Yük (Ḥiml) in the Ottoman Silk Trade, Mining, and Agriculture

Yük or *ḥiml* (Arabic synonym for *yük*), which was widely used in the assessment of market dues and in the regulations on mining and agricultural taxation, was one of the most varied and imprecise measures in the Ottoman Empire.[1] In general, the word was used for a variety of bundles of goods packed for transport. The size or weight varied according to the type of pack animal used or the kind of good being carried. Thus, bundles packed for transport by donkey, mule, horse, or camel varied in weight. However, the high-priced goods such as textiles, silks, or spices conformed to a rather fixed weight or capacity and therefore standardized bags or sacks were used and a uniform rate of tare was applied. On bales of cotton and alum for instance, ten percent of tare was levied, as a rule.[2] An animal pack load could consist of two, four, or even eight separate bundles or bags which were called in the texts, sometimes interchangeably, *tay, denk, heybe (hegbe), boġca (bohca), ġirār (ġarār, ḫarār), taġār (daġār), çuval, ṣandūḳ (ṣandıḳ), sepet (seped),* or *ṭulum*. Individual bundles were often called simply *yük* or *ḥiml* creating confusion in calculations.

A *yük,* or bundle, had to be fastened[3] in a proper and customary way for government inspection and collection of duty. A binding fee (in Italian *legatura*) was paid per bundle of silk. Because of the importance of the regulations on the sizes and measures, and even the shapes, of the bales and tares[4] in international commerce, the medieval manuals for merchants, as well as travellers' books, often contained precise definitions of them.

Thus, the market dues imposed either on weight or per piece were responsible for providing some sort of standardization. It was not only the nature of the goods transported, or the means of transportation, but also the government taxation per unit that determined the standardized types of containers. While the *bāc* (transit or market-due) was

taken for each unit—bundle, bale, packload, etc.—the customs dues were taken *ad valorem* and, therefore, goods were weighed at the public scales. In order to prevent disputes, regulations of tolls and market dues *(ḳānūn-i bāc ve tamġā)* sometimes defined the weight and measure of the bale used. For certain goods it was mandatory that they be weighed at the public scales, called *ḳānṭār* or *mīzān*.[5]

THE *YÜK* IN SILK TRADE

Silk being a precious commodity, precision was sought in fixing the weight of the silk bales. A *yük* of silk meant either the whole load of a camel, horse, or mule (see Table I, nos. 3, 4, 5, 9, 14 and 16), or a single bale (nos. 1, 2, 7, 8, 10, 11, 13, 15, 17, 18) in a pack load. As a rule, a silk bale made in Iran reached its destination without being untied *en route* at the transit centers through which it passed. Thus, when the bales of silk arrived in Italy they had the same weight as when they originated from Iran.[6] Actually, there was no one standard bale for the silk exported from Iran and their weight differed from one area to another as well as within the same area. According to a list illustrating the distribution of silk from Shirwan in a caravan among various guilds in the *Bedestan* of Istanbul, the bales varied widely in weight from 70 to 90 *oḳḳa*. This wide divergence is also confirmed by other sources (see Table I).

From Table I it can be seen that there were actually several types of silk bale: 20 kg, 34 kg, 61-68 kg, and larger ones which varied between 90 and 115 kg. While a packload consisted of eight small bundles *(boġca)* of about 20 kg., a single bale of silk could be as heavy as 115 kg. There was no one standard silk bale which can be determined even for a certain period. Perhaps the best method for determining a measurement would be to find out which pack animal was employed in each case.

Silk bales were carefully prepared for their long journey. Raw silk was first wrapped in a sack called *telise* and tied firmly with a rope. The above description, taken from an Ottoman document dated 1526,[7] fits with the *torsello* or *fardello* carved above the doorway of the Court of Merchants in Lucca in the fourteenth century.[8] The tare, consisting of the *telise* and rope of a silk bale, is computed as 6.3 *lidre* or about 2.425 kg., which is approximately three percent of the net load. Apparently the packing methods and materials, as well as processes

Table I
Bale or load (*yük, ḥiml, boġça or ferde*) of silk

Place and Date	Weight of Bale or Load in original unit	Kg	Source
1. Iran and Genoa, 1340	1 *fardello* = 252 *libbre* de Genoa[9]	79.821	Pegolotti, 300
2. Azak (Tana), 1542	1 *fardello*	79	Berindei-Veinstein «La Tana», 125
3. Iran, 15th c.	2 *some*	301.230	G. Barbaro cited by Hinz, 15
4. Iran (and Mardin), 1518	1 *yük* = 8 *boġča* (bundle) = 32 *baṭman* = 126.4 *oḳḳa* (1 *boġča* = 15.8 *oḳḳa*)[10]	162.144 20.268	Barkan, *Kanunlar*, 159; Hinz, 14
5. Bursa, ca. 1484	1 horse load = 71.4 *men (män)*[11]	214.200	Bursa Sicil, A 4/4
6. Bursa, 1485	1 *ḥiml* = 405 *lidre*[12]	115.860	Bursa Sicil, A 4/4; *Belgeler*, doc. 123
7. Bursa, 1485	1 *'idl* = 176 *lidre*	68.000	*op. cit.*, document, 156
8. Bursa, ca. 1490	1 *yük* of silk = 90 *lidre*	34.635	Bursa Sicil, A 8/8
9. Bursa 1621	1 *ḥiml* = 550 *lidre*	176.380	Dalsar, 289
10. Erzincan, 1516	1 *yük* = 10 *baṭman* = 19,200 *dirhem*	61.574	Barkan, *Kanunlar*, 182
11. Bursa, 1526	1 *yük* = 208 *lidre*	79.000	Dalsar, 212, no. 132
12. Bursa, 1775	1 *balya* = 170 lbs.	110.000	Issawi, *Turkey*, 254
13. Istanbul, 1600	1 *ferde* = 70-90 *oḳḳa*	89.796 to 115.432	BA, MM, 3693/3-11
14. Bursa, 1620	1 *ḥiml* = 550 *lidre*	209.551	Dalsar, 289
15. Iran, ca. 1600	1 bale of silk = 300 *libbre sottile*	90.000	Sella, «Commerci», 111
16. Iran, 17th c.	1 large bale = 408 Dutch pounds	201.552	Le Brun, cited by Minorsky, 20
17. Iran (Gence), 1727	1 *divānī ḥimle* = 48 *oḳḳa*	61.547	Barkan, *Kanunlar*, 182; Hinz, 36
18. Iran, Bursa, 1500	1 *tenbelid (tanbalit)*[13] = «half a horse load» = 300 *lidre*	96.210	Bursa Sicil

of applying tares did not change much throughout medieval times.[9] In this, Italy seemed to follow the eastern ways. Pegolotti, writing in the 1340's, tells us that fine commodities were packed with a *sacco di canovaccio* (canvas), *corda,* and a *scarpigliera,* that is, an outer wrapping.[10] Pegolotti distinguishes between *sacco di canovaccio* and *sacco di gianìa* (also written as *ginia, gina,* or *agina*). The description of the latter (see editor's note, p. 307, no. 1) coincides with the definition of the Arabic *telise, tillis,* a sack "woven of palm leaf strips." In Turkey, a *telise (tiliz* in Turkish) was usually made of hemp.[1]

THE *YÜK-KABAL* SYSTEM IN MINING

Ottoman regulations on mining, based mostly on pre-Ottoman texts and conservative in nature, are an important source for pre-Ottoman weights and measures in Serbia and Bosnia. Their study is particularly interesting for the observation of Ottoman policy regarding native weights and measures. The following is a key passage in the mining regulations of Novabiri (Novobrdo) dated 893/1488:[17]

> When the digging in a shaft reaches the seam and the hauling out of the mineral ore begins, [one load of ore] called *şihse* (şihte)[18] is sold for about ten *lidre* [of silver] for the best quality of ore, five for the average, and one or two for the poor quality. One *şihse* of ore equals 120 *verkče* and each *verkče* equals five *ilrvlagi* (?). Each *lidre* is estimated as 276 *akça*. This is an established rule from earlier times. Also, each *lidre* equals 12 *ünke* and each *ünke* is estimated as 23 *akça,* which is a confirmed law. [The weight of] one *ünke* is six *miṯḳāl*.

The regulation further states:[19] "Out of 40 *ḥiml* of washed and cleaned first quality ore is extracted about 20 *lidre* of raw silver, of average quality 12 *lidre,* and of poor quality 5 or 6 *lidre*.

