo-vostochnoi i Tsentral'noi Evropy* vol. II, ed. A.S. Tveritinova (Moscow, 1969), p. 330.
- 17 *Calendar of State Papers, colonial series, East Indies...*, 1622-1624, ed. W.N. Sainsbury (London, 1878), pp. 571-572, 577.
- 18 *Bronnen tot de Geschiedenis der Oostindische Compagnie in Persië*, ed. H. Dunlop (The Hague, 1930), pp. 11, 60, 153, 305, 471, 497, 547, 612, 638-639.
- 19 A. Olearius, *Vermehrte neue Beschreibung der Muskwitischen und Persischen Reise* (Schleswig, 1656 (reprinted Tübingen, 1971)), pp. 601, 669.
- 20 Raphaël du Mans, *Estat de la Perse en 1660*, ed. C. Schéfer (Paris, 1890 (reprinted Farnborough, 1969)), pp. 342, 346 (Schéfer, *ibid.*, cxv, does not attribute or date this memorandum, but it seems to be identical to the one in the Archives Nationales, Paris, *Série colonies*, F⁷10, where it is dated 1686).
- 21 R. Davis, *Aleppo and Devonshire Square* (London, 1967), pp. 27, 42, 139.
- 22 S. Anderson, *An English Consul in Turkey, Paul Rycout at Smyrna 1667-1668* (Oxford, 1989), p. 160.
- 23 N. Ülker, *The Rise of Izmir 1681-1740*, Ph.D. dissertation, University of Michigan, 1974, pp. 83-84, 86.
- 24 *Armiano-russkie otnosheniya v XVII veke*, ed. V.A. Parsamyan (Erevan, 1953), pp. 37, 39, 46, 55, 121-122, 125, 163-165, 213-224, 237-243.
- 25 J. Struys, *Les voyages de J.S. en Moscovie, en Tartarie, en Perse...* (Amsterdam, 1681), p. 221.
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- 29 O. Prakash, *The Dutch East India Company and the Economy of Bengal 1630-1720* (Princeton, 1985), pp. 160, 185, 199, 210.
- 30 K. Glamann, *Dutch-Asiatic Trade 1620-1740* (Copenhagen/The Hague, 1958), pp. 114-115, 119-121, 126.
- 31 Archives du Ministère des Affaires Étrangères, Paris, *Correspondence Politique, Perse*, vol. 5, f. 22.
- 32 J. Pitton de Tournefort, *Relation d'un voyage du Levant* (Paris, 1717), vol. II, pp. 438, 497.
- 33 J. Hanway, *An Historical Account of the British Trade over the Caspian Sea* (London, 1753), vol. II, p. 31.
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- 36 Sh.L. Khach'ikyan, "Shahvelu vordi Sarhadi hashvematanë vorpes hay-rusakan intesakan kaperi skzbnaghbyur", *Patma-Banasirakan Handes* (1978), no. 2, p. 101.

the principle centres at this time and the Italians the only significant importers. Even the small number of leading family firms made annual imports of less than 5,000 kg. The highest recorded annual import by the Florentine galleys was 20,000 kg in 1466, but this was an exceptional shipment, carrying several years' purchases. In many years the galleys returned with no silk at all from the Levant.⁵ Inalcik has estimated the value of Bursa's silk import from Iran in 1450 at about 150,000 ducats, equivalent to less than 40,000 kg at contemporary prices. We have no way of assessing the accuracy of this estimate, but it is interesting to compare it with contemporary estimates for later in the sixteenth century. An anonymous Venetian valued Iran's silk export to Aleppo at 350,000 ducats (≈144,000 kg at current prices) in 1556, and the Russia company agent Edwards reckoned that "one village of the Armenians" exported 400-500 loads (69,000-87,000 kg) of silk to Aleppo each year.

⁵M. E. Mallett, *The Florentine Galleys in the Fifteenth Century* (Oxford, 1967), pp. 63-72, 118-120.

Note on Units used in Tables 1 — 4

(Compiled principally on the basis of H. Doursther, *Dictionnaire universel des poids et mesures...* (Bruxelles, 1840); W. Hinz, *Islamische Masse und Gewichte, umgerechnet ins metrische System* (Leiden (Handbuch der Orientalistik), 1955); A. Martini, *Manuale de metrologia* (Turin, 1883); Steensgaard, *op. cit.*, p. 416. On the subject of the bale see also H. Inalcik, "Yük (himl) in Ottoman silk trade, mining and agriculture", *Turcica*, vol. XVI (1984), pp. 131-156.)

