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**The Economic Geography of Ottoman Anatolia:
People, Places, and Political Economy around 1530**

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ABSTRACT

We use GIS data and information from the tax registers of the Ottoman Empire to study the economic geography of Ottoman Anatolia in the sixteenth century, soon after the vast expansion of the empire in Asian territories. For a consistent and systematic account of resources and activities, we use data from the official accounting registers (*muhasebe defteri*) of the empire recorded around the year 1530, available at the district (*kaza*) level from the State Archives in Turkey. The accounting registers include detailed information regarding the amounts and essential features of the inhabitants and resources of the empire, especially in relation to the fiscal and administrative capacity of the state. Since the data are given at the level of the district, we use the name of the district to georeference its location, calculate district-level values of several representative indicators, and use GIS software to display the geographic dispersion of these indicators on maps. Regarding people, we determine the total number of taxpaying inhabitants in a district and the fractions of inhabitants who were non-Muslims and those exempt from taxation. In the same vein, we use the information regarding productive resources to calculate the numbers of mills, caravanserais, and markets in each district. Finally, as an indicator of political economy constraints that the Ottomans faced in newly conquered territories, we provide information regarding the spatial implementation of the *malikane-divani* system, an unusual method of dividing tax revenues between the state and local private recipients (*mülk, vakıf*).

JEL Categories: N15, N35, N45, N75, N95

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The early decades of the sixteenth century witnessed a vast expansion of Ottoman rule in Anatolia and lands farther east and south. With the conquests of sultans Selim I and Süleyman I, the empire became a dominant world power and experienced an enormous transformation of its population and economy. In addition to growing in size, the population changed significantly in ethnic and religious composition. Whereas the Ottomans ruled over a largely non-Muslim population in the fifteenth century, by the 1530s the subjects included numerous peoples from the central Islamic lands. The sources of revenue and methods of taxation were also different in the newly conquered lands in the east and south that were previously controlled by the Safavids and the Mamluks.

This chapter will examine the economic geography of Ottoman Anatolia soon after the vast expansion of the empire in Asian territories. For a consistent and systematic account of resources and activities, we use data from the official accounting registers (*muhasabe defteri*) of the empire recorded around the year 1530, available at the district (*kaza*) level from the State Archives in Turkey.¹ Based on

¹ The accounting registers used in this study are (1) *166 Numaralı Muhâsebe-i Vilâyet-i Anadolu Defteri (937/1530) Hüdâvendigâr, Biga, Karesi, Saruhân, Aydın, Menteşe, Teke, Alâiye Livâları* (Ankara: Osmanlı Arşivi Daire Başkanlığı, 1995); (2) *387 Numaralı Muhâsebe-i Vilâyet-i Karaman ve Rûm Defteri (937/1530) I: Konya, Bey-Şehri, Ak-Şehir, Larende, Ak-Saray, Niğde, Kayseriyye ve İç-İl Livâları* (Ankara: Osmanlı Arşivi Daire Başkanlığı, 1996); (3) *387 Numaralı Muhâsebe-i Vilâyet-i Karaman ve Rûm Defteri (937/1530) II: Amasya, Çorumlu, Sivas-Tokat, Sonisa-Niksar, Karahisar-ı Şarkî, Canik, Trabzon, Kemah, Bayburd, Malatya, Gerger-Kahta ve Divriği-Darendelivâları* (Ankara: Osmanlı Arşivi Daire Başkanlığı, 1997); (4) *438 Numaralı Muhâsebe-i Vilâyet-i Anadolu Defteri (937/1530) I.: Kütahya, Karahisâr-i Sâhip, Sultanönü, Hamîd ve Ankara Livâları* (Ankara: Osmanlı Arşivi Daire Başkanlığı, 1993); (5) *998 Numaralı Muhâsebe-i Vilâyet-i Diyar-i Bekr ve Arab ve Zü'l-Kadriyye Defteri (937/1530) I: Âmid, Mardin, Sincar, Musul, Arapkir, Ergani, Çirmük, Siverek, Kiğı, Çemişkezek, Harput, Ruha, Ana-Hit ve Deyr-Rahbe Livâları İle Hisn-ı Keyf ve Siird Kazaları* (Ankara: Osmanlı Arşivi Daire Başkanlığı, 1998); (6) *998 Numaralı Muhâsebe-i Vilâyet-i Diyar-i Bekr ve Arab ve Zü'l-Kadriyye Defteri (937/1530) II: Âmid, Mardin, Sincar, Musul, Arapkir, Ergani, Çirmük, Siverek, Kiğı, Çemişkezek, Harput, Ruha, Ana-Hit ve Deyr-Rahbe Livâları İle Hisn-ı Keyf ve Siird Kazaları* (Ankara: Osmanlı Arşivi Daire Başkanlığı, 1999).

the detailed tax records known as the *defter-i hakani*, accounting registers for this period provide the first comprehensive inventory of taxable resources and activities for the whole empire.

We use the tools of spatial analysis to process the information from official accounting registers for a geographic representation of the people, places, and political economy in Anatolia during this period. Ottoman historiography has made significant progress in recent decades in studying the evolution of society and institutions, mainly through microanalysis of specific regions and segments of society over time. We wish to promote a spatial dimension in the analysis by highlighting the regional diversity of the Ottoman economy, even within the limited geographic span of the Anatolian plateau, in a macroeconomic framework.

The archival data recorded in the accounting registers include detailed information regarding the amounts and essential features of the inhabitants and resources of the empire, especially in relation to the fiscal and administrative capacity of the state. Since the data are given at the level of the district, we use the name of the district to georeference its location, calculate district-level values of several representative indicators, and use GIS software to display the geographic dispersion of these indicators on maps. Regarding people, we determine the total number of taxpaying inhabitants in a district and the fractions of inhabitants who were non-Muslims and those exempt from taxation. In the same vein, we use the information regarding productive resources to calculate the numbers of mills, caravanserais, and markets in each district. Finally, as an indicator of political economy constraints that the Ottomans faced in newly conquered territories, we provide information regarding the spatial implementation of the *malikane-divani* system, an unusual method of dividing tax revenues between the state and local private recipients (*mülk, vakıf*).

People

The Ottoman empire expanded rapidly and substantially in Asia during the century following the conquest of Istanbul in 1453. Soon after conquering Istanbul, Mehmed II extended Ottoman control in Anatolia, first along the Black Sea coast in the north and later towards the southeast with victories against the Akkoyunlu and Karaman states. Rapid expansion continued during the reign of his grandson, Selim I, who nearly doubled Ottoman lands through encounters with the Safavids and by conquering the lands previously controlled by the Mamluks, including the holy cities of Mecca, Medina, and Jerusalem. The next campaign against the Safavids under Süleyman I resulted in the conquest of Iraq and the extension of Ottoman rule onto the Persian Gulf.²

As the Ottomans took control of new lands, they surveyed taxable resources and activities in the region and recorded the information in tax registers called *defter-i hakani*, also known as the *tapu tahrir*.³ The registers were used for a variety of purposes, including serving as official records to establish legal claims to land, assessing the expected tax revenues, and appropriating some of the revenues to the military and administrative officials as remuneration for local services. Although some historians have unfortunately criticized the tax registers as being sources with “pitfalls and limitations”,⁴ the concern can obviously be raised for any historical or current source of information and must not be the basis for preventing useful lines of inquiry or to generate a list of investigation types to avoid. The information contained in tax registers must have been sufficiently high in quality that the empire’s officials evidently

² For a detailed account of the Ottoman expansion in Asia, see Boyar, Ebru, “Ottoman expansion in the East”, in *The Cambridge History of Turkey, Volume 2. The Ottoman Empire as World Power, 1453-1603*, ed. Suraiya Faroqhi and Kate Fleet (Cambridge: Cambridge University Press, 2013), pp. 74-140.