N. Beldiceanu's calculation[20] of *şihse* as equivalent to 20 *ḥiml* is based on the identification of the value of the sale of the extracted ore (10 *lidre* of silver for one *şihte*) and the amount of the actual extraction of silver (10 *lidre* of silver out of 20 *ḥiml* of washed and cleaned ore). This hypothesis rests on two assumptions: first that ore drawn out of

the mine was identified with "washed and cleaned ore," and second that the sale price of the raw ore was supposed to be the same as the actual contents of the silver contained in it. These assumptions have not been substantiated by Beldiceanu.

Even if we agree with Beldiceanu that one *şihse* equals 20 *ḥiml*, his calculation of *ḥiml* (in Beldiceanu *haml*) cannot be verified. In the regulations, *ḥiml* is defined as 4 *kayl* or *kile* or 4 *kabal* (or *kıbıl*).[21] In the first instance, *kayl* or *kile* is accepted by Beldiceanu as the standard Ottoman *kile* of 20 *oḳḳa* (or 25.656 kg). In the second instance, one *kabal* is accepted as the equivalent of 19 *oḳḳa* and 135 dirhem (or 24.894 kg) as defined in a *ḳānūn* of a mine of Kratovo dated 1536.[22] Thus, Beldiceanu concludes that a *ḥiml* is 102,624 kg when a *kile* is interpreted as the Ottoman standard *kile* of 20 *oḳḳa*. Particularly when dealing with native measurement systems, the words *kayl, kaylçe,* or *kile,* or *ḥiml* were sometimes used by the Ottomans in their general meaning of measure or load or they simply referred to the native measures. It will be illustrated that here *kayl* or *kile* and *ḥiml* or *yük* are used for Serbian *kabal* and other measures.

In the Ottoman regulations, *kabal* is sometimes used interchangeably with *ḥiml* (or *yük*). A *ḥiml* is sometimes defined as corresponding to four *kabal*. In this case, *ḥiml* refers to a larger local measure. In fact, in a mine in the Kratovo area the local system was rendered as follows:[23] "In the aforementioned mine, the *kabal (kıbıl)* is defined as 19 *oḳḳa* and 135 *dirhem*. Four of these *kabal* make one *ḥiml* (*haml* in Anhegger), and each three *ḥiml* constitutes one *hice* (for *hice* see *infra*). This is the established and confirmed rule." Now we have a new kind of *ḥiml* corresponding to a local unit used in measuring the extracted ore which equals four *kabal* or 99.576 kg. In conclusion, Beldiceanu's calculation of *şihse* on the basis of Ottoman *kile* of 20 *oḳḳa* cannot be accepted. In fact, a local measuring system was followed by the Ottomans as before in the division of the extracted mineral ore.

According to an Ottoman regulation based on investigations made in the mining areas around 1536, it was ruled that[24] the local "kile" called *cetvirnik* (in Serbocroatian literally "one fourth") consisted of four *kapa* and each *kapa* of 8 *kutla*.[25] *Kapa* is designated as *oḳḳa* and *kutla* as *ḳadeḥ* in the Ottoman interpretation in the text. "Every four *kile* makes one *ḥiml*, and two *kile* one half *ḥiml*, which is called *polovač*" (*polovač* again from Serbocroatian *poloviča*, meaning half: Anhegger, II, 404).

Here we find the whole local system rendered with the corresponding Ottoman terms.

Table II

	Kabal	*Polovač*	*Četvirnik*	*Kapa*	*Kutla*
Kutla (ḳadeḥ)					1
Kapa (oḳḳa)				1	8
Četvirnik (kile)			1	4	32
Polovač (1/2 ḥiml)		1	2	8	64
Kabal (ḥiml)	1	2	4	64	128

It is obvious that the Ottoman terms were used here as equivalents of the local weight measures. Here the *kile* is shown to be only 4 *oḳḳa*. The Ottoman measure of capacity, *ḳadeḥ* or *kāse,* is 2% of a *kile* of 20 *oḳḳa,* or 1 *ḳadeḥ* equals 160 *dirhem* (of wheat). But here, 1 *oḳḳa* or *kapa* is given as the equivalent of 8 *ḳadeḥ* or *kutla* which would mean that 1 *oḳḳa* is equal to 1280 *dirhem*. If we assume that *kutla,* the smallest unit in our table, was in fact exactly one Ottoman *ḳadeḥ* or 160 *dirhem,* then we find the following equivalents.

1 *kutla* = 1 *ḳadeḥ* = 160 *dirhem* = 513.12 gr.
1 *kapa* = 8 x 0.513 = 4.104 kg
1 *çetvirnik* = 4 x 4.104 = 16.416 kg
1 *polovač* = 2 x 16.416 = 32.832 kg
1 *ḥiml (kabal)* = 2 x 32.832 = 65.664 kg

It is to be noted that in the same area each mine shaft *(ḳuyu* or *çāh)* is divided into 64, 66, or 68 shares for sale, and possessors divided expenses and mineral ore extracted in proportion to the number of shares in their possession.[26] The mineral ore could be easily dividied among shareholders in this system of measurement of 2 x 4 x 8. The largest unit, the *ḥiml* or *kabal,* is 2 x 64 = 128 *kutla*.

On the other hand, in the İzvornik (Zvornik) mining area, the *kile,* the unit of grain measure used in taxation, was, in the regulation of 1548,[27] officially fixed at 33 Ottoman *oḳḳa* and each *ḥiml* consisted of 4 *kile,* or 132 Ottoman *oḳḳa* = 169 kg. Here, half a *ḥiml* (66 *oḳḳa*) corresponds to the *ḥiml* in the mining regulation.

In sum, it is obvious that the Ottoman word *kile* is used in this area not as the Ottoman measure of 20 *oḳḳa* but to designate the local

standard measure of capacity which was used in measurement of grain and mineral ore.

Thus Table II, based on the identification of 1 *kutla* = 160 *dirhem* and 1 *ḥiml* = 65.664 kg, may reflect the actual situation.

Ottoman regulations define *kabal* as "one animal load of ore" *(bir ḥayvān yükü cevher)* (Anhegger, II, 286) and *hiyaca (hice)* as "two-horse load of ore" *(iki bārgir çektügi cevher yükü)* (Skarić, 10). There is no doubt that these load measures in mining were based on the capacity of draft animals, in particular horses, in this area (see Table IIIa).

On the other hand *hiyaca (hice)* is defined in the same Ottoman sources as "one box measure" *(bir ṣandūḳ ölçü)* (Djurdjev, I, 95). It is still a custom in Turkey to measure a huge amount of sand for construction in large boxes open at the top and bottom.

The Bactrian camel carries more weight than the dromedary, and there were hybrids in Anatolia with varying draft capacity. But it is generally accepted that a horse can carry twice as much as a donkey, and a camel twice as much as a horse. This is confirmed by the market dues imposed for their respective loads in the Ottoman regulations. Typically, a market due *(bāc)* of four *akça* was paid per camel-load, 2 *akça* per horse-load and 1 *akça* per donkey-load.

In the Serbian mining area, indigenous miners were employed for the process of extracting silver, so local terminology and devices continued to be used, while Ottoman technical terminology and weights and measures were in use in the refineries and the mints under the direct control of Ottoman officials. An interesting example of this is how the local *pintar,* a measure used in weighing silver in the mint, was replaced by the Ottoman *dirhem* in about 893/1488. In the mint of Srebrnića the local measure, the *pintar,* had been used in weighing silver when delivered to the Ottoman assayer responsible for the mint *(ṣāḥib al-ʿayār).*[28] One *pintar* was supposed to weigh 1150 Ottoman *dirhem.* In 904/1498 the government inspector discovered that two physical *pintars* used by the assayer had a weight of 12 *dirhem* more than the conventional weight, and two others had an additional 11 *dirhem.* Since the official took silver from the producers in *pintars* and delivered it to the mint in *dirhem,* he thus embezzled 11 or 12 *dirhem* from every 1150 *dirhem* of silver. From the inspector's report we learn that the central government had sent to the assayer at Srebrnica the official *dirhems (mīrī dirhem)* which had been stamped at the capital to replace the local *pintars.*

Table IIIa

Weight Carried by Draft Animals

	Camel	Horse	Mule	Donkey
R. Bulliet	500-550 lbs. (226-269 kg)			
13th century, Hinz, 13, 14				100 *mān* = 83.3 kg
1484, Bursa, Sicil		214 kg. silk		
16th century, Güçer	200 *oḳḳa* (256 kg)			
19th century, Chesney, I, 584	500-600 lbs. (244-293 kg)			
17th century, P. Mason, I, 421	2 bales : 552 lbs (270 kg)			
17th century, Tavernier	6-700 French lbs (293-342 kg)			
16th-17th cent., Iran Steensgaard, 31	36 *männ-i shāh* or 200 kg			
19th century, O. Kurmuş, 70	250-450 kg			
1846, Consular Report, Issawi, 177	240 *oḳḳa* (307 kg)	120 *oḳḳa* (153 kg)		60 *oḳḳa* (76.868 kg)
1863, Consular Report, Issawi, Turkey, 177	560 lbs (253 kg)	364 lbs. (164 kg)	420 lbs. (190 kg)	168 lbs. (76 kg) ox 252 lbs (114 kg)
1870, A & P, 64, 341	2 loads : 6 CWTS (314 kg)	2 loads : 3.5 CWTS (157 kg)	2 loads : 3.5 CWTS (157 kg)	2 loads : 1 3/4 CWTS (135 kg)