Load	=	2 bales
Bale	=	100 kg (unless otherwise specified)
		Bales of Iranian raw silk varied in weight from about 75 kg to about 150 kg, depending on the type of beast of burden, the terrain of the route and local practice. The weight of raw silk varies considerably according to the level of humidity in the atmosphere. In Safavid Iran the bale of silk was reckoned at 36 <i>man-i Tabriz</i> = 104 kg.
<i>Man-i Shāh</i>	=	2 <i>man-i Tabriz</i>
<i>Man-i Tabriz</i>	=	2.89 kg
Pound avoirdupois	=	0.454 kg
Dutch pound (pond)	=	0.494 kg
Great pound (24 oz.)	=	0.681 kg
Florence pound	=	0.340 kg
Marseille pound	=	0.388 kg
Venice pound	=	0.301 kg
Russian <i>pud</i>	=	16.38 kg

In certain instances volumes have been calculated from monetary values according to the most nearly contemporary silk price cited in any source.

The increase in volume suggested by these estimates cannot be checked against hard data until the last decade of the sixteenth century, when there are statistics for the level of Venetian imports. These averaged over 1,400 bales (125,000 kg⁶) per annum, with considerable annual fluctuations. Steensgaard has used the figures for the Venetian import to estimate a total European import circa 1600 of 180,000-190,000 kg, allowing a total of 400 bales (40,000 kg) for the other importing nations.⁷ Steensgaard's estimate represents the most serious attempt so far to tackle the question of the volume of Safavid Iran's silk export, but his conclusions do raise some questions. For example, were French imports really as low as the 100-200 bales (10-20,000 kg) he suggests? The import in 1589 of 28,000 kg of Aleppo silk yarn by a single Marseille merchant suggests not, as does the report that the French spent 800,000 ducats on raw silk in 1612. Moreover, while Aleppo was undoubtedly the most important centre for the silk trade at this time, it is perhaps unwise to assume that the trade through Bursa had dried up completely; nor can the possibility that silk was already being exported via Izmir be completely ruled out.⁸ On balance Steensgaard seems too ready to allow Aleppo and the Venetians a

⁶For the data taken from Sella I have worked on the basis of a 90 kg bale, as he suggests.

⁷N. Steensgaard, *Carracks, Caravans and Companies: the Structural Crisis in the European-Asian Trade in the Early 17th Century* (Copenhagen, 1973) (also published as: *The Asian Trade Revolution of the Seventeenth century. The East India Companies and the Decline of the Caravan Trade*, Chicago/London, 1973), p. 162.

⁸As early as 1609 it was described as a big port with numerous Europeans, ships from distant ports, and a sizeable Armenian population. Simeon Lehatsi, *Ughegrut'iwñ, tarngrut'iwñ ew yishatank'*, ed. N. Akinean (Vienna, 1936), pp. 37-38.

virtual monopoly in the trade, and may as a result have underestimated the volume of silk exports.

The same objections could be levelled at Steensgaard's estimate for the early 1620s, of about 200,000 kg per annum. Here he allows 1,400 bales (140,000 kg) to the French, some 38,000 kg to the English and 27,000 kg to the Venetians. For this period there is no equivalent to the series of statistics for Venetian imports 1590-1612, and Steensgaard's figure for the French is based on a series of ships manifests in the Marseille Chamber of Commerce for the single year 1621/22. Taking a single year's total to represent average levels is, however, a dangerous procedure, since all the statistical series for the silk trade show wide year by year fluctuations. Steensgaard is quick to dismiss the statement by the Marseille merchants that in circa 1623 as many as 1,000 to 2,000 bales (100-200,000 kg) were being imported on individual ships,⁹ but the loss of 400 bales (40,000 kg) of raw silk from a single vessel to Mediterranean pirates supports the possibility of large consignments. (The silk lost on that occasion belonged to Armenian merchants — a group who are omitted from Steensgaard's estimate.) The figures suggested for the English and Venetians are also problematic. In 1620 the English in Aleppo were said to have purchased 1,400 bales (140,000 kg) in a panic reaction to the feared diversion of the silk trade to the Cape route (this probably accounts for the exceptional import of 118,000 great pounds [80,000 kg] recorded for 1621). The figures for the English import in 1629 are more in keeping with Steensgaard's suggested level, but without data for more years it is hard to accept the assertion that the English import was "apparently quite stable".¹⁰ Venetian imports also fluctuated considerably, declining from an annual average of 845 bales (76,000 kg) in the 1600s to 297 bales (27,000 kg) circa 1610 and as low as 87 bales (8,000 kg) in 1624-1626 before recovering to 650 bales (65,000 kg) in 1629.

Káldy Nágy's research on the Iskanderun customs records reinforces the impression that the 1620s were years of highly unstable trading conditions in Aleppo, with sharp rises and falls in the level of silk exports and in the shares of total trade of the various nations:

⁹Steensgaard, *op. cit.*, p. 161.

¹⁰*Ibid.*, p. 162.