³ Barkan, Ömer Lütfi, “Türkiye’de İmparatorluk Devirlerinin Büyük Nüfus ve Arazi Tahrirleri ve Hakana Mahsus İstatistik Defterleri I”, *İstanbul Üniversitesi İktisat Fakültesi Mecmuası*, 1 (1940-41), 20-59; Barkan, Ömer Lütfi, “Türkiye’de İmparatorluk Devirlerinin Büyük Nüfus ve Arazi Tahrirleri ve Hakana Mahsus İstatistik Defterleri II”, *İstanbul Üniversitesi İktisat Fakültesi Mecmuası*, 2 (1940-41), 214-47; Coşgel, Metin M., “Ottoman tax registers (Tahrir Defterleri)”, *Historical Methods*, 37/2 (2004), 87-100. Faroqhi, Suraiya, “Ottoman Population”, in Faroqhi and Fleet, *The Cambridge History of Turkey, Volume 2. The Ottoman Empire as World Power, 1453-1603*, pp. 356-403.

⁴ Lowry, Heath W., *Studies in Defterology: Ottoman Society in the Fifteenth and Sixteenth Centuries* (Istanbul: Isis Press, 1992), pp. 11-26.

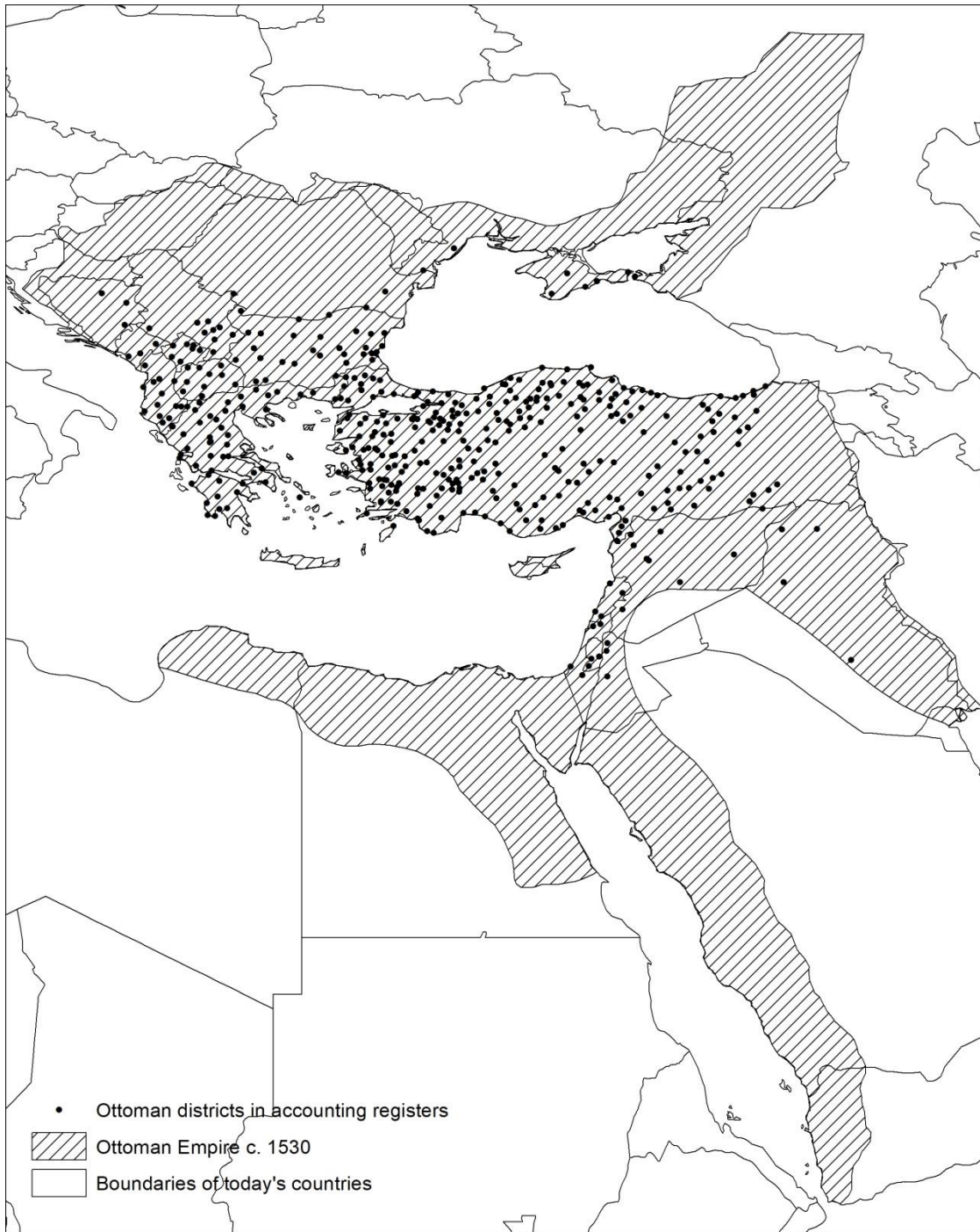
relied on them extensively in administering the fiscal and military affairs of the state. By the same token, they must surely be informative enough for the capable historian to rely on them in making reasonable inferences regarding the history of this empire by carefully considering the concerns that might potentially bias the analysis. Despite their natural imperfections under contemporary circumstances, tax registers contain invaluable information to facilitate the spatial analysis of the people, the buildings and places of production and trade, and the political economy of taxation in Ottoman Anatolia.

The tax registers for the years around 1530 are particularly important for our analysis because of their rather comprehensive coverage for the whole empire, including Anatolia. Conducted during the reign of Süleyman I, the tax records for this period were the only collection that covered all provinces in (circa) the same year. Moreover, they were the only collection for which the officials aggregated the information at the district (*kaza*) level in accounting registers called *muhasebe-i vilayet* to facilitate bookkeeping and decision-making.⁵ In aggregating from detailed tax records to accounting registers, they omitted certain information, such as the names of the heads of households and recipients of tax revenues. But for each district they listed in aggregate the total numbers of towns, villages, bachelor and married inhabitants (broken down by religion and taxpayer-status), and the total amount of expected tax revenue from all sources, all itemized by types of recipient (e.g., *timar*, *zeamet*, *mirmiran*, *padışah*, *vakıf*). In addition, the accounting registers listed the types and numbers of individuals exempted from taxation and the numbers of various other things (e.g., shops, mosques, mills, rivers and other geographic features) that were deemed important for official accounts and planning.

