

T.R.
ANKARA YILDIRIM BEYAZIT UNIVERSITY INSTITUTE
OF SOCIAL SCIENCES

A TEMPORAL ANALYSIS OVER THE WEALTH OF INDIVIDUALS IN THE OTTOMAN EMPIRE, 1710-1919 (WITH SPECIFIC REFERENCES TO INHERITANCE RECORD FROM SHARIA COURTS)

THE DEGREE OF MASTER OF ARTS

Hande Nur KIRMIZIKUŞAK

THE DEPARTMENT OF ECONOMICS

Ankara, 2022



T.R.
ANKARA YILDIRIM BEYAZIT UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES

A TEMPORAL ANALYSIS OVER THE WEALTH OF INDIVIDUALS IN THE OTTOMAN EMPIRE, 1710-1919 (WITH SPECIFIC REFERENCES TO INHERITANCE RECORD FROM SHARIA COURTS)

THE DEGREE OF MASTER OF ARTS

Hande Nur KIRMIZIKUŞAK

THE DEPARTMENT OF ECONOMICS

Advisor Asst. Prof. Dr. Koray GÖKSAL

Ankara, 2022

APPROVAL PAGE

This thesis entitled “A TEMPORAL ANALYSIS OVER THE WEALTH OF INDIVIDUALS IN THE OTTOMAN EMPIRE, 1710-1919 (WITH SPECIFIC REFERENCES TO INHERITANCE RECORD FROM SHARIA COURTS)” studied by Hande Nur KIRMIZIKUŞAK has been accepted in accordance with the rules and regulations required for the degree of Master of Arts in Economics at Ankara Yildirim Beyazit University.

Committee Members		Affiliation	Signature
Asst. Prof. Dr. Koray GÖKSAL		AYBU	
Accept ☐	Reject ☐		
Assoc. Prof. Dr. Cem KORKUT		AYBU	
Accept ☐	Reject ☐		
Asst. Prof. Dr. Erkan GÜRPINAR		ASBU	
Accept ☐	Reject ☐		

Thesis Defense Date:

I, Hande Nur KIRMIZIKUŞAK in full understanding of my knowledge manifest that this thesis follows and satisfies all the terms and conditions required for the M.A. degree dissertation at the department of economics of Yildirim Beyazit University, Ankara.

Director of Institute of Social Sciences.

Tiitle, Name, Surname

.....

PLAGIARISM

I hereby declare that all information in this thesis has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work; otherwise, I accept all legal responsibility.

Name, Surname:

Signature:

DEDICATION

I dedicate this thesis to my late father Mengüç, who has supported me since I decided to become an academician during my undergraduate education, and to his faith in me, to my dear mother Lütfiye, my beloved older sisters Nihan and Hale, and my little nephew Azra Beril, my dear uncle Ali, and to my own patience…

ACKNOWLEDGEMENTS

This thesis is the first step of my academic career, and it brings together most of my research I have worked during my higher education. So many people have influenced my research agenda, thoughts, and academic career. I have no idea where my career would be without the friendship, mentorship, advice, discussions, and encouragement of Koray Göksal and Bora Altay. Koray Göksal is also my advisor, and Bora Altay works within this study as secondary advisor. Their encouragements and supports are one of my primary sources of inspiration in conducting this thesis. I am honored to work with Koray Göksal and Bora Altay, and I would like to give my special thanks to them. I would also like to thank Erkan Gürpınar and Cem Korkut, who are also on my thesis committee. Their supports are very important for me. Finally, I would like to give my special thanks to Hasan Dursun, whose friendship, mentorship, advice, and encouragement contributes my academic career.

I also owe a great deal of thanks to several people at Ankara Yıldırım Beyazıt University. Few people have encouraged me advance in my thesis. I would like to thanks to Shahid Mahmood Waqar, Musa Abdu, Nazira Yangibayeva, Sibel Çimen, Hatice Acun, Gizem Küçükoğlu, Işıl Odabaşı, Esra Elmaderesi, Oğuz Kaan Gök, Tuna Akdoğan, Osama Shaikh and Duygu Ünlü. I would like to send my thanks to E. Öykü Gürgentepe, who is my best friend. I treasure her friendship and thoughts for a very long time.

I feel very lucky to have had excellent collaborators at Yalova University. I would like to give my first thanks to Mehmet Karakaş, who is the chair of the department of economics. His support is very important for me to finish my thesis. Another considerable support comes from Kaya Bayraktar, who encourages me in developing my ability in economic history. Anıl Başaran, Baki Demirel, and Ali Pişkin have also given great support on my thesis. My colleagues, Fatma Benli, Arda Doğruöz, Levent Dölek and Okan Avunduk so been great friends and supporters in my academic life.

The greatest supporters I have had throughout my life are my family, and I am going to give my highest thanks to them.

ABSTRACT

A TEMPORAL ANALYSIS OVER THE WEALTH OF INDIVIDUALS IN THE OTTOMAN EMPIRE, 1710-1919 (WITH SPECIFIC REFERENCES TO INHERITANCE RECORD FROM SHARIA COURTS)

Kırmızıkuşak, Hande Nur M.A, Department of Economics Supervisor: Asst. Prof. Dr. Koray Göksal May 2022, 111 pages

The main purpose of this thesis is to examine the wealth of individuals and its distribution through inheritance records in the Ottoman Empire. Inheritance records generate one of the oldest traditions of the Ottoman Empire from the middle of the fifteenth century. As a common practice, Ottoman courts contain inheritance records of individuals. An inheritance record provides information on the economic assets of deceased individuals. The aggregate level of these assets generates the wealth of individuals. Furthermore, these primary sources include information such as the socioeconomic status of individuals, types of economic assets, borrowinglending relationship, costs of courts, and heirs. These characteristics of inheritance records have begun to attract the attention of economic historians in recent years. This thesis, in this sense, focuses on these primary sources to establish a comprehensive analysis, and it has a dual aim. The first is to present a dataset of inheritance records and average wealth levels from different regions, including commercial, agricultural and rural towns located in Anatolia. This aim continues corresponding to one of the primary questions of the thesis that established the dataset, that is, changes in average wealth levels over time. Average wealth levels have a declining pattern, spanning from 1710 to 1900, and a radical increase during the early twentieth century. This trend is compatible with recent historiography in some regards. This aim proceeds with average wealth levels of individuals from different segments of society, including titled and untitled individuals, males and females as well as Muslims and non-Muslims. These estimates include comparative analysis based on the wealthiest one percent, 10 percent as well as four quartiles starting from the wealthiest 25 percent. The first aim also includes the estimation of wealth distribution for the same period. To achieve this goal, this thesis employs Gini coefficients and Lorenz curves in the long-term perspective. The second aim