¹¹Gy. Káldy Nágy, "Dannye k istorii levantinskoi trgovli v nachale XVII stoletiya", in *Vostochnye istochniki po istorii Yugo-vostochnoi i Tsentral'noi Evropy*, vol. II, ed. A.S. Tveritina (Moscow, 1969), p. 333.

Value of total trade through Iskanderun (in piasters)¹¹

	1626	1628
French	527,200	581,400
English	358,100	481,700
Venetian	184,100	302,100
Dutch	177,500	4,100
Non-European	10,500	19,500
Total	1,257,400	1,388,800

The value of English trade is some two-thirds to five-sixths that of the French, while the Venetians have between a third and a half, and in one year the Dutch a third of the French total. In neither year do the French achieve even half of the value of the total trade, let alone the two-thirds share suggested by Steensgaard. Káldy Nágy's figures for silk exports, however, suggest an even lower level than Steensgaard, and contrast sharply with a Venetian consul's estimate that in the year 1620 4,000 bales (400,000 kg) of Iranian raw silk were brought to Aleppo:

Silk export from Iskanderun (in bales)¹²

1624	544
1626	945
1627	611
1628	1,801

As all the silk exported via Aleppo to Europe passed through Iskanderun these figures seem very low, even bearing in mind that these were difficult years for the Aleppo trade, when Iskanderun suffered repeated attacks from pirates and the routes from Iran to Aleppo were interrupted by the Ottoman-Safavid conflict in Iraq. Only in 1628 do they approach the 2,000 bales suggested by Steensgaard. Of course it cannot be ruled out that the figures are incomplete or have been deliberately misrecorded by corrupt officials, but it is also quite possible that the trade through Aleppo had declined by the mid 1620s because of competition from the Cape route and Izmir. Steensgaard leaves Izmir out of his calculations, but the scant data suggests that at any rate by the middle of the decade the northern port was handling a significant share of the silk trade. In 1624 a single caravan was said to have brought 300 loads (60,000 kg) of silk into the port. The fragmentary and conflicting nature of the data for the 1620s makes arriving at an estimate particularly difficult. On the one hand it seems possible that Steensgaard underestimated the trade of certain European nations, on the other Káldy Nágy's figures suggest that even Steensgaard's estimate is too high for the trade through Aleppo. Until further research reveals more data, the question of the level of exports via the Levant in this period must remain unresolved.

It is not until the 1660s that we again find data for the volume of silk traded through the Levant. By this time Izmir had replaced Aleppo as the principal outlet for Iranian raw silk and England had become the largest importer. For the period 1660-1720 there are a number of statistics and estimates for the volume of English and French imports of Levant silk, and of the trade through

¹²*Ibid.*, p. 330.

Izmir. Once again, however, there are serious gaps. For Aleppo, which continued to play a part, there is only a single estimate, and for the trade of the Dutch and Armenian merchants, importing to Amsterdam and Livorno, there is no data at all.

The available information does show, however, that in this period the English import regularly exceeded that suggested for the Venetians and French in the early seventeenth century. In 1663 and 1668 it stood at about 170-180,000 kg, while in 1669 it reached 243,000 kg. The annual average dropped to 140,000 kg in the first decade of the eighteenth century but rose again to over 180,000 in the following decade. For the French there are figures for imports from Izmir only (the possibility of further imports from Aleppo cannot be excluded): 32,000 kg in 1700 - 1710, and 35,000 kg in 1711 - 1716. This gives a combined Anglo-French total of 172,000 kg for the first decade and 216,000 kg for the second decade of the eighteenth century. Furthermore, it is probable that these figures represent a smaller proportion of total trade than had the Venetian import around 1600. In the 1590s the other European nations had scarcely dented Venice's command of the Levant trade, but in the second half of the seventeenth century the contest was much more open; Italian, Dutch and Armenian merchants competed with the English and French; Amsterdam and Livorno with London and Marseille.

That the silk trade was continuing to expand is also supported by contemporary estimates. In circa 1675 Savary reckoned that the overall volume of the silk export via Izmir was 2,900 bales (422,000 kg¹³). The fact that his estimate of the English share — 1,000 bales (146,000 kg) — is lower than the levels recorded for the late 1660's, inspires confidence that his estimate of total trade is not exaggerated either. He also states that the Dutch formerly imported 1,500 bales of raw silk and goat hair from Izmir, which, taking the ratio of silk to goat hair to be the same as for the English (2:1), would mean a Dutch silk import on roughly the same scale as the English, close to another 150,000 kg. Further information can be found in Savary regarding the varieties of Iranian raw silk traded via Izmir. Of the 2,900 bales, only 400 comprised *sharbafi* and *legi* silk (the varieties originating in Gilan), the remainder coming from the Shirvan and Karabagh regions. This fact is of some interest: all European commentators insist that Gilan was the principal silk-producing region in Iran, so if Izmir was the main outlet only for the silks of Shirvan and Karabagh, those of Gilan may have been exported traded via Tabriz or Isfahan and Aleppo (though Savary mentions *ardasse* as well as *legi* silks in his description of Aleppo's trade).¹⁴ Unfortunately Savary does not indicate a volume for the trade through Aleppo, but a much