⁵ İnalçık, Halil, "Giriş", in *438 Numaralı Muhâsebe-i Vilâyet-i Anadolu Defteri (937/1530) I.: Kütahya, Karahisâr-i Sâhip, Sultanönü, Hamîd ve Ankara Livâları*. See also Barkan, Ömer Lütfi, "Tarihî Demografi Araştırmaları ve Osmanlı Tarihi", *Türkiyat Mecmuası*, 10 (1953), 1-26, for an analysis of Ottoman population based on these accounting registers.

Map 1

Ottoman Districts in Accounting Registers, c. 1530



Map 1 shows the locations of districts recorded in the accounting registers of the Ottoman empire for the years around 1530. For reference, the map includes the frontier of the empire in 1535 as well as the borders of today's countries. As seen in the map, tax registers are not available for some of the districts in the east near the Ottoman border with the Safavid state and in the west near the borders with Austria and Poland-Lithuania. In total, the registers include information regarding 454 districts of the empire for this period.

In the analysis that follows, we focus on the districts in Anatolia, rather than the whole Empire, for consistency with the geographic coverage of this book. We exclude from the dataset all of the districts in Europe, listed under the provinces (*vilayet*) of Rumeli. In addition, we drop some of the districts of the province of Arab, such as those in the sub-provinces of Şam, Gazze, Safed, and Salt, which lie to the south of Anatolia proper. The latter exclusion is also necessary because the information was less detailed and complete for these districts than others, as they had been recently conquered at the time of our registers. With the more focused coverage, our dataset consists of 269 districts in Ottoman Anatolia that belonged to the provinces of Anadolu, Arab, Diyarbakır, Karaman, Rum, and Zülkadir during this period.

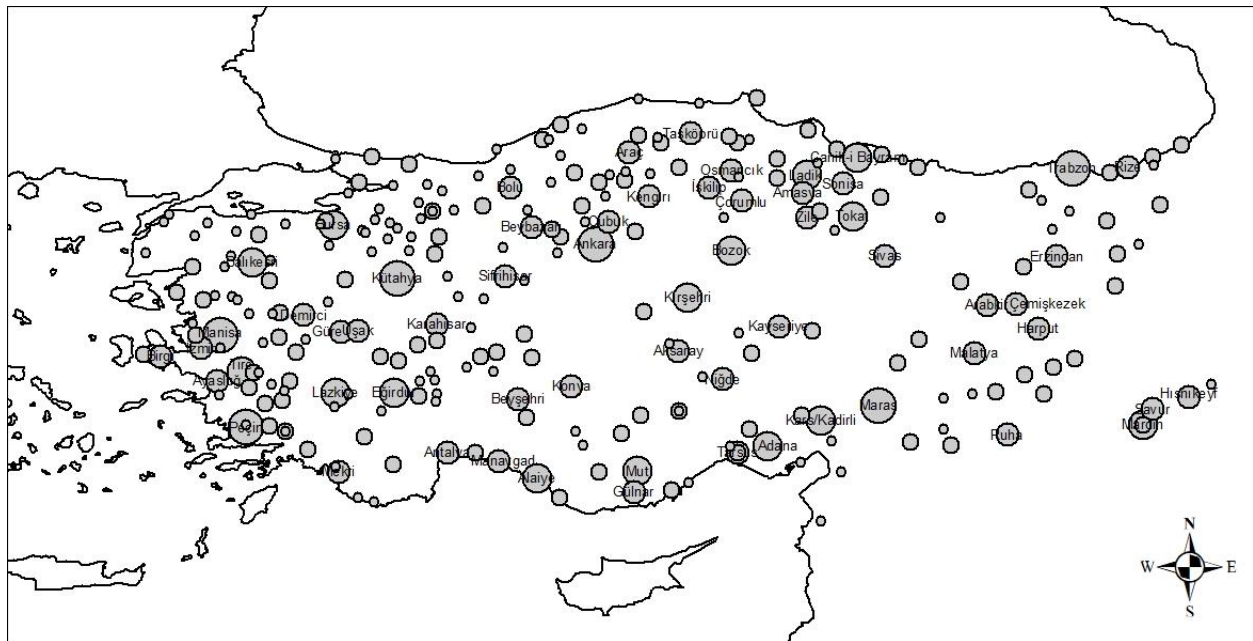
Focusing on inhabitants first, in this section we use the data to calculate representative indicators of population at the district level. Ottoman tax records enumerated the adults, including bachelors (*mücerred*) and heads of household (*hane*), but not children. Moreover, they did not systematically record women. Although they registered the widowed women (*bive*) among the Christian population as a taxpayer category enduring from pre-Ottoman systems of taxation, they did not enter the same category for Muslims. For a standard indicator that was recorded consistently across registers, we thus exclude the widows from our calculations, and use the number of adult males to analyze the spatial variation of the size and composition of people across districts. Unless the age and gender ratios varied systematically across districts, indicators based on the numbers of adult males should serve as rough guides for comparative spatial analyses of broad characteristics of the population.

We use the information from accounting registers to calculate three indicators of people, namely the total number of taxpaying adult male inhabitants, the fraction of those who were non-Muslims, and the fraction of enumerated adult males who were exempt from the *avarız* tax. Maps 2-4 show the geographic distribution of these indicators across the districts in the dataset.

The first indicator is simply the number of male taxpayers enumerated in a district (*nefer*), which is the sum of all taxpaying bachelors and heads of households, regardless of their landholding status (e.g., *bennak, caba, çift*).⁶ Although the land size of districts likely varied considerably across regions, we can use the numbers of taxpayers as a rough measure of the dispersion of population for a comparative spatial analysis across districts.

Map 2

The Number of Male Taxpayers



⁶ İnalçık, Halil, “Osmanlılarda Raiyyet Rüşumu”, *Belleten*, 23, (1959), 575-610.

As seen in Map 2, several of the highly populated districts, such as Kütahya, Manisa, Lazkiye, and Bursa, were located in western Anatolia. Although the districts in southeastern Anatolia generally had low numbers of taxpaying households, Maraş and Mardin clearly stood out as significant exceptions to this trend. Similarly, Trabzon had exceptionally high numbers of taxpaying inhabitants in the northeast. The highest numbers of taxpaying inhabitants in central Anatolia were in the districts of Ankara, Bozok, and Kırşehir.

Historians of the Ottoman empire have long used the information from accounting registers regarding the number of male taxpayers to estimate the changing size of population over time in specific regions or for the empire as a whole. In a seminal contribution to the literature on the topic, Barkan introduced the procedure of using a household multiplier to transform the numbers of households recorded in the registers of Anadolu, Karaman, Zülkadir, Diyarbakır, Rum, Arab, and Rumeli in estimating the size of the population in these provinces and in various cities throughout the empire.⁷ Since no comparable accounting register was available for the inhabitants of Istanbul, he approximated the population of the capital city from other sources to generate an estimate of the total population of the empire as a whole.

Although Barkan was keenly aware of the limitations of his sources and proposed methodology, he also knew that scholars of European and Mediterranean historical demography faced similar difficulties. With the objective of engaging this literature, he was interested in contributing estimates of how the Ottoman population changed over time for a comparative analysis. Recognizing the infancy of scholarship on Ottoman population despite rich archival sources, he understood that other researchers would soon advance his methodology and supplement other sources to improve on his estimates regarding the changes in Ottoman population over time.

⁷ Barkan, “Tarihi Demografi’ Araştırmaları”, p. 11.