is to test the effects of different variables, including titles, gender, religion, decentralization, tax revenues, consumer prices, wars, and weather, on changing levels of wealth distribution. This aim includes quantitative and systematic analysis through econometric models that allow for a deeper understanding of the relationship between wealth distribution and socioeconomic variables as well as non-economic parameters. To achieve these aims, this thesis uses more than 4.400 inheritance records. Other variables, including tax revenues, decentralization, consumer prices, wars, and weather, are derived from reliable secondary sources. The data limitations in establishing inheritance records entail employing 10-year intervals in time series, starting from 1710. The findings indicate that the distribution of wealth had an approximately inverted U-shaped pattern in the Ottoman Empire. Furthermore, wealth distribution is much better for untitled individuals, females, and non-Muslims than those of titled groups, males and Muslims. During the late nineteenth century and the early twentieth century, however, a convergence in average wealth levels of comparison groups in the Ottoman Empire. Finally, while advantageous groups, including titled individuals, males, Muslims, and wars have a significant effect on wealth distribution, no significant results are obtained for disadvantageous groups, including commoners, females, and non-Muslims, state finance, devaluations, and drought.

Key Words: The Ottoman Empire, Inheritance Records, Wealth, Wealth Distribution, Status

ÖZET

OSMANLI İMPARATORLUĞU'NDA BİREYLERİN ZENGİNLİĞİ ÜZERİNE ZAMANSAL BİR ANALİZ, 1710-1919 (ŞERİ MAHKEMERİNDEN MİRAS KAYITLARINA BELİRLİ REFERANSLARLA)

Kırmızıkuşak, Hande Nur Yüksek Lisans, İktisat Bölümü Tez Danışmanı: Dr. Öğr. Üyesi Koray Göksal Mayıs 2022, 111 sayfa

Bu tezin temel amacı, Osmanlı İmparatorluğu'nda bireylerin servetlerinin ve dağılımının miras kayıtları aracılığıyla incelenmesidir. Miras kayıtları, 15. yüzyılın ortalarından itibaren Osmanlı İmparatorluğu'nun en eski geleneklerinden birini oluşturur. Osmanlı mahkemelerinde yaygın bir uygulama olarak şahısların miras kayıtları tutulmaktadır. Miras kaydı, ölen kişilerin ekonomik varlıkları hakkında bilgi sağlar. Bu varlıkların toplam düzeyi, bireylerin zenginliğini oluşturur. Ayrıca bu birincil kaynaklar, kişilerin sosyoekonomik durumu, ekonomik varlık türleri, borçlanma-borç ilişkisi, mahkeme masrafları ve mirasçılar gibi bilgileri içerir. Miras kayıtlarının bu özellikleri son yıllarda iktisat tarihçilerinin dikkatini çekmeye başlamıştır. Bu tez, bu anlamda, kapsamlı bir analiz yapmak için bu birincil kaynaklara odaklanmakta ve ayrıca* ikili bir amacı vardır. Birincisi, Anadolu'da bulunan ticari, tarım ve kırsal kasabalar dahil olmak üzere farklı bölgelerden miras kayıtları ve ortalama refah düzeylerinin bir veri setini sunmaktır. Bu amaç, veri setini oluşturan tezin temel sorularından birine, yani zaman içinde ortalama servet seviyelerindeki değişimlere karşılık gelmektedir. Ortalama servet seviyeleri, 1710'dan 1900'e kadar uzanan bir düşüşe ve yirminci yüzyılın başlarında radikal bir artışa sahiptir. Bu eğilim, bazı açılardan son tarih yazımıyla uyumludur. Bu amaç, unvanlı ve unvansız bireyler, erkekler ve kadınlar ile Müslüman ve gayrimüslimler dahil olmak üzere toplumun farklı kesimlerinden bireylerin ortalama servet seviyeleri ile ilerlemektedir. Bu tahminler, en zengin yüzde bir, yüzde 10 ve en zengin yüzde 25'ten başlayarak dört çeyreğe dayalı karşılaştırmalı analizleri içerir. Birinci amaç aynı dönem için servet dağılımının tahminini de içermektedir. Bu amaca ulaşmak için bu tez, uzun vadeli perspektifte Gini katsayılarını ve Lorenz eğrilerini kullanır. İkinci amaç, unvanlar, cinsiyet, din, ademi merkeziyetçilik, vergi gelirleri, tüketici fiyatları, savaşlar ve hava durumu gibi farklı değişkenlerin değişen

servet dağılımı seviyeleri üzerindeki etkilerini test etmektir. Bu amaç, servet dağılımı ile sosyoekonomik değişkenler ve ekonomik olmayan parametreler arasındaki ilişki hakkında daha derin bir anlayışa izin veren ekonometrik modeller aracılığıyla nicel ve sistematik analizleri içerir. Bu amaçlara ulaşmak için, 4.400'den fazla miras kaydı kullanılmıştır. Vergi gelirleri, yerelleşme, tüketici fiyatları, savaşlar ve hava durumu gibi diğer değişkenler güvenilir ikincil kaynaklardan elde edilir. Miras kayıtlarının oluşturulmasındaki veri sınırlamaları, 1710'dan başlayarak zaman serilerinde 10 yıllık aralıklarla çalışmayı gerektirir. Bulgular, Osmanlı İmparatorluğu'nda servet dağılımının yaklaşık olarak ters U şeklinde bir örüntüye sahip olduğunu göstermektedir. Ayrıca, servet dağılımı, unvansız bireyler, kadınlar ve gayrimüslimler için, unvanlı gruplara, erkeklere ve Müslümanlara göre çok daha iyidir. Bununla birlikte, on dokuzuncu yüzyılın sonlarında ve yirminci yüzyılın başlarında, Osmanlı İmparatorluğu'ndaki karşılaştırma gruplarının ortalama zenginlik seviyelerinde bir yakınsama. Son olarak, Osmanlı'da avantajlı grupları oluşturan unvanlı bireylerin, erkeklerin ve Müslümanların servetlerinin ve savaşların servet dağılımı üzerinde anlamlı bir etkisi varken, unvansız bireyleri, kadınları ve gayri-Müslimleri içeren daha az avantajlı grupların ortalama servet düzeyleri ile devlet finansmanının, devalüasyonların, fiyatlar düzeyinin ve son olarak kuraklığın etkileri üzerine anlamlı bir sonuç elde edilememiştir.