¹³According to J. Savary, *Le parfait négociant* (Paris, 1742-1749), vol. I, part 2, book 5:

1 bale = 20 *batman*
1 *batman* = 6 *oqqa*
1 *oqqa* = 3.125 Marseille pounds

¹⁴*Ibid.*, p. 441.

later estimate puts it at 1,400 bales (140,000 kg) in 1716. There is no contemporary estimate for the trade through Izmir, but in 1702 Piton de Tournefort reckoned on 2,000 bales (each of 26 *batman*, therefore some 378,000 kg). Combining the Aleppo and Izmir estimates produces a total of over 500,000 kg.

To conclude, while the available data on the Levant route falls far short of what would be required to establish with certainty the level of the silk trade in the sixteenth and seventeenth centuries, it is far from devoid of interest. There seems little doubt that the trade grew strongly in the course of the two centuries. Even restricting ourselves to hard figures, there is a striking contrast between the tens of bales (thousands of kilograms) recorded for Italian importers circa 1500, the nearly 1,500 bales (128,000 kg) imported annually by the Venetians in the 1590s, and the over 200,000 kg of the French and English trade at the start of the eighteenth century. Moving into the more uncertain territory of estimated totals, we have suggested that the trade around 1500 cannot have exceeded a few hundred bales (tens of thousands of kilograms), that circa 1600 it probably exceeded 200,000 kg, while for the end of the Safavid period a level greatly in excess of 200,000 kg seems certain, and one as high as 500,000 kg cannot be ruled out.

*The Russian Route*¹⁵

The Russian route presents a simpler problem, since the whole trade passed through a single centre, Astrakhan. Data is, however, sparse and seems to refer only to non-Russian merchants (principally Armenians) so we will again be dealing with fractions of an unknown whole.

Although the route was used sporadically from the sixteenth century, the quantities involved were small until the last quarter of the seventeenth century. Thereafter the trade grew significantly, secured as it was by a commercial agreement between the Julfa Armenians and the Russian government.¹⁶ The Russian archives contain records of some 41,000 kg imported through Astrakhan in 1676, and 29,000 kg in 1682, but it is only in the 1690s that the data begins to be available on a more regular basis. The Russian route benefitted at this time from the interruption to the Levant trade caused by the Nine Years War, as well as by the opening of the Baltic (previously the silk had to be transported all the way to Archangel on the White Sea for onward shipment to Holland). Levels of over 20,000 kg are recorded for several years, while in 1696 84,000 kg, and in the single month of April 1712 44,000 kg of raw silk passed through Astrakhan. The problem is that we cannot be sure whether the latter years were exceptional for the amount of silk imported or

¹⁵Refer to table 2 for figures and sources.

¹⁶On Irano-Russian trade in the seventeenth century, and on the agreements of 1667, 1673 and 1676 see: N. G. Kukanova, *Očerki po istorii rusko-iranskikh torgovykh otnoshenii v XVII-pervoi polovine XIX veka* (Saransk, 1977); Sh. L. Khach'ikyan, *Nor Jughayi hay vach'arakanutyunë ev nra arevratntesakan kaperë Rusastani het XVII-XVIII darerum* (Erevan, 1988).

¹⁷C. de Bruyn, *Voyages de Corneille Le Brun par la Moscovie, en Perse, et aux Indes Orientales* (Amsterdam, 1718), vol. I, p. 76.

¹⁸R.W. Ferrier, *British Persian Relations in the Seventeenth Century*, D.Phil. dissertation, Cambridge, 1970, p. 171, n. 55; K. Glamann, *Dutch-Asiatic Trade 1620-1740* (Copenhagen/The Hague, 1958), p. 126.

¹⁹Archives du Ministère des Affaires Étrangères, Paris, *Correspondence politique, Perse*, vol. VI, f. 44b

merely for the survival of a comparatively full record of the trade.