Subsequent developments proved Barkan right in the way his estimates opened the door for future scholarship. A huge literature soon developed to debate with greater precision how the rural and urban population of the Ottoman empire changed over time. In addition, using the information from tax registers, court records, and various other sources, historians have investigated the causes and consequences of these demographic changes. Mustafa Akdağ and Michael Cook, for example, developed the argument that the population grew at such high rates in the second half of the sixteenth century that it caused significant social and economic problems in the countryside.⁸ With the help of other sources and analytical methods, researchers have continued to debate whether the Ottoman population experienced a significant expansion in the sixteenth century, followed by a demographic crisis in the next century, and how these changes affected social, economic, and political behavior and institutions.⁹

Our approach shifts the emphasis from temporal changes to regional differences in promoting the use of *tahrirs* and derivative accounting registers as sources for useful inquiry into spatial analysis. In this respect, we build on the work of Suraiya Faroqhi, who in a series of books and articles used the information regarding the numbers of taxpayers contained in tax registers in conjunction with the maps of Anatolia in the nineteenth and twentieth centuries to identify the locations of districts that were enumerated in these sources and to determine significant changes in the spatial distribution of Ottoman population during the sixteenth century. Using this approach, she studied, for example, whether the administrative importance of towns (e.g., as district center) led to faster population growth over time through greater economic and political prosperity.¹⁰ Recently developed tools of geographic information

⁸ Akdağ, Mustafa, *Türkiye'nin İktisadi ve İçtimai Tarihi* (Ankara: Türk Tarih Kurumu Basımevi, 1959); Cook, M. A., *Population Pressure in Rural Anatolia, 1450-1600* (London and New York: Oxford University Press, 1972).

⁹ For a review of this literature, see Özel, Oktay, "Population changes in Ottoman Anatolia during the 16th and 17th centuries: the 'demographic crisis' reconsidered", *International Journal of Middle East Studies*, 36/2 (2004), 183-205.

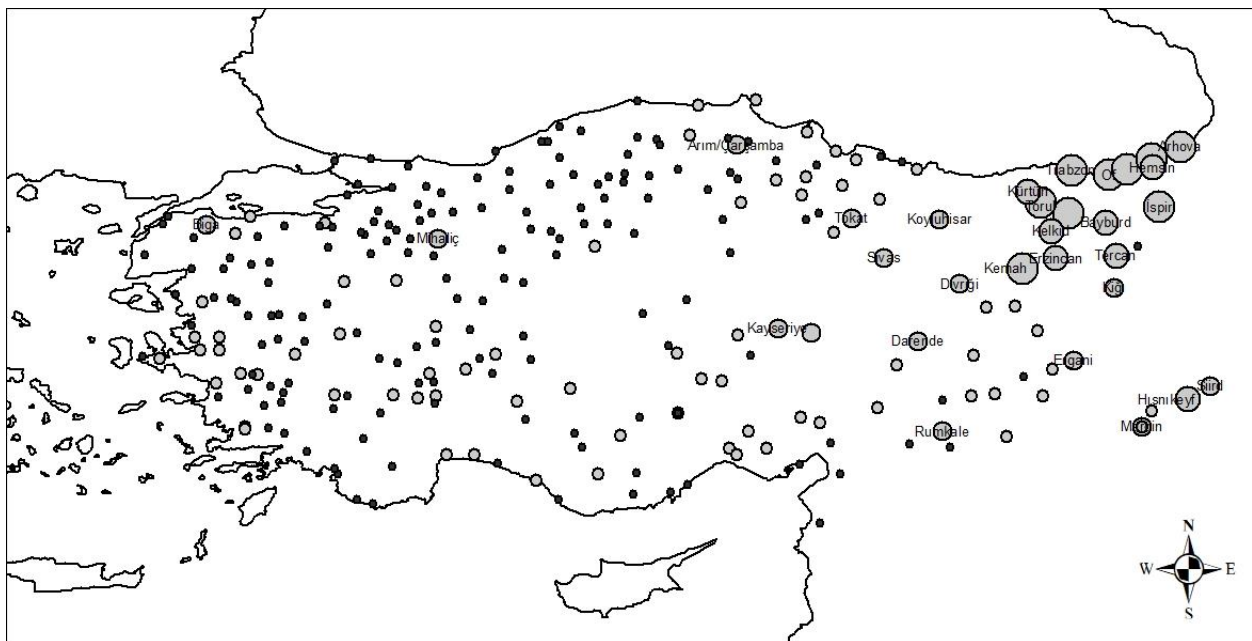
¹⁰ Faroqhi, Suraiya, *Towns and Townsmen of Ottoman Anatolia: Trade, Crafts, and Food Production in an Urban Setting, 1520-1650* (Cambridge: Cambridge University Press, 1984).

systems allow us to identify the locations of districts with greater precision and expand the scope of inquiry to various other indicators of interest.

The next indicator of central interest in our analysis is the religious composition of inhabitants. If the inhabitants of a district all shared the same religion, the accounting registers did not always specify religious affiliation. When two or more religious groups lived in a district, however, the numbers in each category were explicitly recorded, in addition to the marital and taxpayer status of inhabitants, provided that they were “People of the Book” (Jews and Christians). Sometimes the non-Muslims were denoted under a single category, such as *kafir* or *zimmi*. In most cases, the enumerators further specified the categories of non-Muslims, for example by indicating the numbers of Armenians (*Ermeni*), Orthodox Christians (*Gebran*), and Jews (*Yahudiyen*) separately. Regardless of specific affiliation, we group all non-Muslims in a single category and use the fraction of non-Muslims in districts as a broad and consistent measure of religious composition for spatial analysis.

Map 3

The Fraction of non-Muslim Inhabitants



Map 3 shows the distribution of non-Muslim peoples in districts comprising our dataset in Ottoman Anatolia around the year 1530. Clearly, non-Muslims constituted a greater proportion of taxpaying population in eastern Anatolia. The greatest concentration of non-Muslims during this period was in the northeastern regions of Anatolia, such as in the districts of İspir, Torul, Of, Kemah, Trabzon, and Rize.

The legal and tax status of non-Muslims have been topics of great interest among historians of the Ottoman empire. Consistent with the tradition of previous Islamic states, the Ottomans considered Jews and Christians as protected peoples (*zimmi*) with distinct rights and obligations. Their legal rights included the ability to resolve disputes in their own courts, which ruled based on their own laws, traditions, and procedures. Their leaders had a certain degree of autonomy from the state in administering their community's social, religious, and economic affairs. In a well-known example of this autonomy, while the Ottoman rulers heavily regulated the printing press and waited almost three centuries to sanction printing in Ottoman Turkish (in Arabic characters), various Jewish and Christian communities were allowed during this period to use the press for publications in their own scripts and languages.¹¹ In another well-known example, they could borrow and lend at interest, transactions banned for Muslims. On the other hand, they were excluded from military service and certain government occupations. Given such differential rights and constraints between Muslims and non-Muslims, an important question that arises for the economic historian is how these differences shaped the occupational choices and behavior of the people, not just non-Muslims but the whole population. A

¹¹ For a political economy approach to the Ottoman ban on the printing press, see Cosgel, Metin M., Thomas J. Miceli and Jared Rubin, "The political economy of mass printing: legitimacy and technological change in the Ottoman empire", *Journal of Comparative Economics*, 40/3 (2012), 357-71.

related question concerns the impact of differential rights and constraints on the long-term development of Ottoman society and economy.