Table IIIb

Weights and Measures of Ottoman Origin in the Mining Areas of Serbia

	Equivalent in Ottoman measure	Used in weighing	Source
Dirhem	(64 *ṣa'ir*)	silver & gold	Anhegger, Beldiceanu: Index
Miṭḳāl	(96 *ṣa'ir*)	gold	Anhegger; Beldiceanu: Index
Ünke (*onki, onca*)	6 *miṭḳāl*	gold in particular	Beldiceanu, *Reg. Min.*, 233, 349
Lidre	120 or 100 *dirhem*	raw silk	Beldiceanu, *Ibid.*, document: p. 328, cf. *Turcica XIV*, 328
Lidre	12 *ünke* = 72 *miṭḳāl* or 115 *dirhem*	silver	Beldiceanu, 233, 294, 295, 297, text in 349
Çeki	100 *dirhem*	silver	Anhegger, I, 71
Çeki	250 *oḳḳa*	wood, stone	*Ibid.*
Lodra	176 *dirhem*	copper	Anhegger, Index 415
Oḳḳa	400 *dirhem*	standard weight	
Ḳanṭār	100 *lodra*	lead	Anhegger, II, 232
Kile of Istanbul	20 *oḳḳa*	grain, ore	Anhegger, Index 414
Ḥiml (*yük*)	4 *kile* = 32 *lodra*		see *Infra*
Ḥiml (*yük*)	local measures	mineral ore, charcoal, sand, various pack loads	see *Infra*
Hegbe (*heybe*)	Saddlebag with two sacks		
Bilek (*Bileg*)			Beldiceanu, Index 398
Zirā'	100 *parmaḳ*		Anhegger, II, 232, 241, 111, 486
Parmaḳ			Beldiceanu, *Ibid.*, 358 dated c. 1390
Tonluḳ	fabric for one suit		
Ḳulaç	= 1 German *Lachter* (Klafter) = 1.71 meter, a fathom		Beldiceanu, 300
Tekne	a tub	salt	Anhegger, I, 45
Karın		fats, wine	a trough skin made into a bag

As for the Ottoman weights and measures introduced in the mining area, R. Anhegger[29] and N. Beldiceanu,[30] in their publications on the Ottoman mining regulations, did not consider that *lidre* and *lodra* were different units of measure in Ottoman metrology (see Table IIIb). Actually, the Ottoman *lidre* was a standard measure for precious commodities such as silk and silver; while *lodra* was a fraction of a *ḳanṭār* used in weighing comparatively heavy and cheap stuffs such as copper, iron and tin.

Comparing the statements in the mining regulation of Bāyezīd II's time (*ḳānūnnāme,* Paris no. 85 fol. 257 and 267), Beldiceanu concludes that 1 *lodra* of silver weighed 115 *dirhem* or 368.805 g (1 *dirhem* equals 3.207 g).[31] But there was no known *lidre* or *lodra* of this weight in this period. The question now arises whether this "ldre" might actually be a local, pre-Ottoman *litra (lidre).*

Using the statement 1 *lodra* equals 12 *onki* found in the regulation of Novobrdo, Beldiceanu finds[32] an *onki* equal to 115/12 = 9.58 *dirhem* or 30.73 g. The same regulation further states that each *onki (ünke)* equals 6 *miṭḳāl*. Thus, for him 1 *miṭḳāl* equals [115 *dirhem* (1 *lidre*)] ÷ [6 x 12] = 1.59 *dirhem*. But all other Ottoman sources defined a standard *miṭḳāl* as 96 *ṣa'īr* (grain) or 1.5 *dirhem, lidre* as 100 *dirhem* and *lodra* as 176 *dirhem* (only Ḫalīl lists *lidre* as equal to 120 *dirhem*).[33]

To conclude, it is possible to suggest that as was true in the case of *kile, ḥiml,* and *oḳḳa* in the mining areas, a *lidre* of 115 *dirhem* or 368.805 g must have been a pre-Ottoman local *lidre*. (Incidentally, the *libbra* of Torino weighed 368.91 g, and we know that Italy used to import Serbian silver before the Ottoman takeover.)[34]

YÜK-KABAL (LUKNO) SYSTEM IN AGRARIAN TAXATION

The system of *yük-kabal* as applied in the mining areas appears to have been the general metrological system in Serbia and was related to the earlier Roman-Byzantine metrology.[35] In an incisive study, Dr. Dušanka Bojanić brought some important clarifications to this area.[36] She first pointed out that according to the Serbian Czar Dushan's code of law, every peasant in possession of one *baştina* was annually to give a "tribute" to the state or its military representative on the land. This "tribute" was paid in the form of a measure *(kabal)* of wheat or its cash equivalent. Dr. Bojanić adds that it weighed about 15-16 kg, and that its cash equivalent was fixed as 12 *dinars,* which equal one gold piece. She also points out that this actually related to the old

Serbian fiscal system, and that the basic features of this system continued under the Ottomans. The *kabal* was computed in the medieval Serbian system of weights as a part of a duodecimal system of 12 *kabal*s, and a larger measure, the *krina,* was 2 x 12 *kabal*s. The *kabal* system survived under the Ottomans in agricultural taxation (see Appendix II). *Lukno* (in Ottoman Turkish *lukna*), a synonymous native term for a load of grain appears, however, to have had a more general use.[37] We have seen above that the term *kabal* and the system actually continued under the Ottomans in a more complete form in the conservative mining regulations in Bosnia and upper Serbia.[38] In the *lukno* system, 1 *lukno* of wheat consisted of 2 *poluknice* (documented in 1348). There were larger units in the system corresponding to 12 *lukno* and 24 *lukno* as measures of wheat which were closely connected with the agrarian tax system.[39] We find the term *lukna* in earlier Ottoman defters, whereas in later periods it was changed to *kile* or *yük (ḥiml).*

Let us now examine the Ottoman legal texts concerning *lukno, kile,* or *yük (ḥiml)* in connection with peasant taxation.[40]

Lower Serbia on the Danube came under direct Ottoman administration relatively late (first during a short period between 1439 and 1444 and then finally in 1459). The Ottomans usually allowed for a transition period in their annexation of a conquered land during which pre-conquest native laws and customs, including systems of measurement, were maintained. They pursued this policy with more tolerance and for a longer period for groups such as the Eflaks (Vlachs), *derbendci*s (guards on mountain passes) and miners who enjoyed a special status in return for certain services rendered to the state.

A record from an Ottoman survey book[41] dated 872/1467 gives the definition of *lukna* as follows:

> This is the text comprising the details of the regulation of the register (of the Braničevo province).
>
> The measure of this province is called *lukna* in the local terminology and equals 4 *kile* of Edirne. Thus, the price of 1 *lukna* of wheat is estimated at 12 *akça* and that of 1 *lukna* of barley and oat and millet 10 *akça* and that of 1 *medre* of *şira* (mast or wine) 15 *akça.* And every farm of the size of 1 *çift*[42] shall deliver to the timar-holder 1 cartload of wood and 1 cartload of hay, or their cash equivalents as 2 *akça* for wood and 5 *akça* for hay respectively. The swine tax is 1 *akça* for every 2 heads. Also, 1 *akça* for every 3 sheep shall be paid to those who are entitled to take it. For the rest of the products the tithes and *salarlık*s are estimated and recorded according to the established custom. The total sums are determined accordingly in the register.

In the register itself, the tithes are usually to be found computed in *lukna,* and sometimes in *kabal.*

In an earlier "detailed" register of the province of Vilk (upper Serbia) dated *evā' il-i Receb* 859 (June 1455), tithes on grain were also taken in *lukna* while wine was measured in *çobor.*[43]

We find that in northern Serbia, Bosnia and northern Albania, which came under Ottoman rule quite late, the native systems of measures appear in the records almost unchanged. This allows us to follow the slow process of the assimilation of the metrological systems under the Ottomans. In general it can be observed that the Ottomans basically retained the previous systems, the earlier terminology with their own, but making little or no alteration in the actual weights and capacities. This is why the use of the Ottoman terms *ḥiml, yük,* or *kile* for *kabal, lukno, bar,* or *moz* have often confused modern researchers.