To relate these statistics to the level of total trade by the Russian route we must have recourse to two estimates, one produced by the Dutch East India Company, the other by Jonas Hanway, who was active in the trade via Russia several decades later. Both put the export via Russia in about 1700 at 1,000 bales (100,000 kg). As these estimates are independent of one another, and in view of the levels recorded for the years 1696 and 1712, it is indeed possible that exports via Russia reached this level. There is, moreover, circumstantial evidence supporting the idea that by the end of the seventeenth century the Russian route was carrying a significant part of Iran's silk export. First, in describing the boats called *strugi* used on the Volga, De Bruyn defined their capacity as large enough to carry 300 bales of silk, which suggests that this may have been a usual cargo.¹⁷ Second, we know that the success of the Volga route perturbed both the East India Companies¹⁸ and the Ottomans, who in 1721 offered the Armenian silk merchants a new single duty of five per cent in an attempt to win them back to the Levant route.¹⁹

Table 2. Raw Silk Export via the Russian Route

Date	Source	Details	Unit	Quantity	Kg 000
1566	14	Russia Company purchase in Iran	great lb	1,787	1
1580	14	Russia Company import	bale	48	5
1624	18	Bought by a Russian merchant in Gilan	bale	150	15
1635	18	Export via Russia	bale	60	6
1675	24/27	Brought to Moscow by Armenian merchants for sale to the Russian treasury	bale	≈ 200	≈ 20
1676	27	Export via Astrakhan	bale	407	41
1682	24	Export via Astrakhan	pud	1,793	29
1686	27	Export via Astrakhan	pud	427	7
1690	27	Export via Astrakhan	pud	1,305	21
1691	27	Export via Astrakhan	pud	1,168	19
1695	27	Export via Astrakhan	pud	2,232	37
1696	24	Export via Astrakhan	pud	5,119	84
1696-1697	30	Export via Astrakhan, Moscow and Narva	bale	> 1,000	> 100
1697	24	Export via Astrakhan	pud	1,274	21
c. 1700	33	Annual export via Russia	bale	1,000	100
April 1712	27	Export via Astrakhan	pud	2,660	44
1716	36	Export via Astrakhan of an Armenian family partnership operating between Shamakha and Amsterdam	bale	37	4

On the basis of existing information we cannot establish the level of exports via Russia, but we can at least affirm that after a number of false starts the route suddenly became significant in the last quarter of the seventeenth century, and that by the turn of the eighteenth it was perceived as a serious threat by merchants using the Levant and Cape routes. At that time it may have been carrying as much as 1,000 bales (100,000 kg) per annum.

²⁰Refer to table 3 for figures and sources.

*The Cape Route*²⁰

The figures for the Cape route are the fullest available for any section of Iran's raw silk export trade thanks to the archives of the East India Companies. Even here we cannot be sure that surviving data is complete, but at least we can be confident that the margin of error is of manageable proportions. Regular trade via the Gulf started circa 1620; in 1620/1-1622/3 the English East India Company imported an average of 705 bales (70,000 kg) per annum and from 1624/5 to 1630/1 the English and Dutch East India Companies between them imported an annual average of 762 bales (76,000 kg). In the 1630s the volume

Table 3. Raw Silk Export via the Cape Route

Date	Source	Details	Unit	Quantity	Kg 000
1618	13/35	English East India Company (EIC) import	bale	71	7
1621-1630	13	Annual EIC import	bale	366	37
1624-1630	13	Annual Dutch East India Company (VOC) import	bale	429	43
1629	18	Reserved for EIC and VOC	bale	2,000	200
1631-1640	13	Annual EIC import	bale	371	.37
1631-1640	13	Annual VOC import	bale	654	65
1634	18	Sold to the VOC by Armenians in Isfahan	bale	500	50
1641-1643	13	Annual VOC import	bale	495	50
1649	35	EIC import	bale	69	7
1652	35	EIC import	bale	52	5
1652	30	VOC treaty commitment for annual purchase from Safavid treasury	load	300	60
1653	29	VOC sale of Iranian silk in Amsterdam	Dutch lb	71,255	35
1655-1660	30	Annual VOC import	Dutch lb	43,200	21
1676	29	VOC sale of Iranian silk in Amsterdam	Dutch lb	81,501	40
1684	29	VOC sale of Iranian silk in Amsterdam	Dutch lb	= 40,000	= 20
1698	30	VOC import	Dutch lb	74,090	37

increased to an average of 1,052 bales (105,000 kg) per annum, with a peak of 1,873 bales (190,000 kg) in 1637/8. Thereafter the level fell off rapidly: from the 1640s English East India Company imports of Iranian raw silk were sporadic and small scale, hardly reviving even with the renewed interest in Iranian raw silk towards the end of the century. Dutch East India Company imports dropped to an average of 495 bales (50,000 kg) in 1640/1-1642/3 before declining further. In 1652 the Dutch committed themselves to an annual purchase of 300 loads (60,000 kg) from the Safavid treasury, but the records indicate that the actual level of imports for the rest of the century was between 20,000 and 40,000 kg per annum. For the Cape route, therefore, we can suggest a vigorous initial period with average levels exceeding 100,000 kg for a full decade, and thereafter a continuing small-scale trade until the end of the Safavid period.