Tax obligations of the protected peoples were also different. Part of this difference originated from the conquest of lands populated by specific non-Muslim communities, as the Ottomans adopted from previous states the local tax code that included items that were distinct from the code that applied to Muslims in Anatolia. For example, the tax registers recorded the widowed women (*bive*) distinctly among the Christian communities but not in mainly Muslim districts, as noted above. The more systematic differential tax obligation was the poll tax called *cizye*, collected only from non-Muslim subjects throughout the empire. The Ottomans regularly recorded information regarding the number of individuals liable for the poll tax and the expected revenue in each district in special registers.

The special poll-tax registers have the advantage of providing information about non-Muslim subjects of the empire at greater frequency than the tax registers. Although they are therefore very useful for the historian studying population movements among non-Muslims, they are of limited use for comparative studies with the Muslims because they do not contain information regarding them. Despite the limited yearly frequency of accounting registers, we have relied on them for our analysis because of their comprehensive spatial coverage of the religious affiliation of all taxpayers. Comprehensive data is essential for researchers interested in investigating, for example, the long-term economic effects of the differential rights or tax obligations of non-Muslims. Such an investigation would require a comparative analysis of not just the numbers of non-Muslims across Ottoman districts but their fraction in the total population. Map 3 illustrates this information visually.

For our next indicator of interest related to people, we turn to information regarding individuals who were exempt from taxation. Broadly speaking, the Ottoman system of taxation included two levels of exemptions. In the first level, a subject could be exempt from all or specific categories of *regular* taxes. More specifically, this included exemption from some or all of the three major categories of Ottoman

taxation, namely personal taxes levied on people or households that resulted from the dependent status of the subjects, trade taxes on the goods and services brought to market for sale, and production taxes on various farming and manufacturing activities.¹² This type of exemption was rare and granted either generically to a whole class of individuals, such as the clergy (*imām*), or specifically to certain individuals or communities for exceptional considerations.

The second and more common level of exemption applied to an *extraordinary* tax called the *avarız*, collected to finance expenditures of wars.¹³ Although this extraordinary tax eventually became a more regular form of taxation with restricted exemptions in the seventeenth century, it was still an occasional tax with widespread exemptions during our period. All individuals who were exempt from the first level of regular taxes were also granted an exemption from the extraordinary tax. In addition, exemptions were given to local agents and functionaries of the state who provided a variety of religious, official, and professional services to the state or the local population. This included the judiciary (*kadi*), scholars (*ulema*), rice growers, and various professionals in charge of such things as mail delivery, medical services, and maintenance of roads and bridges. The type and amount of exemption varied over time and across services, presumably based on the importance of the service to the state and various other local economic and political considerations.

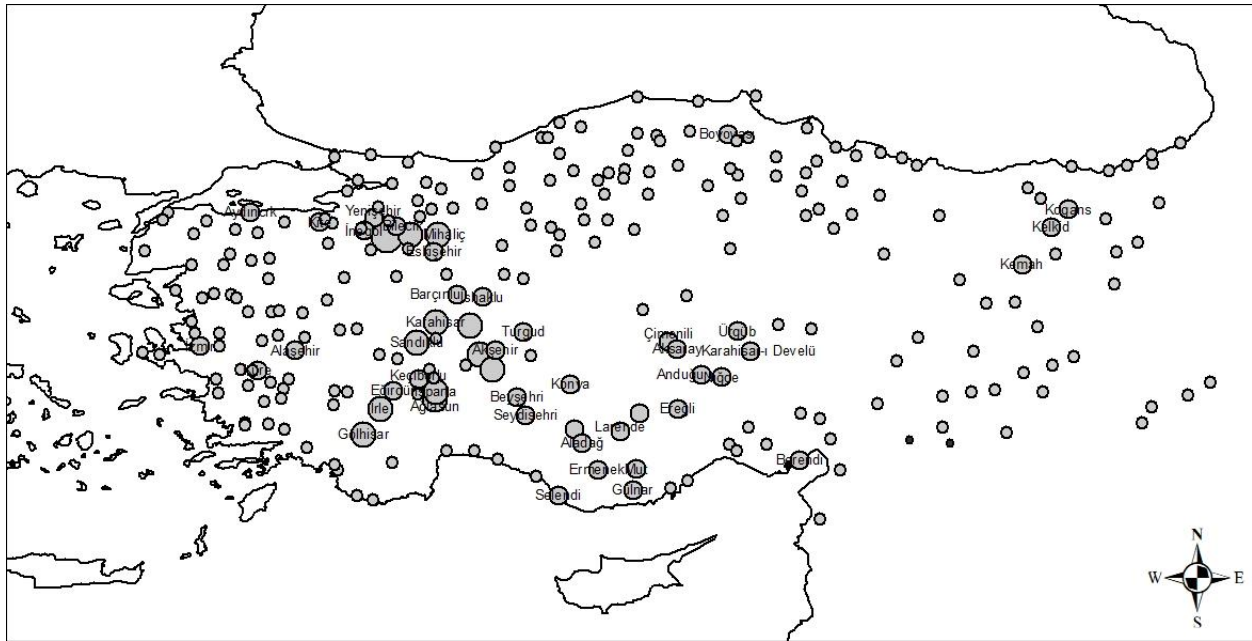
Our spatial analysis is based on the exemptions from extraordinary taxes because they involve greater numbers of people and broader categories of services. The accounting registers show the numbers of individuals benefiting from this exemption as agents and functionaries of the state in each district, itemized by the specific service that they provided. We lack detailed information regarding the remuneration scheme for these services, presumably a function of qualifications and job characteristics.

¹² For a description and systematic analysis of the categories of the Ottoman system of taxation, see Coşgel, Metin M., “Efficiency and continuity in public finance: the Ottoman system of taxation”, *International Journal of Middle East Studies*, 37/4 (2005), 567-86.

¹³ For different types of tax exemptions in the Ottoman empire, see İnalçık, “Osmanlılarda Raiyyet Rüşümü”, pp. 594-601 and Acun, Fatma, “The other side of the coin: tax exemptions within the context of Ottoman taxation history”, *Bulgarian Historical Review*, 1-2 (2002), 125-39.

Tax registers nevertheless provide useful information regarding the number and types of local personnel involved in the provision of various public goods and services.

Map 4
The Fraction of Tax-exempt Inhabitants



Using this information, we show in Map 4 the spatial distribution of populations exempt from extraordinary taxes. For this illustration, we simply calculated the total number of all such individuals who received exemptions without making a distinction regarding the specific service that warranted the exemption. Clearly, the districts with the highest fractions of inhabitants exempt from taxation were concentrated in the southcentral regions of Anatolia extending into the northwest. Although this is clearly an interesting broad pattern, we need additional information to probe deeper into the reasons for such a regional concentration.

Space limitations prevent us from producing a separate map for each type of service that was granted an exemption from extraordinary taxes and from analyzing it in detail to identify spatial patterns

in allocation. Map 4 nevertheless illustrates the possibilities for the interested reader. For example, one could use the information regarding the exemptions granted to religious personnel (*imam, rahib, müezzin*) to examine regional differences in the provision of religious services. Likewise, the records show the numbers of military and administrative personnel in each district by specific categories, useful information that can be used for a spatial analysis of how the Ottoman military and bureaucracy functioned in the provinces.