Anahtar Kelimeler: Osmanlı İmparatorluğu, Miras Kayıtları, Servet, Servet Dağılımı, Statüler.

TABLE OF CONTENTS

ABSTRACT i
ÖZET iii
TABLE OF CONTENTS v
LIST OF TABLES vi
LIST OF FIGURES vii
INTRODUCTION 1
1. HISTORICAL BACKGROUND 5
1.1. Literature Review 5
1.2. Ottoman Economy in a Long-term Perspective: Tax-Collecting Institutions, State Finance, and Growth 26
1.3 An Assessment of the Historical Background 41
2. DESCRIPTIVE ANALYSIS: SOURCE, DATA AND METHODOLOGY 44
2.1. Source 44
2.2. Problems of the Study and Methodology 46
2.3. Data and Its Limitation: A Descriptive Analysis through Inheritance Records 49
2.3.1 Inheritance Records and Their Limitations 50
2.3.2. Other Variables and Their Limitations: State Finance, Decentralizations, Prices, Wars, and Weather 65
2.4. The Distribution of Wealth in the Ottoman Empire: Lorenz Curves and Gini Coefficients 71
2.5. Assessment of Descriptive Analysis 96
3. THE EMPIRICAL ANALYSIS: DETERMINANTS OF THE DISTRIBUTION OF WEALTH, 1710-1919 98

3.1. Variables of the Analysis 99
3.2. Testing the Hypothesis 101
3.3. An Assessment over Findings 103
CONCLUSION 106
APPENDIX A: PRIMARY SOURCES 109
REFERENCES 111

LIST OF TABLES

Table 1. Summary of inheritance records, 1467-1468 6
Table 2. Summary of inheritance records, 1487-1488 7
Table 3. Summary of inheritance records, 1489 9
Table 4. Summary of inheritance records, 1500 10
Table 5. Size distribution of probates in seventeenth-century Antep 12
Table 6. Size distribution of estates: Antep and small to medium-size towns 13
Table 7. Change in average wealth relative to the poorest 14
Table 8. Shares of wealth held by the top 1, 10, and 20 percentile in the 18th century 15
Table 9. The distribution of wealth in Sweden 23
Table 10. Sectoral shares and Gini coefficients 24
Table 11. Europeans' estimates on Ottoman state revenues and expenditure, 1433-1561 . 27
Table 12. The Ottoman economy in global perspective, 1500-1913 31
Table 13. Per capita tax revenues in a comparative perspective, 1500-1913 (in grams of silver) 36
Table 14. Number of inheritance records in the long-term perspective, 1590-1919 52
Table 15. The number of inheritance records by regions 54
Table 16. Number of inheritance records by titles 57
Table 17. The CPI, inflation, and silver content of akche 66
Table 18. State finance in a long-term perspective (billions of akche) 67
Table 19. Average nominal and real wealth (in akche) 71
Table 20. Wealth levels of titled and untitled individuals 73
Table 21. Average wealth levels by gender 75
Table 22. Average Wealth Levels by Religion 77
Table 23. Average wealth levels by segments 79
Table 24. Average wealth level and its distribution by periods 80
Table 25. Average wealth levels of titled individuals by periods 82
Table 26. Average wealth levels of untitled individuals by periods 83
Table 27. Average wealth levels of males by periods 84
Table 28. Average wealth levels of females by periods 85
Table 29. Average wealth levels of Muslims by periods 86

Table 30. Average wealth levels of non-Muslims by periods 87
Table 31. Description of the data 97
Table 32. Unit root test results 98
Table 33. Coefficients and descriptive statistics (dependent variable, ineq) 99
Table 34. Coefficients and descriptive statistics (dependent variable, avwealth) 100

LIST OF FIGURES

Figure 1. Average wealth levels, 1489-1640 (in akche, thousands) 10
Figure 2. The trend of average wealth levels, 1460-1920 (in akche, thousands) 18
Figure 3. The trend of consumer price index, 1710-1913 39
Figure 4. The trend of silver content of akche (in grams) 40
Figure 5. The trend of inheritance records by periods 53
Figure 6. Share of inheritance records by region 55
Figure 7. The number of observations for the top five titles 56
Figure 8. The trend of inheritance records by titles 58
Figure 9. Allocation of inheritance records by types of titles 59
Figure 10. Allocation of inheritance records by gender 60
Figure 11. The trend of inheritance records by gender in a long-term perspective 60
Figure 12. Share of inheritance records by religion 61
Figure 13. Allocation of inheritance records by religion 62
Figure 14. The long-term of inheritance records by religion..... 63
Figure 15. The trend of decentralization and centralization 69
Figure 16. The trend of average wealth levels in real terms 71
Figure 17. The trend of average wealth levels of titled and untitled individuals 74
Figure 18. The trend of average wealth levels by gender 76
Figure 19. The trend of average wealth levels by religions 78
Figure 20. The trend of Gini coefficients by periods 81
Figure 21. Lorenz curves by title 88
Figure 22. Lorenz curves by gender 89
Figure 23. Lorenz curves by religion 90
Figure 24. Gini coefficients by titles, 1710-1919 92

INTRODUCTION

In some respects, the literature on the distribution of income and wealth in both Europe and the Ottoman Empire during the early modern period and the nineteenth century has been slow to progress. Although there are a significant number of research on the individual wealth levels of the Ottoman Empire, a few of them provide a comprehensive analysis from the long-term perspective. This thesis aims to establish that analysis in a temporal framework by employing distinct provinces with different economic scales for the first time and explore how the Ottoman Empire's individual wealth levels and their distribution have changed from the early eighteenth century to the early twentieth century.

The economic history literature has been emphasizing in the last few decades that inheritance records of deceased individuals constitute one of the most important sources in examining individual wealth levels, namely terekes provide information on the aggregate wealth through assets recorded in courts. These primary sources are also needed for the deeper analysis for understanding changing wealth levels and their distribution, particularly in the long-term perspective that offers findings at which period the distribution of wealth is getting better or vice versa. In recent years, still-developing literature has offered new perspectives and methods for deeper analysis, this thesis adapts these methods and develops new approaches that determine the pattern of individual wealth and its distribution.

Two of the Ottoman Empire's particular characteristics as one of the most important military powers are that it has not been subjected to quantitative analysis for the early modern period and that its economic performance has not been examined through modern economic parameters in a long-term perspective. Although the data limitations prevent economic historians from executing an analysis through modern economic variables such as GDP and per capita GDP, a few studies that focus on prices, wages, and standard living provide long-term analysis of the economic performance of the Ottoman Empire (Özmucur and Pamuk, 2002; Pamuk, 2004b). This thesis, in this sense, aims to conduct analysis through inheritance records as representative of individual wealth levels. This

analysis consists of modern economic approaches based on Lorenz curves and Gini coefficients that signify the level of wealth distribution within the economic structure.