Table IV

Pre-Ottoman Systems of Measurement in Serbia, Bosnia, and Albania.

Kabal System			
	Equivalence	kg	Source
Hiyača (hiče)[44]			Kanun, ed. Djurdjev, 95; Documents published by Skarić and Spaho cited by Anhegger II, 232, 239, 276; Paris no. 85 in Beldiceanu, 345; Bojanić, *Passage*, 107-111
large	24 *kabal*		
small	12 *kabal*		
Ḥiml (mineral)	4 *kabal* = 77 *oḳḳa* and 140 *dirhem*	99.576	Spaho : see Anhegger, II, 239
Kabal (mineral)	19 *oḳḳa* and 135 *dirhem*	24.894	Ḳānūn, 943/1536, ed. Spaho : see Anhegger, II, 239, 403
Kabal, small (grain)	14 *oḳḳa*	15-16	Bojanić, 182
Kabal, large (grain)	140 or 144 *oḳḳa*, or «two horse-load» of ore	180-185	Bojanić, 182, 184 (grain); Skarić, 10 (ore)

Kabal System (Kratovo)			
Ḥiml (*kabal*, mineral)	2 *polovač* = 20480 *dirhem*	65.664	Kanun, 943/1536, ed. Spaho: see Anhegger, II, 231
Polovač	2 *četvirnik* = 10240 *dirhem*	32.832	for the etymology of the terms see Anhegger, I, 70-71; II, 403-4
Četvirnik	4 *kapa* = 5120 *dirhem*	16.416	
Kapa	8 *kutla* = 1280 *dirhem*	4.104	
Kutla	160 *dirhem*	0.513	
Şihse (Şihta) System (Novobrdo)			
Şihta (or *şihsa* or *şihse*)	= 120 *verkče*	1313.280	Kanun, Paris no. 85, fascimile: Beldiceanu, 348-349. In Beldiceanu, p. 304: 1 *şihse* = 20 × 102.624 kg or 2,052.48 kg. I take 1 *ḥiml* = 65.664 as in the *ḳabal* system
Verkče	= 5 «*ilrvlagi*»	10.944	
«*ilrvlagi*» (?)	—	2.188	

Table V
Pre-Ottoman Systems of Measurement in Serbia, Bosnia, and Albania (Continued)

Lukna System (Serbia, for grain)			
	Equivalence	kg	Source
Lukna of Smederevo	2 *luknice* = 7 *kile* = 140 or 144 *oḳḳa*	186.320 or 191.851 kg	Bojanić, 183; McGowan, 166
Lukna of Braničevo (*Luknice*)	6 *(po)luknice* = 72 *oḳḳa*	93.360 (or 234.132) kg	Bojanić, 183
Poluknice	12 *oḳḳa*	15.393 kg	Bojanić, 183
Grain measures in Bosnia and Hercegovina			
Kile of Saray	50,64 or 66 *oḳḳa*, 60 in 1565		Kanun, ed. Djurdjev 35, 49, 71
Kile of Kilis	66 *oḳḳa*		*op. cit.*, 123
Ḥiml of Izvornik	4 *kile* = 132 *oḳḳa*		*op. cit.*, 99
Kile of Izvornik	33 *oḳḳa*		*ibid.*

Moz (Modius) System (Albania)

Moz (*ḥiml* or *yük*)	2 *karta* = 160 *oḳḳa* (formerly 3 *karta*)	205.280	Ḳānūn, Djurdjev, 182; Pulaha, 18-22
Karta	80 *oḳḳa*	102.640	Pulaha, 19; Inalcik, *Arvanid*, 123; Djurdjev, I, 183
Bar (*barrë*)	6 *kile* of Istanbul = 120 *oḳḳa*	153.936	bar < Albanian *barrë* moz < mod < modius:
Ḥiml	6 *kile* of Istanbul = 120 *oḳḳa*	153.936	Ḳānūn, ed. Djurdjev, 168; Pulaha, 19
Istatra or Ustatra[45]	400 *lodra* = 176 *oḳḳa*	225.772	Ḳānūn of Trepča, 893/1488: Paris no. 85, facsimile: Beldiceanu 343; (In Beldiceanu, p. 291, *Istarta*)

Table VI
Sapo and Muzur for Measuring Salt

Place and Date	Ottoman Measure	Kg	Source
Salonica, 1478, Pre-Ottoman measure for salt	1 *muzur* = 45 *oḳḳa*	57.726	Anhegger and Inalcik, Ḳānūnnāme, 34
Silistre, 16th c., for rice	1 *muzur* = 5 *kile* of Silistre = 150 *oḳḳa*	192.420	Silistre, BA, T. no. 483
Avlonya, 1583	1 *muzur* = 32 *oḳḳa*	41.049	Inalcik, Arvanid, 126
Iskenderiyye (Albania)	1 *muzur* = 50 *oḳḳa*	64.140	Pulaha, 18-21
Ahyolu (Anchialos)	1 *muzur* = 2 *vezne* = 90 *oḳḳa*	115.452	Güçer, IFM, XXIII, 123
Wallachia (rock salt)	1 pièce = 100 *oḳḳa*	128.280	BA, Mühimme 83, doc. 151
Caffa, 1542, salt	1 *sapo* = 16 *keylçe*	410.416	Berindei-Veinstein, Kefe, Ḳānūn, 74

An attempt is made in Tables IV, V, and VI to restore the pre-Ottoman systems as they were presented in the Ottoman regulations *(ḳānūnnāme)*.

In the salt-works in Ibrail, Midilli (Mytilene), Rhodes (Rodos), Kızılca-Tuzla (near the Dardanelles), Saruhan and Raguza (Dubrovnik), the measure used was *kile*. For *mensura, mesura, misur* and μουζουριον see Schilbach, 280.

YÜK AS TAX UNIT: "ONE MEASURE OF WHEAT AND ONE MEASURE OF BARLEY"

The tax system of "one measure of wheat and one measure of barley per household" is an interesting case illustrating the origins of the Ottoman weights and measures in the Balkans and showing how a pre-Ottoman measure of the grain tax continued to be used throughout the area of Rumili. As attested in the Ottoman survey registers, an ancient grain tax delivered in kind as one or two measures of wheat and the same for barley continued in the Ottoman provinces of Sofya (Sofia), Semendire (Smederevo), Braniçeva (Braničevo), Bosnia, Hercegovina, Albania and Greece.

Table VII

Place and date	Tax and measure used	weight in kg	Source
Pravadi and Üsküdar (Bulgaria) 1455	Total amount of Beylerbeyi's grain revenue : 15 *mud* of wheat and barley half and half	6927.120	Cevdet, no. 89
Semendire (Serbia), 1527	one *yük* (100 *oḳḳa*) of barley and 1 *kile* (20 *oḳḳa*) of wheat	128.289 (1 *yük*) 25.656 (1 *kile*)	Barkan, *Kanunlar*, 325-329
The Morea, 1499	2 *ster*[46] of wheat 2 *ster* of barley	221.604 lb.? (wheat)	State requisition : Sanuto, II, 1057
Depe-Delen, 1506	1 *kile* of wheat and 1 *kile* of barley	38.484 (1 *kile*)	Başvekâlet Arch. T.T. no. 34 : from the *derbendcis*
Delvine, 1506	1 *kile* of wheat and 1 *kile* of barley	?	*Ibid.* : the *derbendcis*
Premedi, 1506	1 *deng* of wheat and 1 *deng* of barley	?	*Ibid.* : the *derbendcis*
Bosnia and Hercegovina, 1539	1 *kile* (66 *oḳḳa*) of wheat and 1 *kile* of barley	84.664 (1 *kile*)	Djurdjev, I, 40,50 : the *derbendcis*
Izvornik, 1548	2 *kile* of wheat and 2 *kile* of barley (1 *kile* = 33 *oḳḳa*)	84.664 (2 *kile*)	*Ibid.*, 101
Hercegovina, 1638 *derbendcis*	2 *kile* of wheat and 2 *kile* of barley (1 *kile* = 60 *oḳḳa*)	76.968 (1 *kile*)	*Ibid.*, 144
Agrıboz (Euboea), 1569	one *yük* (160 *oḳḳa*) of wheat and barley half of each	205.248	Barkan, *kanunlar*, 341-4

The ancient tax of "one measure of wheat and one measure of barley" survived longer with groups granted a special status under the Ottomans. In Albania, the so-called *derbendcis*, who were peasants/ *reʿāyā* assigned to guard the mountain passes at Depe-Delen (Depelen) and Ohri, enjoyed certain tax exemptions, but each head of a household was still to surrender one *kile* of wheat and one *kile* of barley to the timar-holder.[47] It was specified in the register of Depe-Delen that the *kile* in question was the local measure which equalled one and a half of the *kile* of Istanbul. In Bosnia and Hercegovina too, the ancient custom of one measure of wheat and one measure of barley continued especially with the *derbendcis* (see Table VII).