Buildings and Places of Trade and Production

The accounting registers of the Ottoman empire include information regarding various structures that were essential for the state's fiscal, religious, military, and administrative functions. For example, the records show the numbers of mills, mines, markets, irrigation dikes (for rice growing), and various types of shops in towns that were sources of tax revenue. Likewise, the enumerators recorded the numbers of mosques, churches, monasteries, schools, and other religious buildings; as well as the numbers of castles, towers, and other structures for military defense. In addition, for each district the registers entered not just the numbers of uninhabited productive grain fields or the types of tribes and town neighborhoods, but information regarding structures that served various administrative functions, such as border crossings, soup kitchens serving the poor, and bridges that needed maintenance.

We use the numbers of watermills, caravanserais, and markets as representative indicators of structures involved in trade and production in Ottoman districts. In Anatolia, mills were mostly powered by water. The registers typically recorded the watermills (*asiyab*) in each district, sometimes distinguishing among them by type and function. Since the watermill taxes depended on the amount of stones (*bab*) available to grind flour, the accounting registers typically listed the number of millstones in each district.

Although the size and functions of watermills likely varied across districts, we can use the total number of millstones as a rough indicator of grain production and the associated economic activity.¹⁴

Map 5

The Number of Watermill Stones



As seen in Map 5, it was a common practice throughout Anatolia to use watermills as sources of power for various economic activities during this period. Although the tax registers do not provide the exact locations of watermills, presumably they were built in places of easy access to streams. In addition, we would expect them to be concentrated more heavily in areas of high demand for the products that require the service, likely correlated with population density. The spatial distribution of millstones observed in Map 5 is consistent with these expectations. The map indicates that there were more watermills in western regions than in eastern Anatolia, consistent with the distribution of taxpaying

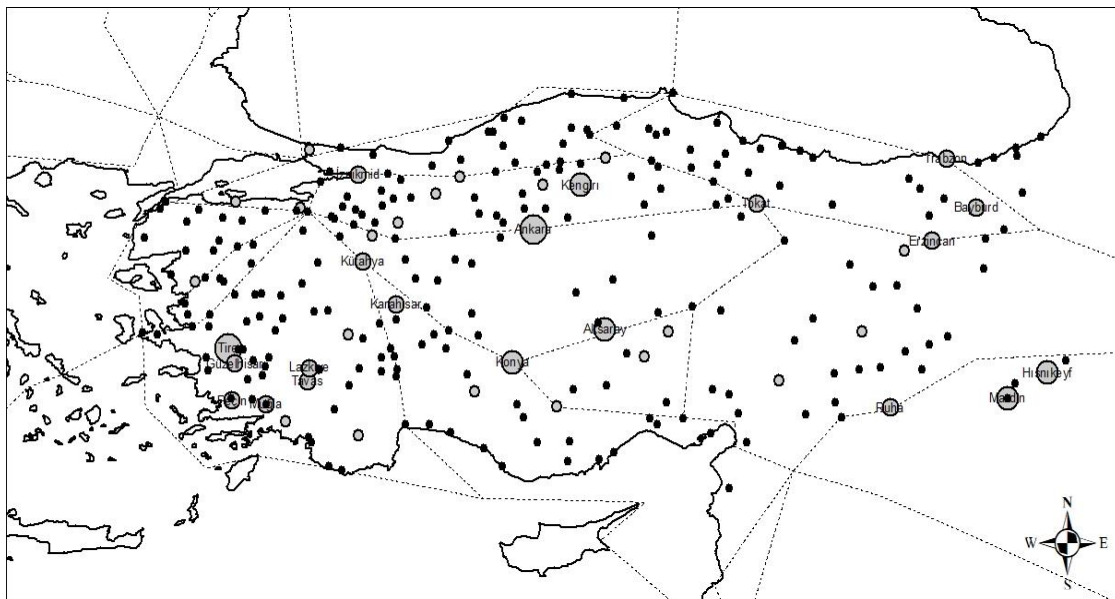
¹⁴ Özcan, Ruhi, “Arşiv Belgeleri Diliyle Su Değirmenleri (Âsiyâb)”, *Ankara Üniversitesi Osmanlı Tarih Araştırma ve Uygulama Merkezi Dergisi*, 40 (2016), 195-203.

inhabitants we observed on Map 2. The highest number of watermill stones was in Trabzon. In the same vein, Maraş and Mardin were notable exceptions in eastern Anatolia as districts with significantly high numbers of watermill stones.

Another set of buildings typically recorded in accounting registers are the caravanserais, which provide information regarding trade routes and commercial activities in Ottoman Anatolia during our period.¹⁵ Typically located in towns or along trade routes, caravanserais fulfilled several functions related to the needs of traders and others who used the roads for long-distance travel (e.g., pilgrims, emissaries). Most important, they provided security from raids and robbers, shelter against weather conditions, and food and water to animals and travelers.

Map 6

The Number of Caravanserais



¹⁵ For an analysis of caravanserais and trade routes based on a rich variety of sources, see Faroqhi, *Towns and Townsmen*, Chapter 2.

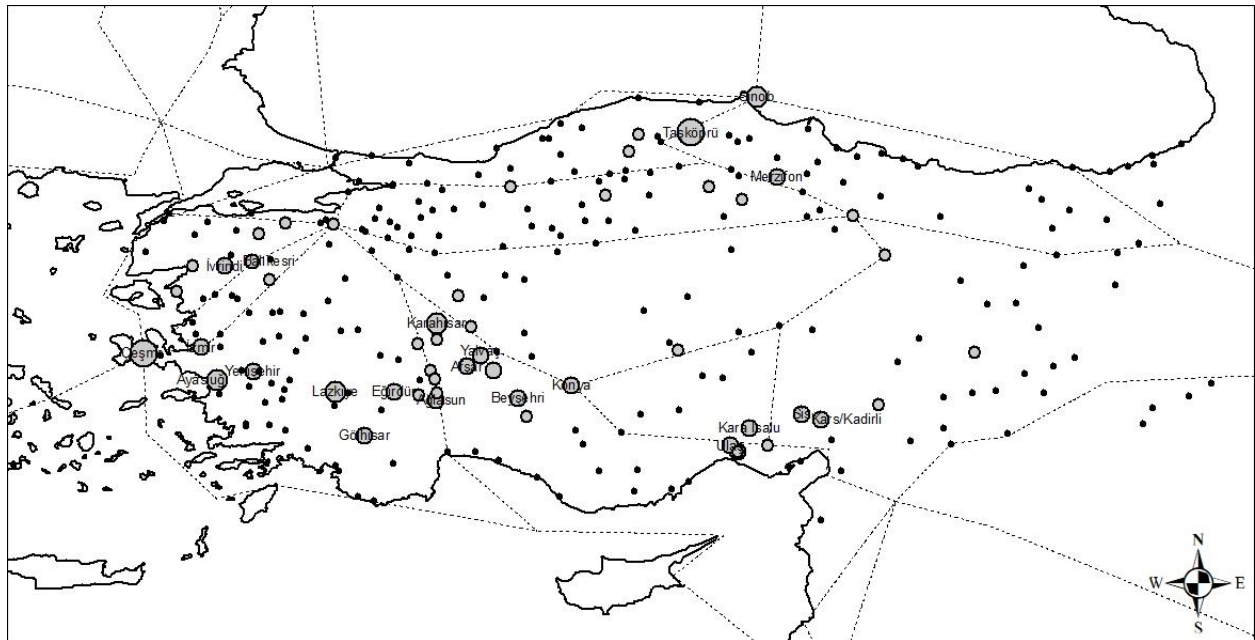
Map 6 shows the total numbers of caravanserais in Ottoman districts identified in our records during this period. In addition to the spatial locations of districts, the map includes main trade routes in the Ottoman empire, as identified by Matthew Ciolek to have existed during the period between 1300-1600.¹⁶ As one would expect, most of the caravanserais were in districts that were located along the main trade routes. In central Anatolia, for example, the highest numbers of caravanserais were in the districts of Ankara, Konya, Aksaray, Karahisar, and Kütahya, all along the main trade routes. The map also shows high numbers of caravanserais in certain districts, such as Tire, that were not on the main trade routes identified by Ciolek but obviously along other routes heavily travelled by traders and others.