*Total Production and Export*²¹

We have proposed a trade of a few hundred bales c. 1500, and have suggested at least 200,000 kg via the Levant circa 1600. Some 70,000 kg were exported via the Cape route in the 1620s and 100,000 kg in the 1630s, but we have not been able to produce a viable estimate for the Levant trade for these decades, and so can neither assess the impact of the East India Companies' trade on the traditional route, nor estimate the scale of total exports in this period. For the 1660s and the turn of the eighteenth century there is firm evidence for an import of around 200,000 kg via the Levant, but we can be fairly confident that this represents only a large fraction of the total Levant trade, with the possibility of a total of up to 500,000 kg. In the same period the Dutch East India Company continued to import some 20,000-40,000 kg. At the turn of the seventeenth century the Russian route may have been taking as much as 100,000 kg, but on the basis of the available evidence it cannot be established whether this was balanced by a corresponding drop in exports via the Levant. The 1690s, the decade for which there is most information on the Russian route, are poorly provided for the Levant trade, so collating the data for the different routes again proves impossible. Combining the estimated totals for all the routes around 1700 gives a figure in excess of 600,000 kg, but with the totals for both the Levant and the Russian routes unverified, and the likelihood that the share taken by the Russian route was at least partly diverted from the Levant route, this is a highly debatable figure.

With this in mind, we may turn to the sixteenth and seventeenth century estimates of overall Iranian production and export (Table 4). We need have few qualms about immediately rejecting a number of these as impossibly

²¹Refer to table 4 for figures and sources.

Table 4. Total Iranian Production and Export

Date	Source	Details	Unit	Quantity	Kg 000
1566	8	Potential Iranian export	50-60 <i>man</i> load	3,000-4,000	434-694
1618	15	Iranian production	<i>man-i Shāh</i>	202,000	1,168
1618	15	Iranian export to the West	<i>man-i Shāh</i>	112,000	647
c. 1620	13/30	Iranian export to Europe	bale	6,000	600
1623	13	Total European import	bale	7,500	750
1623	13	Total Iranian export	bale	34,000	3,400
1624	17	Total Iranian production	great lb	1.5 M	1,020
1624	17	Iranian export to Europe	great lb	1 M	680
c. 1637	19	Total Iranian production	bale	20,000	2,000
c. 1637	19	Total Iranian export	bale	19,000	1,900
1637	18	Total Iranian production	bale	2,800	280
1637	18	Iranian export to Europe	bale	1,500	150
c. 1670	25	Potential Iranian export	bale	30,000	3,000
c. 1670	24	Total Iranian production	bale	8,000	800
c. 1670	26	Total Iranian production	bale	22,000	2,200
1686	20	Potential export from Gilan and Mazandaran	bale	40,000	4,000
c. 1720	34	Total Iranian export	bale	9,000	900

high. Victims of this first purge will include not only the extravagant Robert Sherley (34,000 bales) and the anonymous Frenchman (40,000 bales),²² but also such respected reporters as Adam Olearius and Jean Chardin. Chardin's estimate of 22,000 bales (2,200,000 kg) in any case appears to be based on Olearius's 20,000 bales (2,000,000 kg) — there is a suspicious similarity between their regional sub-totals.²³

Silk production in bales

Olearius		Chardin	
Province	Bales	Province	Bales
Gilan	8,000	Gilan	10,000
Mazandaran	2,000	Mazandaran	2,000
Shirvan	3,000	Media	3,000
Karabagh	2,000	Karabagh	2,000
Khurasan	3,000	Bactria	3,000
Georgia	?	Georgia	2,000

²²His memorandum included the equally improbable statistic that Iran had a Christian population of seven million: Raphaël du Mans, *Estat de la Perse en 1660*, ed. C. Shéfer, (Paris, 1890) (reprinted Farnborough, 1969), p. 346.

²³Sources as for tables.

Chardin writes that silk production is continually expanding, which probably accounts for his addition of 2,000 bales to Olearius's total for Gilan.²⁴ The statement itself is in accord with the findings presented in this article, but the figures he gives are impossibly high.²⁵

Another group of estimates can be rejected as derivative or interdependent. To this category belong, among others, the several East India Company estimates of the early 1620s, which probably derive principally from Barker and Pettus's 1618 reports.²⁶ Of the remaining estimates there is little to be said of Edwards's (1566) as he gives us no information about how he reached his figure nor any breakdown of the total, and in any case we have no statistical data for the same period. The remaining four estimates, however, merit serious consideration.