As will be seen in Table VII, this tax varied from one area to another in the type of measure used, whether it kept the pre-Ottoman name or was called a *kile,* which meant in this case simply a measure. It was also called *yük* and *deng*.

According to a document inserted in the *1525 ḳānūnnāme* of the province of Sofya,[48] a group of non-Muslim *reʿāyā* of the areas of Sofya, Samakov, Şehirköy (Pirot) and Berkofca (Berkovica) complained that they were paying two measures *(kile)* of wheat and two measures of barley in addition to the tithes and *salāriye* to the timar-holders under the name of *resm-i harmān* (harvest due). As Süleyman I was in this region on his way to Belgrade in 1521, the *reʿāyā* took advantage of his presence and appealed to him to abolish this tax.[49]

In the same region Muslim peasants paid only tithes and *salāriye (salarlıḳ)*. The non-Muslim *reʿāyā* interpreted the additional grain tax of two measures of wheat and two measures of barley as a double assessment, because in pre-Ottoman times that was the main grain tax.[50] In a decision to demonstrate his justice, Süleyman I abolished it and ordered that the non-Muslim *reʿāyā* too were to pay only tithes and *salāriye*.[51] But the timar-holders, seeing their timar income, which was officially recorded in the imperial register, substantially diminished as a result of this decision, pursued the matter at the Porte after the campaign of 1521. Then the Sultan revoked his earlier decision and ordered that the non-Muslim *reʿāyā* of the region had to pay *resm-i harmān* as before, in addition to the tithes and *salāriye*. In the new survey of the province the surveyor said he was able to verify through the testimony of the elderly people that this tax had been collected in the period prior to the Ottoman conquest and was a long-established custom. Documents acknowledging it were issued by the local *cadi*s. Thereupon the Porte confirmed the last order and thus

resm-i harmān was restored and entered into the new register. It is known that as early as the reign of Czar Samuel of Bulgaria (976-1014 A.D.) the Bulgarian peasant surrendered one measure of wheat and one measure of barley as a grain tax.[52]

It is to be noted that the ancient measure of grain appears to have been adopted by the Ottomans as the local *kile* (50 *oḳḳa* or 64.140 kg), which equalled two and a half regular Ottoman *kile* of Istanbul (20 *oḳḳa* or 25.656 kg).

In the province of Semendire, the Eflaks, who enjoyed a special status, also complained against the collection of wheat and barley by sancaḳ-beyis in 1527.[53] The surveyor noted in his report that since the sancaḳ-beyi needed this contribution (for his household and animals), it was not possible to abolish this custom. Consequently, the surveyor's compromise proposal was enacted to the effect that in each village every fifteen households would have to give one *yük* (5 *kile* or 100 *oḳḳa*) of barley or each three households one *kile* (20 *oḳḳa*) of barley and each village of 25 households or more one *kile* (20 *oḳḳa*) of wheat.

The earliest reference in the Ottoman resources to the levy of one measure of wheat and one measure of barley goes back to the fourteenth century, probably to the beginning of the Ottoman conquests in Byzantine Thrace. There, in a *vaḳf mezra' a* of the Kızıl-Delü family,[54] assigned to guard a mountain pass, each Christian peasant household was required to deliver to the *vaḳf* "one *kile* of wheat and one *kile* of barley."

The Byzantine tax σιτοκριθον, introduced by Andronicus II (1282-1328), "demanded that every agricultural laborer should deliver to the state a portion of his harvest in *natura,* in the form of six *modioi* of wheat and four *modioi* of barley *pro zeugarion.*"[55] Not even monasteries were exempted from this tax. It is to be noted that the tax was to be paid in kind per *zeugarion* (Ottoman *çift-ḫāne*) in a defined amount. Six Byzantine *modioi* (Salonica) corresponded to about 140 kg or 5.4 Ottoman *kile.*[56] The tax was introduced in response to an acute financial crisis. Ostrogorsky claims that it was "a new tax." But evidently the practice was old, and the same kind of taxation can be found under different names in Byzantium.[57]

A measure *(yük* or *kile)* or two of wheat and a measure or two of barley, collected as a tax in kind, appears to be a type of levy used to meet the immediate needs of the state or the military for the subsistence of their large households and many animals. This characteristic of the tax is visible in both the Byzantine and Ottoman practices. This

interpretation is confirmed by the fact that it is sometimes compared to *salāriyye* by the Ottoman lawmaker. When the Ottomans invaded the Morea in 1499, they levied from every five households one bushel *(ster)* of wheat and one bushel of barley for the sustenance of the army.[58]

ABBREVIATIONS[59]

AO: *Archivum Ottomanicum,* I, 1969— .

Adâletnâmeler: H. İnalcık, "Adâletnâmeler," *Belgeler,* II/3-4, 1965, 49-145.

Aymard: Maurice Aymard, *Venise, Raguse et le commerce du blé pendant la seconde moitié du XVI^e siècle,* Paris: S.E.V.P.E.N., 1966.

Anhegger: Robert Anhegger, *Beiträge zur Geschichte des Bergbaus im Osmanischen Reich,* two vols. and Supplement, Istanbul: Istanbuler Schriften, 1943-45.

BA: Başvekâlet Archives, now Osmanlı Arşivi, Istanbul.

Balard: M. Balard, *La Romanie génoise, XII^e-début du XV^e siècle,* Genova: Atti della Società Ligure di Storia Patria, nuova serie vol. XVIII, 1978.

Barkan, *Kanunlar: XV. ve XVI. Asırlarda Ziraî Ekonominin Hukukî ve Malî Esasları,* Istanbul 1943.

Beldiceanu, *Actes*: N. Beldiceanu, *Les actes des premiers sultans conservés dans les manuscrits turcs de la Bibliothèque Nationale à Paris*: vol. I, *Actes de Mehmed II et de Bayezid II du ms. fonds turc anc. 39,* Paris: Documents et Recherches . . . , ed. P. Lemerle, vol. II, Paris, 1960.

Beldiceanu, *Reg. Min.*: N. Beldiceanu, *Règlements Miniers,* (1390-1512). Documents et recherches VIII, Paris, 1964.

R. Bulliet: Richard Bulliet, *The Camel and the Wheel,* Cambridge, Mass., 1975.

Bojanić: Dušanka Bojanić, *Fragments d'un recensement collectif et d'un recensement détaillé du sandjak de Vidin dans la seconde moitié du XV^e siècle,* Belgrade, 1973 (in Serbian with a resumé in French).

Bojanić, *Passage*: D. Bojanić, "Passage dans la Serbie du Nord des mesures mediévales de masse et de surface aux mesures turques correspondantes," *Les Mesures sur le sol de Serbie au travers les siècles,* Belgrade, 1974, 101-11.

Bursa Sicil: Bursa Şer'iyye Sicilleri, Arkeoloji Müzesi, Bursa (the court records of the cadis of Bursa).

G. Boerio: Giuseppe Boerio, *Dizionario del Dialetto Veneziano,* Venezia, 1856, reprint Milano, 1971.

Cevdet, no. 89: Belediye Library, Istanbul, Cevdet Collection, Tahrir Defteri no. 89.

Chesney: F. R. Chesney, *The Expedition for a Survey of the Rivers Euphrates and Tigris,* two vols., London, 1850.

Čirković: S. Čirković, "Les mesures dans l'État mediéval serbe," *Les mesures sur le sol de Serbie au travers les siècles,* Belgrade, 1974, 65-90.

Djurdjev, I: *Kanun i Kanun-Name za Bosanski, Hercegovacki, Zvornicki, Kliški, Crnogorski i Skadarski Sandzak,* eds. B. Djurdjev, N. Flilpović, H. Hadzibegić, M. Mujići, Dr. H. Šabanović, Sarajevo: Orientalni Institut u Sarajevu, 1957.

Dalsar: Fahri Dalsar, *Türk Sanayi ve Ticaret Tarihinde Bursa'da İpekçilik,* Istanbul: İstanbul Üniversitesi, İktisat Fakültesi publication no. 116, 1960.

Güçer: Lütfi Güçer, *Osmanlı İmparatorluğunda Hububat Meselesi ve Hububattan Alınan Vergiler,* Istanbul: İstanbul Üniversitesi, İktisat Fakültesi no. 152, 1964.

Hinz: Walter Hinz, *Islamische Masse und Gewichte,* Leiden: Brill 1955

Inalcık, *Kanunname*: Robert Anhegger and Halil Inalcık, *Ḳānūnname-i Sulṭānī ber Müceb-i 'Örf-i 'Oṣmānī,* Ankara: Türk Tarih Kurumu, 1956.