Finally, we calculate the number of markets in each district as a rough indicator of commercial exchange. The Ottoman empire taxed trade through various channels, such as the market tax levied on the goods brought to periodic markets for sale and the dues payable to the market supervisor. The detailed tax registers typically itemized the amounts of market taxes for towns and villages, which can be used as an indicator of the volume of trade in specific regions.¹⁷ Although the accounting registers lack the same level of detail regarding market taxes because of aggregation, they nevertheless include the number of markets in each district. Notwithstanding the variation in the volume of trade across markets, the number of markets in each district provides useful information regarding opportunities available for trade.

¹⁶ Ciolek, T. Matthew, *Georeferenced Data Set (Series 1 - Routes): Trade Routes in the Ottoman Empire 1300-1600 CE*. OWTRAD Dromographic Digital Data Archives (ODDDA). Old World Trade Routes (OWTRAD) Project (Canberra: Asia Pacific Research Online, www.ciolek.com/OWTRAD/DATA/tmcTRm1300.html, 2005).

¹⁷ For an economic analysis of the Ottoman tax system and the difference between trade taxes and other types of tax categories see Coşgel, “Efficiency and continuity in public finance: the Ottoman system of taxation”. See also, for a study of Anatolian markets based on *tahrirs*, Faroqhi, Suraiya, “Sixteenth century periodic markets in various Anatolian sancaks”, *Journal of the Economic and Social History of the Orient*, 22/1 (1979), 32-80.

Map 7
The Number of Markets



As seen in Map 7, just as most of the caravanserais were located along the main trade routes, so too most of the markets were held in districts along or near these routes. This was clearly the case, for example, for Sinop and Taşköprü in northcentral Anatolia, for İzmir and Çeşme in the west, and for Kusun, Konya, and Karahisar in central Anatolia. In southwestern Anatolia, there were districts, such as Lazkiye and Ayasluğ, that were not along the main trade routes identified by Ciolek but were nevertheless important centers for trade through the periodic markets that they hosted in their regions.

The Political Economy of the Dual-Recipient (*malikane-divani*) System of Taxation

A peculiar system of taxation observed in certain districts of Ottoman Anatolia was the formal division of tax revenue between the state and private recipients. Under the standard arrangement prevalent in other districts, the tax revenue of a unit of taxation (e.g., a village, watermill, town market) was typically allocated exclusively to a single recipient. The recipient could be an agent of the state (e.g., central government, provincial governor, local soldier or administrator) or a private recipient such as a landholder (*mülk*) or a pious foundation (*vakıf*).¹⁸ Under the dual-recipient system called the *malikane-divani* system, by contrast, a private recipient (*malikane*) and an agent of the state (*divani*) shared the tax revenue between them. The shares of the state and private recipients were not at a uniform ratio throughout the empire. Although the distinct characteristic of this system was the division of revenue, the relative shares of recipients could vary significantly across districts.

Scholars have proposed various arguments regarding the historical origins of the dual-recipient system of taxation.¹⁹ Although the arrangement is clearly not unique to the Ottomans, neither does it seem to have a unique precedent. Barkan considered the system to be based on the Islamic law of land and believed that it could be widely observed not just in parts of Anatolia but also in Syria and possibly other lands previously ruled by Turkish-Islamic states. Focusing more specifically on Anatolia, Beldiceanu-Steinherr found the origin in the Anatolian Selçuk state, based on the overlap that she observed between the geographic coverage of this state and the Ottoman districts that practiced dual-recipient system of

¹⁸ Coşgel, Metin M. and Thomas J. Miceli, “Risk, transaction costs, and tax assignment: government finance in the Ottoman empire”, *Journal of Economic History*, 65/3 (2005), 806-21.

¹⁹ For a discussion of the historical origins of the system see Venzke, Margaret L., “Aleppo's Mālikāne-Dīvānī System”, *Journal of the American Oriental Society*, 106/3 (1986), pp. 461-9.

taxation. Likewise, Venzke found evidence to indicate that the system observed in Aleppo was based on the Mamluk legacy.²⁰

Regardless of its historical origins, the system must have served essential useful functions to be able to pass the test of time and survive into the period of Ottoman rule. We can group the functions noted by historians into two categories depending on the presumed power asymmetry between the state and local private powerholders. The first is the argument that the dual-recipient system helped the state to ensure the loyalty of local elements, such as powerful families who owned land prior to Ottomans and could form resistance unless included in the allocation of tax revenue.²¹ İnalçık, for example, notes that the reason the system was observed in the Turcoman regions was because it facilitated the Ottoman rule through revenue concessions that secured support from the hereditary tribal lords.

Scholars have noted a second category of reasons for the system's existence, based on different presumptions regarding the relative powers of state and private elements. In this view, the essential function of the dual-recipient system is for the government to penetrate into previously feudal relationships by claiming some of the revenue that previously belonged to private agents as state's share. Venzke, for example, argues that the system allowed "the state to maintain a palpable political presence in *vaqf* and *mülk* villages and other fiscal units from which it would otherwise have been shut out".²²

It is easy to see that the two approaches are in fact consistent with each other and that we can put them in a coherent whole by clarifying how the dual-recipient system allowed the government to maximize revenue subject to the risk of revolt while balancing the interests of the state and local powerholders. The key indicator of the balance is the relative share of the state's revenue relative to

²⁰ Barkan, Ömer Lütfi, "Türk-Islam Toprak Hukuku Tatbikatının Osmanlı İmparatorluğunda Aldığı Şekiller: Malikâne-Divânî Sistemi", *Türk-Hukuk ve İktisat Tarihi Mecmuası*, 2 (1939), pp. 119-84; Beldiceanu-Steinherr, Irène, "Fiscalité et formes de possession de la terre arable dans l'Anatolie préottomane", *Journal of the Economic and Social History of the Orient*, 19/3 (1976), 233-312; Venzke, "Aleppo's Mālīkāne-Dīvānī System".