That produced in 1618 by Barker and Pettus, two of the first East India Company agents in Iran, is of considerable interest for the detailed breakdown of its figures. The agents had been helped by "soundry brokers" in drawing up their report, so it may partially reflect the view of informed Armenian or Iranian merchants of the time. Moreover, by the time they wrote their report the agents "had been long enough in the country for early enthusiasm to have been dispelled but for experience to have informed".²⁷ This opinion is borne out by the careful detail in the reports as well as by the hard-headed and far from optimistic assessment of the prospects for the East India Company trade in Iran set out in Pettus's accompanying letter.²⁸

Barker and Pettus's estimate is set out below showing the subtotals for the different regions of Iran.

Silk production by weight

<i>Region</i>	<i>Man-i Shāh</i>	<i>kilograms</i>
Georgia (clearly including Shirvan and Karabagh; <i>ardass, ardasset</i> and <i>canary silks</i>)	30,000 (formerly 60,000)	173,400 (346,800)
Gilan (<i>legi</i> silk)	81,000	468,180
Mazandaran and Farahabad	57,000	329,460
Khurasan	34,000	196,520
Kirman, Tabas, Yazd and elsewhere	Small quantities	
Total	202,000	1,167,560

The produce of Khurasan, the highest quality silk, was either exported to India or consumed by the domestic industry, as was the production of Kirman, Tabas and Yazd. Of the remaining 168,000 *man-i Shāh* (971,040 kg) the Englishmen were "credibly informed" that a third was used in the Iranian industry, leaving 112,000 *man-i*

²⁴J. Chardin, *Voyages de Chardin*, ed. L. Langlès (Paris, 1811), vol. IV, pp. 162-163.

²⁵Certain contemporary commentators noted the exaggeration in estimates of Iranian silk production: Raphaël du Mans, *op. cit.*, p. 12; and, possibly following him, J. B. Tavernier, *Les six voyages du Chevalier Chardin en Perse, et autres vieux de l'orient* (Paris, 1682), vol. I, p. 542.

²⁶The East India Company directors were well aware of the difficulty of accurately estimating the level of Iran's silk production, noting on one occasion that estimates ranged from 5,000 to 30,000 bales. *Calendar of State Papers, colonial series, East Indies...*, 1622-1624, ed. W.N. Sainsbury (London, 1878), p. 184.

²⁷R.W. Ferrier, "An English view of the Persian trade in 1618", *Journal of the Economic and Social History of the Orient*, vol. XIX/2 (1976), p. 191.

²⁸*Ibid.*, pp. 191-194.

Shāh (647,360 kg) for export to the West. Barker and Pettus believed the current level of production to be some 30,000 *man-i Shāh* (173,400 kg) down on earlier levels because of the recent campaigns in Transcaucasia, so the potential export would have been some 20,000 *man-i Shāh* (115,600 kg) higher (operating the same rule of thumb of exports accounting for two-thirds of total production), giving a quantity in excess of 750,000 kg. Of this total a proportion would have been destined for the Ottoman silk industry so the figure cannot be directly compared with totals for European imports from the Levant, but even taking this into account Barker and Pettus' estimate appears high when viewed alongside the quantities known to have been imported to Europe in this period.

The second serious estimate of Iran's silk production and export presents a striking contrast. In 1637 Overschie, the Dutch East India Company agent who managed the most determined Dutch attempt to effect the diversion of the silk trade to the Cape route, set out his estimate in a letter to the Dutch East India Company Governor General in Batavia. His calculation broken down by region is given below:²⁹

<i>Silk production by weight</i>		
<i>Region</i>	<i>Bales</i>	<i>Kg. '000s</i>
Gilan	2,100	210
Mazandaran and Farahabad	150	15
Kirman	250	25
Georgia, Karabagh and Ganja (presumably including Shirvan)	300	30
Total	2,800	280

According to Overschie all the low grade silk from Transcaucasia was exported to Turkey for use in the Ottoman industry, and of the remaining 2,500 bales (250,000 kg), 1,000 (100,000 kg) were used in the domestic industry, leaving 1,500 bales (150,000 kg) for export to Europe. He claimed that in the past year the Dutch East India Company had bought 1,000 bales and the English East India Company 373, while the Armenians had taken only 100 bales to Aleppo. Overschie's estimate of both total production and export is thus less than a quarter of the amount suggested by the English agents twenty years before.

Overschie was perhaps the most experienced silk trader to offer an estimate of the volume of trade, but even his experience was limited. The Dutch East India Company organized its silk purchases from Isfahan and bought almost exclusively *legi*, Gilan silk.³⁰ This may account for the preponderance Overschie gives to Gilan

²⁹*Bronnen tot de Geschiedenis der Oostindische Compagnie in Persië*, ed. H. Dunlop (The Hague, 1930), p. 612.