The Ottoman Empire achieved rapid territorial expansion from the Middle East to Eastern Europe and from the Arabian Peninsula to Northern Africa until the middle of the seventeenth century. These military achievements provided economic and political power that could influence the balance of power in Europe. Controlling trade routes and increasing naval power allowed the Ottomans to enjoy higher economic returns, particularly during the sixteenth century. While the primary sources based on individual records provided information about the increasing riches of elites during these periods, it was difficult to measure the economic performance of the Ottoman Empire at the macro level.

After the late seventeenth century, the picture changed, and the growth rate of territorial expansion started to slow down. In other words, the Ottoman Empire reached its natural borders. The main reflections of this process were institutional change in tax-farming systems and decreasing economic returns due to the declines in spoils of wars. Each process had caused changes in wealth accumulation over time. One could argue that changing economic and political structures entailed changes in the direction of wealth towards disadvantaged groups, including untitled mercantile actors as untitled provincial powerful groups, females, and nonMuslims. Secondly, this process suggested that elites, who held economic rights and privileges of being military members, faced losses in economic returns due to the declines in spoils of wars. Thirdly, it could be offered that judicial and religiousbased groups increased their influence within the economic and political environment, and hence, the wealth moved towards these advantageous groups over time. These arguments are mostly based on implicit propositions.

The main aim of this thesis is to provide quantitative and systematic analysis to test such propositions that emerge from changing economic and political environments in a long-term perspective. Constructing a relatively large dataset through inheritance records from different provinces of the Ottoman Empire allows for examining such propositions in terms of individual wealth levels and the

distribution of wealth. Record-keeping practices of Ottoman Sharia courts are commonly known information within the recent literature. These court records contain not only crimes but also circumstances that appeared in daily life such as marriage, establishing a waqf, sales of real estate, credit-debt relations as well as registering inheritance records of deceased individuals. Furthermore, these records have belonged to individuals from different socioeconomic groups, including elites, females, and non-Muslim subjects. Thus, these sources constitute the primary sources of this analysis. Thanks to the nature of these sources, this analysis has the chance to develop a dataset regarding different socioeconomic groups by honorific titles, gender, and religion.

The main questions of this thesis are "how did individual wealth levels and their distribution change over time?" and "how did exogenous and endogenous shocks affect the average wealth levels and the distribution of wealth in the long term?". To answer these questions, there have also been several hypotheses that are developed within this thesis. The first is that being from advantageous groups such as elite, males, and Muslims entailed higher wealth, and changes in wealth levels of these groups significantly affected the distribution of wealth. The second hypothesis is that exogenous shocks such as war and dry had a significant effect on inequality. The third main hypothesis is that endogenous shocks such as state finance, decentralization, consumer prices, and devaluations had a significant effect on both average wealth levels and the distribution of wealth in the Ottoman Empire from the early eighteenth century to the early twentieth century.

To achieve these goals, this thesis is organized as follows. The first chapter focuses on the economic performance of the Ottoman Empire. The first part of this chapter summarizes the earlier studies on individual wealth levels and the distribution of wealth in the Ottoman Empire. Although this part briefly explains these studies, it gives the methods and dataset they employed and discusses their deficiencies. The second part of this chapter presents the economic history of changing economic and political structures of the Ottoman Empire through taxfarming systems, prices, and devaluations. This literature also provides a secondgeneration dataset of the analysis. Finally, the third part of this chapter

provides an assessment of the earlier literature and the economic history of the Ottoman Empire.

This part also discusses the deficiencies of earlier literature and explains the main contribution of this thesis.

The second chapter constitutes the most important contribution of this thesis by presenting its newly established dataset through inheritance records from different regions of the Ottoman Empire. This chapter, in this sense, executes a descriptive analysis. The first part defines the primary and secondary sources of the dataset. The second part offers the main hypothesis and problems of the thesis. Furthermore, the third part also examines the limitations of data in establishing historical ones. Through these limitations, a descriptive analysis is conducted in the fourth part regarding commonly employed methods in earlier studies and the examination of wealth distribution. Although the dataset is evaluated through a temporal analysis, there have been comparisons among different socioeconomic groups as well as diverse wealth segments, including the wealthiest top one, 10, 25 percent, and other quartiles. Finally, the descriptive analysis shows the distribution of wealth through Lorenz curves and Gini coefficients in the long term.

The third chapter of this thesis tests the main hypotheses through regression models. The effects of exogenous and endogenous shocks on the average wealth levels and the distribution of wealth generate the main subject of this chapter. Following the econometric analysis, the final part of this chapter provides an assessment of the findings from a comparative perspective regarding the earlier studies. The conclusion summarizes the major findings of this thesis and discusses the main contributions of the analysis as well as its effects on future studies.

1. HISTORICAL BACKGROUND

This chapter has a dual aim. The main purpose of these aims is to develop a historical background over variables used in this thesis. The first aim focuses on earlier studies on individual wealth levels and their distributions in the Ottoman Empire over time. This review allows for examining deficiencies of existing literature and for developing limits of the analysis conducted in this thesis. The questions of "How does this thesis fill the gaps in the literature?", "How do the characteristics of the sources used in this thesis differ from earlier studies?" and "How does the method conducted in this thesis differ from earlier studies?" generate the primary purposes of the first aim. The second part provides a piece of brief information on the changing economic and political structures of the Ottoman Empire. This part is related to the various variables except for the distribution of wealth and average wealth levels used in the analysis. In this sense, the second part focuses on state finance, including tax revenues and contract durations, that affected the distribution of wealth. Furthermore, wars and weather conditions, particularly drought periods, constitute important segments of variables on the changing wealth levels and distribution of wealth.

1.1. Literature Review

In the last few decades, there is growing literature on the debates over wealth and its distribution in the Ottoman Empire. A few of these studies, however, conduct a quantitative and systematic analysis on the assessment of individual wealth levels and the degree of inequality. Inheritance records generate the main primary sources of the earlier studies. In this sense, the discovery of the importance of inheritance records in wealth analysis goes to Halil İnalcık (1953-54). Since the earlier estimates of this study, economic historians start to give careful attention to inheritance records as well as individual wealth levels in the Ottoman Empire. Owning wealth is one of the most crucial determinants of living standards. More importantly, these sources are also crucial in examining the economic performance of societies in the pre-industrial period. Due to the lack of data, it is difficult to estimate commonly used economic indicators such as GDP, per capita GDP, and balance of trade. Thus, inheritance records emerge as an alternative source to

examine economic performances, particularly in the early modern period. These sources also become common in studies based in Western Europe.