²¹ İnalçık, Halil and Donald Quataert (eds.), *An Economic and Social History of the Ottoman Empire, 1300-1914* (Cambridge: Cambridge University Press, 1994), p. 129.

²² Venzke, "Aleppo's Mālīkāne-Dīvānī System", p. 455.

private recipients. Of course, the state would have preferred to appropriate all of the tax revenue for its own agents, possible if there were no constraints to its power of allocation. At the other extreme, the state could be so weak in its power in a district that it might have no choice but to yield most or all of the revenue to local elements. In the more usual cases between these extremes, we would expect the division of revenue to depend on the strength of the state relative to local powerholders and the associated risk of revolt faced by the state in raising revenue. If the power of the state over local elements was greater in a district relative to another, it could lower the fraction of revenue assigned to private recipients, sufficient to maintain an appropriate alignment of interests while controlling the risk of revolt.

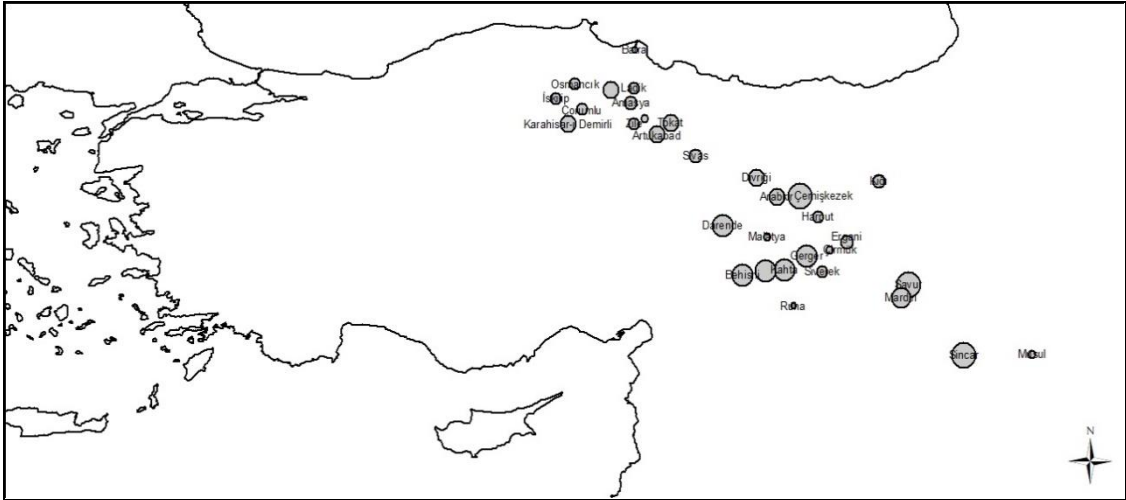
For a spatial analysis of the way the dual-recipient system functioned around the year 1530, we thus need to identify the districts in which the system was implemented and calculate the relative shares of the state and private recipients in those districts. The system was observed in only 31 of the 292 districts covered in our dataset, though of course it may have existed elsewhere prior to the 1530s or in districts that were outside of the coverage of accounting registers recorded around 1530. For the 31 districts that practiced the dual-recipient system, the registers show the allocation of tax revenue among the recipients. In addition to listing the total amount of the tax revenue expected from the villages, towns, and other units paying their taxes to a certain state agent (e.g., *timar*, *zeamet*, *mirmiran*, *padişah*), the registers show the division of revenue between the state agent and private recipients (*vakıf* and/or *mülk*). We use this information to aggregate the total amount received by the state's agents and private recipients in each district and calculate the fraction received by the state's agent as an indicator of the balance of power between them.

Map 8 shows the spatial distribution of the share of state among the districts practicing the dual-recipient system of allocation. The result is surprising because it shows that the state's share of the tax revenue increased in many districts going from the northcentral districts towards southeastern Anatolia. Based on the foregoing reasoning, we would have expected the state's power to decline as we moved

away from the center because of the presumption that the state’s capacity to rule in a region was directly proportional to its physical ability to reach the region given the means of transportation. Given the Ottoman seat of power in Istanbul, this would have implied a declining state’s share as we moved away from Istanbul.

Map 8

The State’s Share of the Revenue in Dual Recipient (*Malikane-Divani*) System of Tax-Collection



We need additional information regarding the reasons for the increase in the state’s share of the tax revenue in the spatial pattern observed in Map 8. It is possible that the fractions that we observe in 1530 show more the pre-Ottoman balance of power between the predecessor states and local powerholders than the established relative strength of the Ottoman state. It is also possible that the rise in the state’s power represented more the state’s desire to assert control in the farther districts during this period than the actual balance of power. A systematic analysis of the data is necessary to investigate the likelihood of these and other possibilities as an explanation for the observed pattern.

Conclusion

This chapter has analyzed the economic geography of Anatolia around the year 1530. We used information from the official accounting registers of the empire, which are unique sources for their comprehensive coverage of most Ottoman districts during this period. Examining this information with new tools of spatial analysis, we explored patterns in the geographic distribution of various representative indicators of Anatolian people, places, and political economy. The ultimate objective has been to illustrate how these tools would complement the traditional approach of Ottoman historians by shifting the main focus of investigation from important developments over time to puzzling patterns and variations across districts. Our analysis uncovered various preliminary results regarding the size, religious composition, and tax-status of the people in Ottoman districts; the numbers of watermills, caravanserais, and markets as representative indicators of buildings and places of production; and the geographic variation in the power of the state as seen through its share of the revenue in the dual-recipient system of taxation.

Regarding people, our results showed that certain regions of Anatolia were more densely populated by taxpaying inhabitants than others, though no dominant patterns emerged from a preliminary analysis. Although many of the densely populated districts lay along coasts, numerous others were inland, which raises questions about the interactions between historical, economic, and political factors in determining the numbers of taxpaying inhabitants observed around the year 1530. The patterns were more visible for the religious composition of the population. Non-Muslims clearly constituted a greater proportion of taxpaying inhabitants in eastern Anatolia, the greatest concentration being in the northeast. Likewise, the fractions of individuals exempt from the extraordinary taxes collected to finance war expenditures were notably higher in the southcentral regions of Anatolia.

Our analysis identified similarly interesting patterns and puzzles regarding the spatial distribution of the numbers of mills, caravanserais, and markets in Anatolian districts. For example, there was a greater concentration of watermills in western and northeastern Anatolia, presumably determined by the

availability of suitable streams and the high demand for generated power. Caravanserais were built mostly along the main transportation networks and important secondary routes. Districts in southwestern Anatolia had some of the largest numbers of regional markets, though notable concentrations of markets could be observed in other areas along the main trade routes.

Finally, we examined the state's share of the revenue under the dual recipient system of tax collection, an unusual system of allocation that was observed during this period in certain districts located between northcentral and southeastern Anatolia. Contrary to hypothesized expectation based on the balance of power between the state and local private powerholders, our results show that the state's share of the tax revenue mostly increased in districts located farther from the capital, specifically from northcentral to southeastern Anatolia.

It is beyond the scope of this chapter to examine the nature, reasons, and consequences of the patterns and puzzles depicted in our spatial analysis. Our modest objective was simply to show the richness of the information contained in the accounting registers of the empire, the benefits of using new tools of spatial analysis, and the potential questions of research for further exploration. We leave it to future research to investigate these questions systematically.