³⁰M.A.P. Meilink-Roelofs, "The Earliest Relations between Persia and the Netherlands", *Persica*, vol. VI (1972-1974), p. 38.

silk. Furthermore, he was hardly a disinterested observer. One purpose of his letter was to convince his superiors that his attempt to secure a monopoly of the silk trade had achieved almost complete success, so he plays down the production of silk in the regions to which the Dutch East India Company did not have access, notably Shirvan and Karabagh, and the level of exports carried to the Levant by Armenian merchants.³¹ Overschie did not, however, succeed in convincing the Dutch East India Company directors in Amsterdam. They wrote back that even when Company imports were at their peak no more than half the raw silk reaching the Netherlands was coming by the Cape route, and they cited figures for Levant imports in 1638 indicating that 333 bales had come from Aleppo in the holds of just two English ships, while Venice was known to have imported 200-300 bales and Marseille 150. They also remarked that there was still plenty of raw silk on the Aleppo market, and that they had not taken into account the considerable quantities coming to England and Livorno from Izmir.³² Overschie was obliged to concede that he had underestimated the level of exports via the Levant, a conclusion borne out by the data for the trade via the Levant in earlier and later decades.³³

The remaining estimates, by the Julfa Armenians in circa 1670 and by an Indian merchant in Astrakhan in circa 1720, are not broken down by region, but they also deserve close attention since they come from the merchants who were most deeply involved in the export of Iranian raw silk. The Armenians' estimate was made in the course of the negotiations with the Russian government which led to the 1667 trade agreement.³⁴ It was not only Julfa Armenians who were involved in the initial negotiations (though they were the eventual beneficiaries) — a Shirvan merchant acting for the Governor of Shamakha also participated and produced a similar estimate of the volume of silk production. They stated that the total volume of Iranian production and export (the two are not distinguished) was some 4,000 loads or 8,000 bales³⁵ (800,000 kg). This estimate was repeated in the subsequent negotiations surrounding the 1673 and 1676 agreements. We have no way of knowing how the figure was reached, but the roundness of the number and the vagueness about whether it represents overall production or export alone suggest that there was no very meticulous calculation. It is also the case that the Armenians had a motive for pitching their estimate high, since they were hoping to interest the Russian government in the potential value of the trade in terms of revenue and opportunities for Russian merchants. Certainly 800,000 kg seems improbably high compared to the figures suggested for the separate routes, and considerably exceeds even the 600,000 kg arrived at by totalling estimates for the Levant and Russian routes.

³¹Overschie was not alone in underestimating the continuing trade via the Levant. Compare van Oostende's assertion that only 50 bales had gone overland to Turkey in 1638: *Bronnen tot...*, p. 654.

³²*Ibid.*, pp. 638-639.

³³*Ibid.*, pp. 665-666

³⁴See note 17 above.

³⁵They reckoned the bale at 6 *pud* or 98.28 kg.

The final estimate is that given by an Indian merchant in Astrakhan in 1720. The estimate figures among the information gathered by Russian officials in the period when Peter the Great was contemplating the invasion of Iran's Caspian provinces, one of the principal motives being to secure the economic resources of the region. The merchant, without divulging his source of information or providing any breakdown of the figure, put Iran's total silk production at 9,000 bales (900,000 kg). This estimate may have been influenced by the earlier figure of 8,000 bales, which might have been current in Russia from the time of the negotiations of the 1660s and 1670s. It again represents the opinion of someone who was in a position to be well informed, but like the Armenians' estimate of fifty years earlier it is far in excess of the levels suggested by the available hard data.

Thus even the few estimates that come from informed sources turn out to be little use. The two that provide the fullest information are hopelessly at odds with each other; one is clearly a deliberate underestimate, while the other seems much too high. The two estimates coming from the merchants who should have known most about the silk trade also inspire little confidence. The information they contain is restricted to a bald statement of total production or export, and both seem improbably high.

Conclusion

Perhaps the only firm conclusion is that quantitative estimates by contemporary writers on Safavid Iran are of little worth to the historian. The available statistical evidence does, however, suggest a vigorous expansion in the export of Iranian raw silk to Europe between 1500 and 1720. It has not been possible to chart this expansion with any precision, only to say that from a trade measured in some tens of thousands of kilograms in around 1500, the export probably reached 200,000 kg or more by the turn of the seventeenth century, and was greatly in excess of this figure in the early eighteenth century, possibly attaining a level as high as half a million kilograms.

The existence of a fast-growing export trade in raw silk throughout the Safavid period raises interesting questions in a number of areas: the commercialization of agricultural production, the impact of foreign demand for raw materials on prices and on domestic manufacture, the contribution of the silk export trade to the economy as a whole and to state finances in particular, the economic role of the political elite, and the nature and causes of Safavid decline. These questions are beyond the scope of this article, but the quantitative aspect undoubtedly provides food for thought and suggests many avenues for future research.