According to Halil İnalcık (1953-54: 51), the earliest scholar who studied individual wealth in the Ottoman Empire, inheritance records are one of the most important sources in terms of socio-economic history. In this study, İnalcık examines inheritance records registered in Bursa courts for the period between 1463 and 1503. There are three main segments regarding aggregate wealth levels of individuals: The wealthy class, the medium class, and the poor. The first segment represents individuals that had assets of more than 10.000 akche, while the second segment consists of individuals with total assets between 1.000 and 10.000 akche. The third segment includes individuals whose total wealth was under 1.000 akche.

Table 1. Summary of inheritance records, 1467-1468

Wealth Groups	Observations	Percentages	Shares
Lower than 1.000	79	25,7	
1.000 – 5.000	124	40	84,1
5.000 – 10.000	57	18,4	
10.000 – 50.000	49	12,6	
50.000 – 100.000	6	2	15,9
Higher than 100.000	4	1,3	
Total	319	100	100

Source: İnalcık (1953-54: 55)

Table 1 presents a summary of İnalcık's findings for Bursa in 1467 and 1468. These figures indicate that a substantial proportion of inheritance records belonged to the middle class, which had a wealth between 1.000 and 10.000 akche (58,4 percent). The number of wealthy individuals, whose wealth was higher than 10.000 akche, covers the smallest proportion within the sample (15,9 percent). The total assets of four inheritance records out of 319 have values exceeding 100.000 akche. On the other side, the share of the poor is higher than that of groups, which have assets higher than 10.000 akche (25,7 percent). The last column, however, gives a narrower classification of wealth segments. In this sense, the first group constitutes

individuals with assets lower than 10.000 akche. This figure is 84,1 percent. The second group represents individuals with assets higher than 10.000 akche. The share of the latter group is 15,9 percent. To establish a comparative perspective, this study employs inheritance records located in Bursa from the years 1487 and 1488.

Table 2. Summary of inheritance records, 1487-1488

Wealth Groups	Observation	Percentage	Shares
Lower than 10.000	359	88,8	88,8
10.000 – 30.000	27	7	
30.000 – 50.000	5	1,2	11,2
Higher than 50.000	11	3	
Total	402	100	100

Source: İnalcık (1953-54: 56)

Table 2 presents similar variables based on inheritance records. These figures allow for establishing a comparison with the figures of earlier periods. The second period contains a close number of observations from the previous period. The share of wealth segments with lower than 10.000 akche increases to 88,8 percent, while the share of wealthy segments declines to 11,2 percent in this period. İnalcık (195354) argues that the changing shares of the wealthiest group indicate a trend in the distribution of wealth for the better in Bursa during the second half of the fifteenth century.

Changes in the share of wealth groups also emerge from practices in keeping inheritance records over time. For instance, individuals, who were relatives of a deceased individual within the wealthiest group, might refrain from applying to Sharia courts to register the aggregate wealth. This practice leads to a lower number of observations for the wealthiest group. This study overlooks such problems that emerged from historical data. Without employing Gini coefficients, it is difficult to argue whether there was a better distribution or not. Furthermore, this study includes deficiencies in establishing a comparison among different socioeconomic groups. Finally, the wealth levels presented in Tables 1 and 2 reflect nominal values

(İnalcık, 1953-54: 56). All in all, even if this study is an initial point of research on individual wealth levels and inheritance records for the Ottoman Empire, such analysis should be improved with different approaches and methods to obtain more complete findings.

Another important research based on individual wealth levels and inheritance records is conducted by Ömer Lütfi Barkan (1966). Contrary to İnalcık's research, Barkan (1966) executes the analysis for longer periods. Furthermore, this study provides information about the socioeconomic status of deceased individuals, including marital status, gender, numbers of inheritors, and locations. Inheritance records used in this study are in Edirne courts and start from 1545 and encompass 1659. Furthermore, there are 3.128 observations, in which 67 percent of them constitute inheritance records of males and 33 percent have belonged to females (Barkan, 1966: 10). In addition, 73 percent of males are married, and this figure is 75 percent for females (Barkan, 1966: 12).

Among males, there are five different occupations: Jannisary, Sipahi, İlmiye, Courtier, and Craftsman. The first two segments are members of military organizations in the Ottoman Empire. İlmiye represents individuals from educational and religious organizations. Courtier includes individuals, who were employees in the palace. Finally, craftsman generates groups of manufacturers, producers, and farmers within the society. The sample of these groups has 1.503 observations. A substantial share of inheritance records used in this study has belonged to sipahi groups with approximately 44 percent. Following this group, the share of ilmiye groups is approximately 24 percent. Inheritance records of Janissaries follow these groups with 21 percent. The rest belongs to courtiers (4 percent) and craftsmen (7 percent). The same dataset also shows that 82 percent of these individuals lived in the city center while the rest of them lived in relatively small villages of Edirne (Barkan, 1966: 17). Even if this study employs inheritance records in large numbers, these primary sources are used to establish price series instead of analyzing wealth levels.

Hüseyin Özdeğer (1988)'s research based on inheritance records of Bursa is more comprehensive compared to the earlier studies. First of all, the period covered by this study, spanning from 1463 to 1640, is higher than those earlier ones.

Secondly, this study pays higher attention to socioeconomic variables, including gender, marital status, and inheritors, in the long-term perspective. This analysis includes 4.639 inheritance records, and 2.578 of them (55 percent) belong to males while 2.061 of them belong to females (Özdeğer, 1988: 25). Furthermore, 3.121 of these inheritance records provide information about the inheritors. A substantial share of inheritors consists of husbands, wives, and children (47 percent) in Bursa (Özdeğer, 1988: 57).