Inalcik, *Arvanid:* Halil Inalcık, *Hicri 835 Tarihli Sûret-i Defter-i Sancak-i Arvanid,* Ankara: Türk Tarih Kurumu, 1954.

Issawi, *Turkey:* Charles Issawi, *The Economic History of Turkey, 1800-1914,* Chicago: The University of Chicago Press, 1980.

Kanunname, Paris no. 85: *Kanunname,* Bibliothèque Nationale, Paris, MS. fonds turc ancien, 85.

O. Kurmuş: Orhan Kurmuş, *Emperyalizmin Türkiye'ye Girişi,* Istanbul, 1974.

McGowan: Bruce McGowan, "Food Supply and Taxation on the Middle Danube (1568-1579)," *Archivum Ottomanicum* I, 1969, 139-96.

Minorski: V. Minorski, *Tadhkirat al-Mulūk, A Manual of Safavid Administration,* London: Luzac, 1943.

Pegolotti: Francesco Balducci Pegolotti, *La Pratica della Mercatura,* ed. Allan Evans, Cambridge, Mass., 1936.

Pulaha: Selami Pulaha, *Le cadastre de l'an 1485 du Sandjak de Shkodër,* Académie des Sciences de la R. P. d'Albanie, Institut d'Histoire, Tirana, 1974.

Sella: D. Sella, *Commerci e industrie a Venezia nel secolo XVII,* Venice-Rome, 1961.

Skarić: V. Skarić, *Old Mining Regulations and Techniques in Serbia and Bosnia,* Belgrade, 1939 (in Serbian).

Schaube: A. Schaube, *Geschichte des mittelalterlichen Handels und Verkehr zwischen Westdeutschland und Italien,* two vols., Leipzig, 1900.

Spaho: Fehim Spaho, "Turski rudarski zakoni" (Turkish Mining Regulations), *Glasnik Zemaljskog Muzeja u Bosni i Hercegovini,* XV, 1913, 133-94.

Steingass: F. Steingass, *A Comprehensive Persian-English Dictionary,* London, 1892.

Sombart: W. Sombart, *Der moderne Capitalismus,* Leipzig, 1916-17.

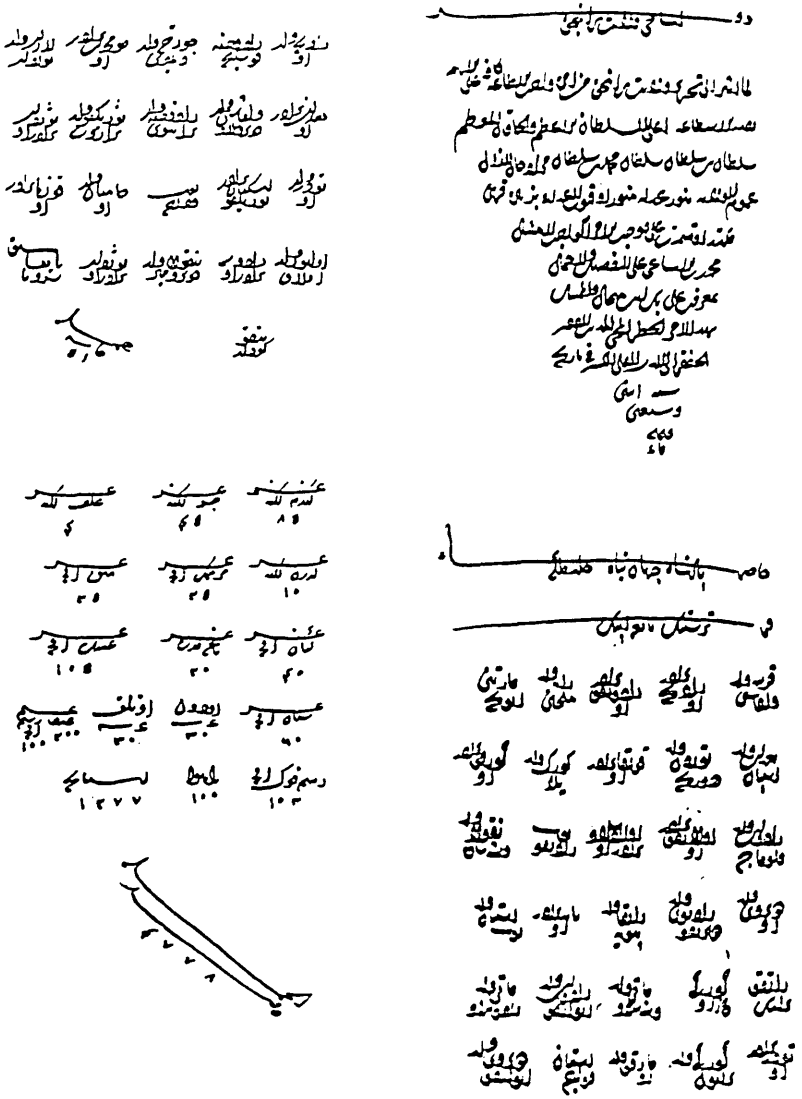
Turcica: *Turcica, Revue d'Études Turques,* Paris, 1970- .

TOEM: *Tārīkh-i 'Oṣmānī Endjümeni Medjmū'asi,* Istanbul, 1326-36/ 1910-20.

R. E. Zupko: Ronald Eward Zupko, *British Weights and Measures, A History from Antiquity to the Seventeenth Century,* London, 1977.

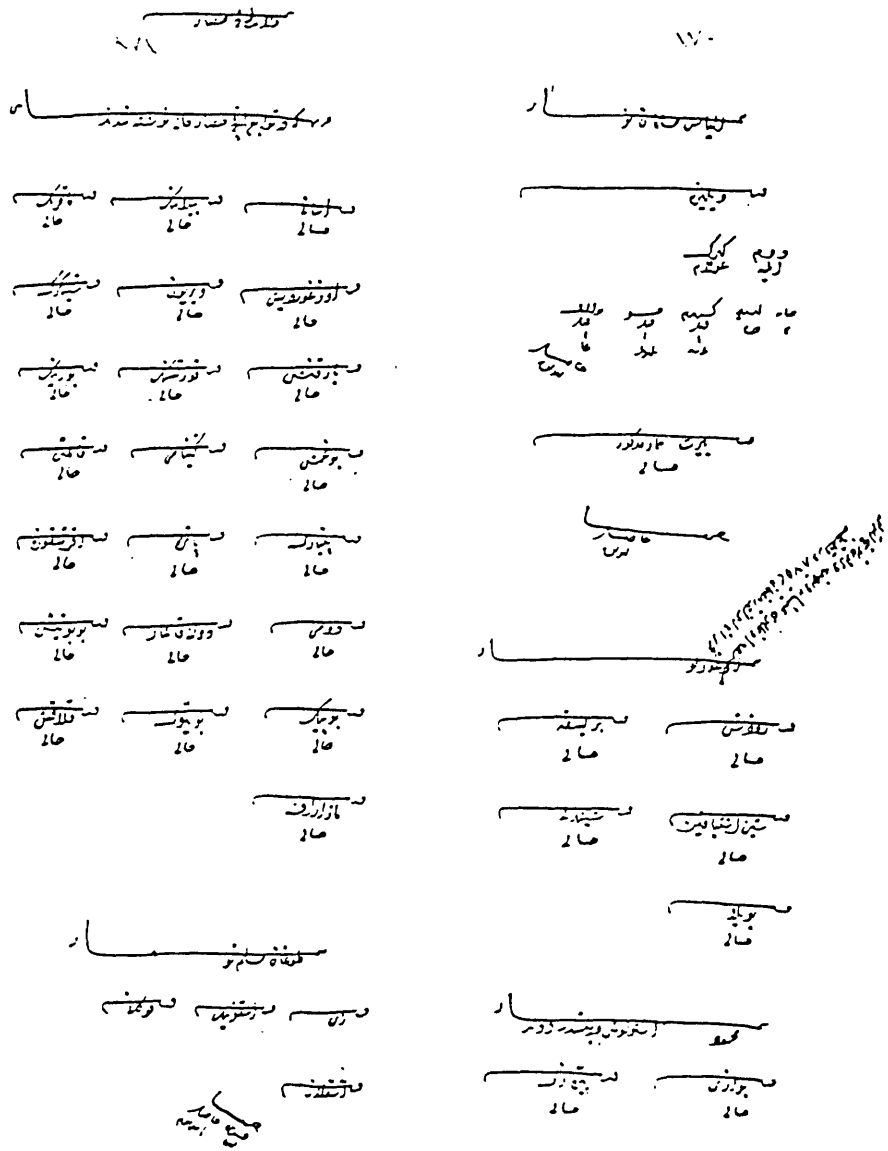
APPENDIX I

Source: The Başvekâlet Archives, Istanbul, Maliyeden Müdevver Def. no. 5; Braničevo Vilâyeti Defteri dated 872/1467, grain measured in *lukna*.