Table 3. Summary of inheritance records, 1489

Wealth Segments	Observations	Percentage	Share
Lower than 1.000	75	31	
1.000 – 4.999	93	39	85
5.000 – 9.999	36	15	
10.000 – 49.999	28	12	
50.000 – 99.999	3	1	15
Higher than 100.000	4	2	
Total	239	100	100

Source: Özdeğer (1988: 136)

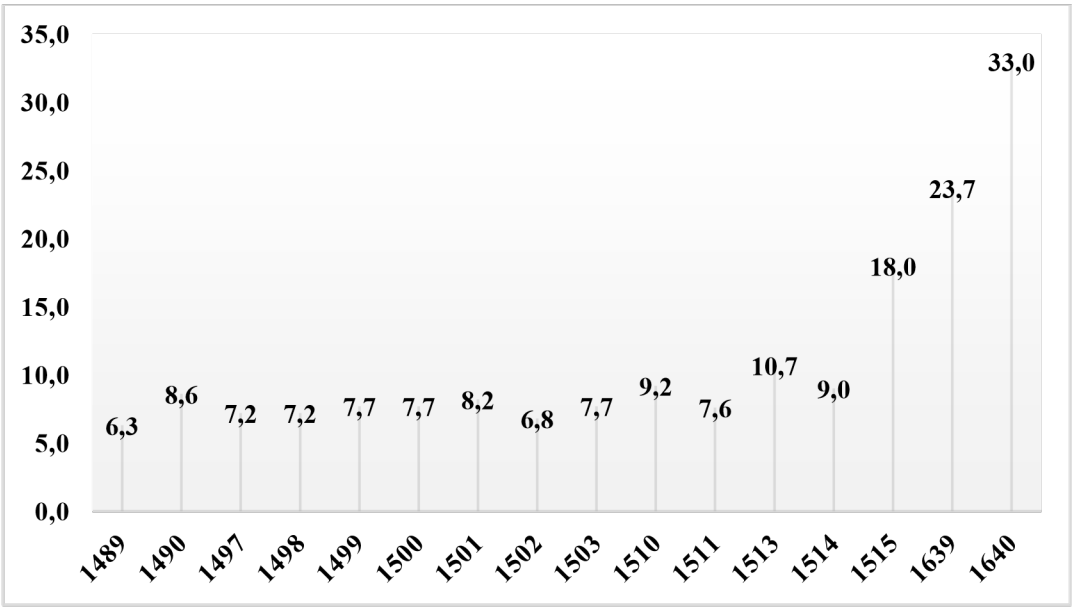
Following socioeconomic variables, Table 3 presents a summary of inheritance records regarding different wealth segments for Bursa in 1489. These figures reflect nominal values in akche. The findings indicate that the share of the wealthiest group was 15 percent, while the aggregate share of the middle class and the poor was approximately 85 percent. These outcomes are similar to the findings of İnalcık as given in Tables 1 and 2. A notable difference emerges in the shares of the poor within the sample. While the former study estimates the share of the poor is approximately 26 percent, the latter gives 31 percent. Furthermore, the shares of groups including the poor and the middle class are close to each other (Tables 1, 2, and 3). In sum, the findings of both studies based on the same city give similar outcomes.

Table 4. Summary of inheritance records, 1500

Wealth Segments	Observations	Percentage	Share
Lower than 1.000	64	28	
1.000 – 4.999	112	48	89
5.000 – 9.999	31	13	
10.000 – 49.999	16	7	
50.000 – 99.999	5	2	11
Higher than 100.000	3	2	
Total	**231**	**100**	**100**

Source: Özdeğer (1988: 137)

During the early sixteenth century, the findings indicate a similar trend in the shares of wealth groups. The share of the poor decreased from 31 to 28 percent in the second period. The aggregate share of the middle class and the poor, however, increases up to 89 percent in this period. This change entails declines in the share of the wealthiest group, which represents individuals with wealth higher than 10.000 akche. This study mostly focuses on the changes in the wealth of the wealthiest groups. In this sense, Özdeğer (1988) argues that the increasing number of wealthy individuals referred to economic growth compared to earlier periods.



Source: Özdeğer (1988: 141)

Figure 1. Average wealth levels, 1489-1640 (in akche, thousands)

Figure 1 presents the average wealth levels of individuals, whose aggregate assets were lower than 250.000 akche, in the long-term perspective. The figures indicate a steady trend in average wealth levels from the late fifteenth century to the early sixteenth century. A significant jump in the dataset emerges in the figure of 1515, in which average wealth levels increase from 9.000 to 18.000 akche. The increasing trend in average values continues during the first half of the seventeenth century. There are two different problems in this dataset. First, the values given in Figure 1 are nominal, and more importantly, there are inconsistencies in the number of observations. For instance, while the average values of 1503 are based on 487 observations, there are only 28 observations for the year 1515. Such fluctuations in numbers are also valid for the entire dataset. Nevertheless, the trend of average values based on 3.096 inheritance records provide information on individual wealth levels from a long-term perspective (Özdeğer, 1988: 141).

Said Öztürk (1995) focuses on inheritance records of individuals from the military organization of the Ottoman Empire in the seventeenth century. This study includes 2.670 inheritance records registered in Istanbul courts from the period between 1591 and 1669 (Öztürk, 1995: 29-30). The structure of this study is organized around three main parts. The first part mostly focuses on the limitations of data. It is emphasized that it is difficult to determine whether some titled

individuals belong to the military organizations, especially when discussing how the determination of military class members is made. In other words, this study states that not all inheritance records used in the sample belonged to members of the military class. To deal with this problem, Öztürk (1995: 44) incorporates all titled individuals into the entire sample. The second part of this study focuses on the social and economic situations of individuals (Öztürk, 1995: 103-253). In particular, this part provides information on marital status and numbers of inheritors given in inheritance records of military members. These variables generate descriptive statistics for the analysis. The third part presents certain quantitative analyses on wealth levels, gender, and origins of deceased individuals. Instead of establishing temporal and comparative analysis among different segments, this study focuses on average wealth levels individually. The main contribution of this study, however, is based on the share of cash capital in aggregate wealth that included both cash and non-cash assets. Secondly, as in Barkan's research, Öztürk mostly gives more importance to examining the price movements through the information in the inheritance records (Öztürk, 1995).

The number of quantitative analyzes on individual wealth levels has also increased rapidly in recent years. Hülya Canbakal (2009) analyzes the distribution of wealth in Antep, covering the seventeenth century and eighteenth century. The method of this study is mostly based on those of earlier studies. This study employs 103 inheritance records for the years 1682 and 1694, and 1.055 inheritance records for the period between 1760 and 1778. There is a similar classification of wealth segments. While individuals with aggregate assets lower than 100 qurush generate the poor, individuals that had wealth between 5.001 and 10.000 qurush constitute the wealthiest segment.

Table 5. Size distribution of probates in seventeenth-century Antep

Wealth Segments	0 – 100	101- 200	201- 500	501 – 1.000	1.101 – 2.000	2.001 – 5.000	5.001 – 10.000
Observations	27	29	21	4	11	8	3
Shares	26,20	28,20	20,40	3,90	10,70	7,80	2,90

Source: Canbakal (2009: 240)

Table 5 presents the allocation of inheritance records by wealth segments in seventeenth-century Antep. These figures indicate that 26,20 percent of the sample generates the poor. Concerning Canbakal (2009)'s classification, the share of the middle class is 71 percent, while the share of the wealthiest group is approximately 3 percent during the seventeenth century. More importantly, Canbakal (2009: 241) presents that the wealthiest 20 percent owned almost 76 percent of the aggregate wealth in Antep during the seventeenth century. In this comparison, the poor own only 1,64 percent of the aggregate wealth while the middle class has almost 24 percent of the total wealth. A wealth analysis through the socioeconomic status of deceased individuals is absent within the scope of the study.

Table 6. Size distribution of estates: Antep and small to medium-size towns

Estate Size (qurush)	**0 - 417**	**425 - 833**	**842 – 4.167**	**4.175**	**Total**
Vidin	15 (62,50 %)	6 (25,00 %)	3 (12,50 %)	0 (0,00 %)	24 (100,00 %)
Ruse	24 (58,54 %)	7 (17,07 %)	9 (21,95 %)	1 (2,44 %)	41 (100,00 %)
Antep	75 (72,82 %)	5 (4, 85 %)	20 (19,42 %)	3 (2,91 %)	103 (100,00 %)

Source: Canbakal (2009: 243)

Furthermore, Canbakal (2009: 243) conducts a comparative analysis among different towns of the Ottoman Empire. The findings presented in Table 6 indicate that the share of the lowest wealth segment in Antep was higher than those of Vidin and Ruse. Canbakal (2009: 242), however, argues that Vidin was the poorest town with no inheritance records higher than 4.175 qurush among each other. This situation may be the outcome of lower numbers of observations in Vidin compared to other cities. The share of the middle class, which wealth ranges from 425 to 4.167 qurush, is higher in Ruse town with 39 percent than those of Vidin and Antep. Individuals, who had wealth between 842 and 4.167 qurush, allow for comparison

among Antep and Ruse. The share of this specific segment is close to each other during the seventeenth century. Hence, Canbakal (2009: 242) argues that these findings signify the most polarized pattern of wealth distribution in Antep.

Table 7. Change in average wealth relative to the poorest

Wealth Groups in Ascending Order	Relative Size of the Wealth Group (%)	Average Wealth per Probate (qurush)	Wealth Groups Relative to the Poorest	Average Wealth per Probate (qurush)	Wealth Groups Relative to the Poorest
		17th Century		18th Century	
1	28,10	68	1,00	50	1,00
2	51,10	265	3,90	300	6,00
3	10,70	1.444	21,20	750	15,00
4	6,80	3.005	44,20	3.000	60,00
5	1,90	5.175	76,10	7.500	150,00
6	1,00	7.613		13.500	270,00

Source: Canbakal (2009: 244)

Table 7 presents a comparison of average wealth levels for the periods between the seventeenth and the eighteenth century. The trend of average wealth levels provides information on the changing levels of different segments. For the

first segment, the poor, average wealth levels decrease to 50 qurushes during the eighteenth century, while the levels of the second segment increase in the same period. The change in average wealth levels of the third segment appears to be more pronounced compared to the first two groups. The average wealth levels decline by half. While the wealth levels of the fourth segment remain at the same level, increases in average wealth levels of the highest two segments appear to be more pronounced compared to other segments. Canbakal (2009), in this sense, discusses that the distribution of wealth in Antep was getting worse in the latter period compared to the former period. The major indicator of this outcome was the increasing premium in average wealth levels between the poor and the wealthiest segment. Canbakal (2009: 245) justifies this argument by comparing changing average wealth levels of the wealthiest one percent and the bottom 95 percent, in which average wealth decreases from 7.163 to 4.505 qurushes for the former, and this figure decreases from 455 to 121 qurushes for the latter.

Table 8. Shares of wealth held by the top 1, 10, and 20 percentile in the 18th century

Place	**17th Century**	**18th Century**
	Top 1 %	
Antep	10,74	18,96
Ruse	4,75	6,50
Vidin	4,17	5,08
	Top 10 %	
Antep	55,30	70,00
Ruse	32,39	48,38
Vidin	41,73	41,56
	Top 20 %	
Antep	77,45	83,30
Ruse	60,13	68,11
Vidin	60,00	60,55

Source: Canbakal (2009: 248)

Finally, Canbakal (2009: 248) conducts a more comprehensive comparison among different towns through the shares of wealth held by the top one, 10, and 20

percentiles within the entire sample. The findings indicate a worsening trend in the distribution of wealth for Antep during the eighteenth century. While the share of wealth held by the wealthiest one percent increased up to 19 from 11 percent, these figures remain at the same level for Ruse and Vidin towns of the Ottoman Empire. A similar trend is also available in the figures of the wealthiest 20 percent. A notable difference appears to be pronounced in the figures of the wealthiest 10 percent. The share of the wealthiest 10 percent increases for both Antep and Ruse towns, while this figure drops slightly for Vidin. Compared to earlier studies, Canbakal (2009)'s study has employed more developed methods in examining the distribution of wealth in the Ottoman Empire. A part of this method, including the classification of wealth segments regarding the wealthiest percentiles, provides a way in conducting a wealth analysis within this study.

Another important research based on individual wealth is conducted by Boğaç Ergene and Ali Berker (2009). This study focuses on a middle-sized town in the Ottoman Empire, Kastamonu. The analysis is based on 615 inheritance records, spanning from 1712 and 1760 (Ergene and Berker, 2009: 30). Contrary to earlier studies, the main focus is not only the average wealth levels of deceased individuals but also shares of inheritors in aggregate assets. In the examination based on inheritors, only the inheritances of daughters and sons are subjected to the analysis. The wealth segments are given in this study start from the poorest 20 percent and go to the wealthiest 20 percent. While the analysis is based on these segments, Gini coefficients generate another important finding of the analysis. Through these variables, this research conducts a regression analysis to test the effects of socioeconomic parameters of legators, including gender, title, occupation, and religion. The main result is that the inheritors of those who held the title of Agha and Effendi attained higher wealth in Kastamonu during the eighteenth century (Ergene and Berker, 2009).