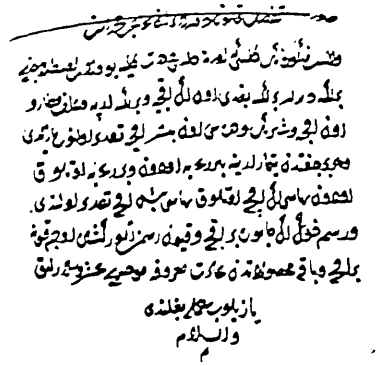
APPENDIX II

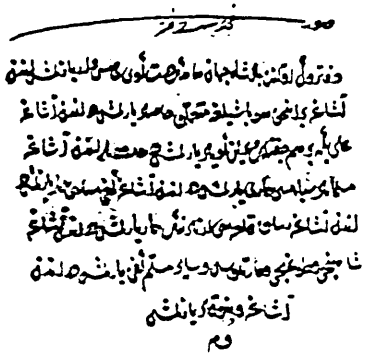
Source: The Başvekâlet Archives, Istanbul, Maliyeden Müdevver Def. no. 34; Dibra Defteri dated 871/1466, grain measured in *kabal* or *kıbıl*.



APPENDIX III

Source: BA, Maliyeden Müdevver Defter no. 5; Braničevo Vilâyeti Defteri dated 872/1467, the definition of *lukna*.





NOTES

1. For example, the exact weight of one sack of spices, whether 160 (Sombart) or 200 kg (Schaube), continues to be a matter of controversy.

2. Pegolotti, Index: *Tara,* 443, in particular 307-19.

3. *Yük bağlanub şehirden metāᶜ gitmelü olsa yükten iki akça alınur,* "When a packload is tied up to send out a good from the city two akça per load is taken as market due" (The Regulation of Bosna, dated 1530: Barkan, *Kanunlar,* 399-400); wheat was shipped in sealed sacks of a certain quantity (Aymard, 71).

4. The Italian word *tare,* and Turkish *tara (dara),* are derived from the Arabic *ṭarḥa,* something to be thrown out (from the main body).

5. There were two kinds of *ḳanṭār,* big and small (*büyük ḳanṭār* and *küçük ḳanṭār*), whereas for precious goods such as silk, a balance with greater precision, called *mīzān,* was used. The Ottomans tried to simplify commercial taxation in the conquerored lands; for example, in eastern Asia Minor during the period 1516-40 they distinguished between horse and camel packs as far as transit dues were concerned and reduced the rate of customs from 5 percent to 2 percent: see Barkan, Kanunlar, 185, (Kemah, 1516).

6. For the *torsello* or *fardello* of silk, carved above the doorway of the Court of Merchants in Lucca, see F. Edler de Roover, "The Beginnings and the Commercial Aspects of the Luccese Silk Industry," *Ciba Review,* p. 2909; *fardello* is to be found in the form of *felarda* or *felar* (small bale), (see N. Beldiceanu, *Actes,* I, 177) in Ottoman Turkish. Pegolotti lists (p. 300) the weights of tare of silk bales from various parts of Iran.

7. See Dalsar, 212 (doc. 132).

8. See *Ciba Review,* 80, 2909.

9. "Une livre sottile" of Genoa equalled 317.75 g: see Balard, *Gênes,* I, 52.

10. *Ḥarīr yükü gelip gitse bir yükü sekiz boġça imiş ve her boġçası dörder baṭman imiş ve her baṭmanı bin beşyüz seksen dirhem imiş,* "When a packload of silk arrives in the city and leaves, one packload was said to be 8 *boġça* and each *boġça* 4 *baṭman* and each *baṭman* 1580 *dirhem*" (see Barkan, *Kanunlar,* 159; Hinz, 14).

11. A Bursa court record (Bursa Sicil, A 8/8, 16 v) informs us that in February 1484, 14 horses were hired to carry 1000 *men* of silk from

Tabriz to Bursa for 6000 *akça*. In another time 6 horses were hired for 400 *men:* for *men* see Hinz, 18-19.

12. One Ottoman *lidre* of silk was 100 or 120 *dirhem* around 1500.

13. A Bursa cadi record talks about "18 *yük* 2 *tenbelīd* ve 8 *boġça*" of silk found in the hands of a merchant (see Table I-18). So, these three must designate three different kinds of bundles. Since *boġça* is the smallest unit (only about 20 kg) *tenbelīd* may be between this and *yük*. *Tenbelīd* is defined as "half a horseload" (Steingass, 327). A bale of 79-80 kg which is found in Pegolotti and Bursa court records might have been one of the two bales of the horse load. A horse load might also have consisted of 8 *boġça,* weighting altogether 162.144 kg, which is the exact equivalent of two larger bales.

14. Tares of various bales are given in Pegolotti, pp. 307-08; for *tare di seta,* see p. 300.

15. *Ibid.,* 108, 308.

16. Until recently, in Kastamonu (northern Anatolia, formerly in close commercial relations with Iran), a bale of cotton was made in a similar way: cotton was first wrapped in a *tiliz,* i.e., a loosely woven fabric of hemp, and firmly tied by a cord, then the whole thing was packed into a strong sack and tied again with rope.

17. Ḳānūn, facs. in Beldiceanu, *Reg. Min.,* 348-49.

18. *Şihse* is rendered as *şihte* or *şihta* in an earlier regulation (Beldiceanu, *op. cit.,* 362), cf. Skarić, 21, and Anhegger, 284, 400: *şihte,* originally from German *Schicht,* also meant 16 shares out of 64 shares of one mine shaft (Beldiceanu, *Reg. Min.* 304, cf. Kanun, Djurdjev, I, 94).

19. *Ḳānūn,* facs. in Beldiceanu, *Reg. min.,* 351.

20. *Ibid.*

21. For example see Spaho, 7-28. German translation in Anhegger, II, 231.

22. Spaho, 37, German trans. in Anhegger, II, 239.

23. A *ḳānūn* of the mine at Kratovo dated 24 *Muharrem* 943/14 July 1536, published by Spaho, 37, German trans. Anhegger, II, 239.

24. Spaho, 11, German trans. Anhegger, II, 231.

25. Latin *cappa:* Anhegger, II, 231, 404; *coppo,* a grain measure in Aquila (Pegolotti: Evans 113², 167, 176); *kutla* (in Bulgarian), a grain measure of 1/2 *şinik* (3.207 kg); in Anatolian Turkish *kutla* (Istanbul, İzmir, Bursa, Edirne, Çanakkale), a wooden grain measure of 12 *oḳḳa* (15.393 kg). (Tietze, "Slav. Lehnwörter in der Türkischcen Volks-

sprache," *Oriens,* X, 20); in Greek χοτυλη, referred to in a twelfth-century text (Schilbach, 119), was a capacity measure of 0.302 lb.; in modern Greek (Macedonia) about 11 *oḳḳa; kabal,* in Ottoman Turkish also *kıbıl, kıbul* or *kabav (kabao)* (Skarić 10; Anhegger, 401), today in Anatolia (Erzincan) *kobul,* most probably comes from Greek χουβελιον (see Schilbach, 155); a grain measure of a capacity of 107.944 liter (Salonica), *kabal* had apparently a very wide use in the medieval world since we find it in Bulgarian (*kóbel:* A. Tietze, *ibid.*), in Italian (Pegolotti: *cubello, copello, capiello,* "bucket" for measuring grain), in Hungarian (*köböl* of Esztergom = 4 *fertály* or *lakat,* middle of the sixteenth century, see *Magyar Gazdaságtörténeti Szemle,* vol. I, 1894, 107), and in German *(Kübel);* also see *infra.*

26. See Anhegger, II, 228; Beldiceanu, *Reg. Min.,* 86, the division system of 4, 8, 32, and 64 is universal; this type of share system is used in contracts, land produce and possession and in ships in the Mediterranean countries since antiquity.

27. Djurdjev, I, 99.

28. N. Çagatay, "Osmanlı İmparatorluğunda Maden Hukuku ve İktisadiyatı Hakkında Vesikalar," *Tarih Vesiklarai,* XII, 1943, 420-23; Anhegger, I, 62-63.

29. See vol. I, 70-71, notes 33 and 34, and vol. II, Register, 409, 421; only *lodra* is mentioned.

30. *Reg. Min.,* 279-307: *Glossaire;* in Djurdjev, 200, it is read *ledre.*

31. P. 294: *Lodra.*

32. *Ḳānūn,* facs. text in Beldiceanu, 349, trans. 233 "The fee for the foundry *(ḳālḫāne)* is one *akça* for every 114 *dirhem," ibid.,* 351.

33. See *Turcica,* XIV, 324.

34. Ronald E. Zupko, *British Weights and Measures,* Madison: The University of Wisconsin Press, 1977, 188, cf. Čirković, 74-77.

35. *Fragments d'un recensement collectif et d'un recensement détaillé du sandjak de Vidin dans la seconde moitié du XV^e siècle,* Beograd: Istorijski Institut, 1973, (in Serbian), summary in French, 182-83; for its relations to the Byzantine metrology, see above note 25.

36. *Op. cit.,* 182; it was not possible for me to use M. Vlajinac, *Wörterbuch unserer alten Masse und Gewichte,* 4 vols., Beograd, 1961-64 (in Serbian).

37. "Dans le système serbe des mesures du blé on utilisait les appellations de 'lukno' et de 'kabal' pour les mêmes mesures de blé"

(Bojanić, *op. cit.*, 183). Under the Ottomans *kabal* continued to be employed as a measure for grain in taxation (see Appendix II).

38. In *Defter-i Mufaṣṣal-i Vilāyet-i Vilk,* dated 859/1455, ed. H. Hadzibegić, A. Handzić and E. Kovačević, Sarajevo, 1972, grain measure is always *lukna.*

39. Bojanić, "Passage," 105-08; Čirković, 78-82.

40. One gold piece tax or 24 silver coins as its equivalent was originally the so-called jugatio-capitatio which survived from Diocletian's time down to the Ottomans as the basic agrarian peasant tax in the Mediterranean world.

41. BA, Maliyeden Müdevver, no. 5, see Appendix III.

42. See *Turcica,* XIV (Paris, 1982), 121.

43. See note 38.

44. In the *ḳānūn* of İzvornik (Zvornik), Djurdjev, I, 95, it is marked to be read as *hiyaça.* The term is defined in the *ḳānūn* of Trepča, Paris, no. 85, 236b: "*hyça,* that is, due for the load [of ore]" *(hyça, ya' nī bāc-ı ḥiml). Bāc* is always imposed on *yük (ḥiml)* in Ottoman practice. In a calculation of expenses we find the expression "one *hyça* of charcoal" (264b, text published in Beldiceanu, p. 345). It is defined as "[The ore] is filled in a box called *hyça* which equals four *ḳıbıl (ḳabal)*" *(Kanun,* ed. Djurdjev, I, 95, dated 1548).

45. The etymology of the word *istatra* may go back to Roman times; στατέρι was a scale *(kantar)* to weigh heavy goods in the Roman Empire: Schilbach, 183: in the Islamic world the unit *istār* was quite small: 1 *istār* = 6 3/5 *dirhem* (Hinz, 15); Mevḳūfātī, I, 152: 6.5 *dirhem.* In the early fifteenth century, one *modius* had four *kartés (karta, quarta):* F. Cordignano, *Catesto Veneto di Skutari . . . ,* I, Roma, 1942, 40 cited by S. Pulaha, 19; Pulaha, 21-23, believes that in Albania the Venetian system of taxation was "adapted to the Ottoman terminology." It should be remembered that four *ster (staio)* made one *modius (moggio)* (see below note 50); one-fourth of the main measure of grain (cf. *quartiere* in Pegolotti, 409) became universal in the Mediterranean countries (later on in England: see R. E. Zupko, *British Weights,* Index: Quarter); the Ottoman grain measure *kile* consisted of four *şinik* (Greek Χοινίκι).

46. One *ster (staio)* in Venice = 83.31 lb. and 110.802 lb. in Koron and Methone (grain): Schilbach, 286; two *setier* of Arles = one *mina* of Genoa = 107.7 lb.: Heers, *Piccamiglio,* 21; *stier-dönüm,* ca. 920 square meters, where a *setier* of seed can be sown with: Bianchi, I,

885. "Quattro staia Veneti fanno un moggio Padovano"; (G. Boerio, 705); etymology of the word is the Latin *sextarius* or one-sixth *(ibid.);* see note 45: *istatra* and *quarta.*

47. In the survey of Avlona (Vlorë) dated 991/1583 (ed. H. Inalcik, *Sûret-i Defter-i Sancak-i Arvanid,* Ankara: Turkish Historical Society, 1954, 125) the law concerning the *derbendci*s reads: "The adult male shall pay for *ispence* ten *akça per head* . . . and those married men shall deliver one and a half *kile* of wheat and one and a half *kile* of barley—the kile used in this case is *kile* of Istanbul"; for *ispence* see my "Osmanlılarda Raiyyet Rüsûmu," *Belleten,* XXII, Ankara, 1959, pp. 602-08; D. Bojanić-Lukač, "De la nature et de l'origine de l'ispendje," *Wiener Zeitschrift für die Kunde des Morgenlandes,* vol. 68, Wien, 1976, 9-30; for the same in the province of Ohri, see Ö. L. Barkan, *Kanunlar,* 294-314.

48. Barkan, *Kanunlar,* 252.

49. Inclined to favor the timar-holders, the surveyor-inspector referred in his report not to the ordinary *reʿāyā* of the region, but only to the dealers of sheep and wagon drivers. The *reʿāyā* came and made their complaints directly to the Sultan who was considered as the last resort to redress injustice (see my *The Ottoman Empire: The Classical Age,* London and New York, 1973, pp. 89-93).

50. See the *Ḳānūnnāme* attributed to Süleyman I, ed. *TOEM,* p. 62; and Barkan, *Kanunlar,* 36; also my "Suleiman the Lawgiver and Ottoman Law," *Archivum Ottomanicum,* I, 1969, 130-36.

51. On *salāriye* or *salarlık, ibid.,* 131-32; "Adâletnâmeler," *Belgeler,* III, 1965, 73-75.

52. C. Jirecek, *Geschichte der Bulgaren,* Prag, 1876, 410.

53. *Ḳānūn* dated 937/1527 in Barkan, *Kanunlar,* 325-29.

54. See Ö. L. Barkan, "Vakıflar ve Temlikler," *Vakıflar Dergisi,* II, 339, the endowed *mezra'a, Daru-Bükü,* was near *Kızıl-Delü Derbendi,* a mountain pass. Seyyid 'Alī, also known as Kızıl-Delü, was among the first Turkish settlers in Thrace: see I. Beldiceanu-Steinherr, "La vita de Seyyid Ali Sultan . . . ," *Proceedings of the Twenty-Seventh International Congress of Orientalists,* Ann Arbor, 1967, Wiesbaden, 1971, 275-76; for his *tekke* see S. Faroqhi, "Agricultural Activities in a Bektashi Center: The Tekke of Kızıl-Deli, 1750-1830," *Südost-Forschungen,* XXXV, 1976, 69-96.

55. G. Ostrogorsky, *History of the Byzantine State,* trans. J. Hussey, Oxford, 1956, 431.

56. Schilbach, I, 157; in Gallipoli (Gelibolu) one *modios* equalled 583.170 liter: *op. cit.*, 153.

57. See J. Karayannopoulos, *Das Finanzwesen des früh-byzantinischen Staates*, München: R. Oldenburg, 1958, "Ausser-ordentliche Klassensteuern," 141-47; also Schilbach: μοδιος.

58. M. Sanuto, *I Diarii*, ed. N. Barozzi et al., II, 1057: *". . . et manezà quelli lochi con provision che de ogni 5 caxe fazano uno* ster de *formento et uno de orzo . . ."*; one *staro* or *staio* of wheat in Venice equalled 83.3 liters (and one *moggio* equalled four *staia*). Thus every five houses had to provide about three Ottoman *kile* of wheat and three Ottoman *kile* of barley (one Ottoman *kile* = 25.656 kg). True, this emergency levy was related to the *'awārid* (emergency levies), but the practice might originally have been an established tax in pre-Ottoman times.

59. Cf. also *Turcica*, XV, 1983, pp. 347-48.

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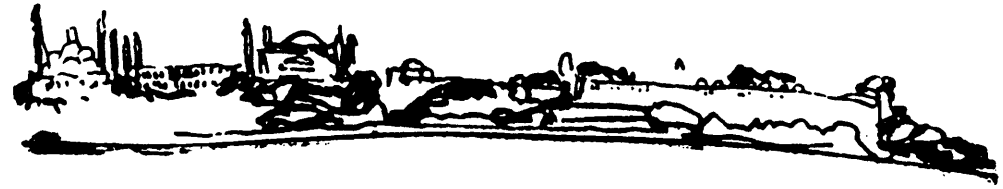
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