Metin Coşgel and Boğaç Ergene (2011) execute another wealth analysis through inheritance records registered in Kastamonu courts for the eighteenth century. 1.500 inheritance records from 63 different court registers generate the dataset, covering the 96 years between 1710 and 1806 (Coşgel and Ergene, 2011: 257). This study presents a comparison of individual wealth levels among titled and

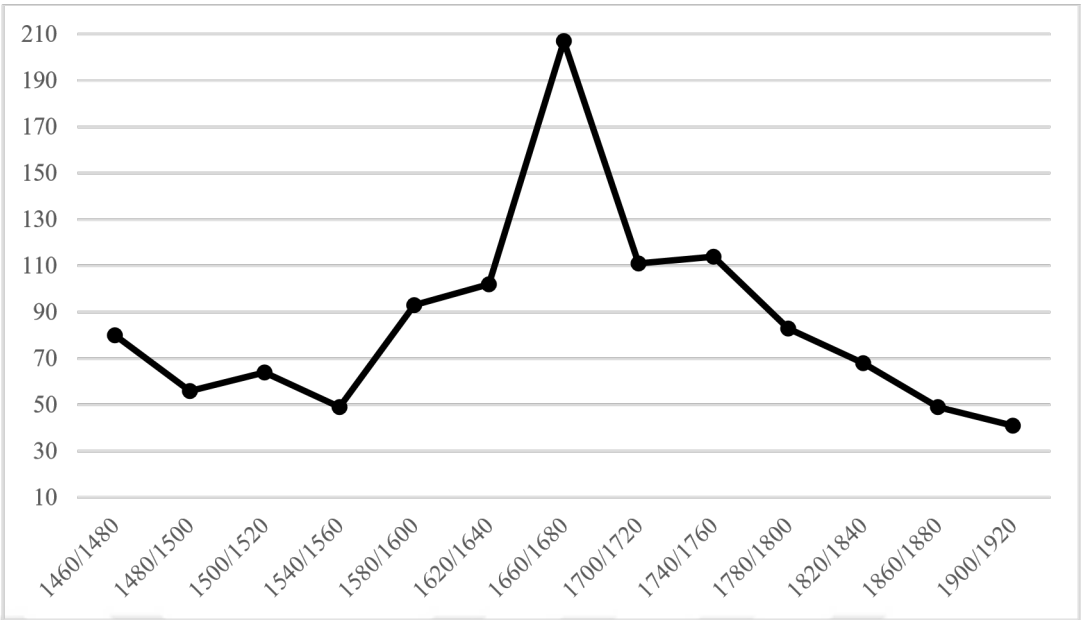
untitled individuals. Furthermore, the distinctions within the titles themselves have been at the center of the discussion. In this sense, there are three main groups: elite religious/judicial-based titles, elite administrative/military-based titles, and untitled individuals of the same groups. In addition to these groups, this study incorporates titles of legators' fathers into the analysis. While these variables generate the focus of the analysis, there is a comparison with similar groups in England. This comparison is based on how wealth is passed on to future generations and the role of the legal structure. The main outcome indicates that the wealthy members of one generation in England were more successful in transferring their wealth to the next generation than those of Kastamonu (Coşgel and Ergene, 2011: 272).

Coşgel and Ergene (2012) also conduct another wealth analysis through inheritance records of Kastamonu town for the eighteenth century. The dataset includes 1.600 inheritance records belonging to Muslim males from 60 different court registers for the period between 1713 and 1802 (Coşgel and Ergene, 2012: 311). Contrary to earlier studies, this study focuses not only on average wealth levels but also on exogenous effects, including weather, war, and tax-farming contracts, that might change the trend of wealth distribution. The genuine results of this analysis indicate that wars and weather conditions had a significant effect on the distribution of wealth while changing institutional structures had no significant effect on Gini coefficients during the eighteenth century. These findings, however, are limited to a certain period in the eighteenth century, and the number of observations is incomplete to obtain more complete results (Coşgel and Ergene, 2012: 328).

Ergene, Atabey Kaygun, and Coşgel (2013) use inheritance records registered in Kastamonu courts in different wealth analyses for the eighteenth century. This study focuses on different socioeconomic groups. The analysis presents a comparison between males and females. There are 2.200 inheritance records subjected to the analysis for the period between 1713 and 1802 (Ergene et. al., 2013: 7). The aggregate values of average wealth levels indicate a declining trend for both males and females between 1713 and 1802 (Ergene et. al., 2013: 9). Furthermore, this study argues that the declining trends in the average wealth of males are more pronounced compared to females. During the same period, the average wealth levels

of the richest top one percent decline by about 5 percent, while this figure is 14 percent for the poorest 25 percent during the eighteenth century (Ergene et. al., 2013: 9). A similar trend is also valid for the figures for females. However, declining rates in average wealth levels are lower than those of males. One particular outcome of this study is that the distribution of wealth was much better than those of males in the long-term perspective. While the Gini coefficient is 0,52 for females, this figure emerges as 0,62 for males between 1713 and 1802 (Ergene et. al., 2013: 11). All in all, the findings indicate that wars, economic crises, and weather incidents had a significant effect on changing average wealth levels as well as the distribution of wealth. Furthermore, one particular outcome shows that the economic crisis had influenced the wealth of rich men more than the poor while droughts affected the average wealth levels of the latter more than the former. Finally, an interesting outcome of this study is that the average wealth of males became better off after wars (Ergene et. al., 2013: 20).

One of the most comprehensive studies based on individual wealth levels belongs to Canbakal and Alpay Filiztekin (2021). The temporal limit of this study covers a very long period from 1460 to 1920. Secondly, and more importantly, the analysis includes seven different towns mostly located in Anatolia contrary to earlier studies focusing on a single city. In this sense, the scope of the analysis is based not only on comparisons among different socioeconomic groups but also on different towns. Selected cities contain Bursa, Kayseri, Manisa, Antep, Trabzon, Manastır, and Diyarbakır, where long-term court records are available due to the data constraints. The analysis is also based on 15.562 court records (Canbakal and Filiztekin, 2021: 97). First of all, the main focus of this study is to discuss methodological problems that emerged in working on inheritance records. Even if there are data limitations, these primary sources are crucial in conducting wealth analysis, particularly for the early modern period.



Source: Canbakal and Filiztekin (2021: 98) These are derived from the aggregate data of seven different towns.

Figure 2. The trend of average wealth levels, 1460-1920 (in akche, thousands)

Secondly, unlike previous studies, except for the studies focusing on Kastamonu, this study presents the average wealth levels in real terms (Canbakal and Filiztekin, 2021: 98). These figures present average wealth levels in seven different towns of the Ottoman Empire. The trend of average wealth levels, however, has a series of fluctuations in the long-term perspective. In the period between the late fifteenth century and the early seventeenth century, average wealth levels remain at the same level, even if there is a decline towards 50 thousand akche from the prices of 1740. In this period, average wealth levels increase up to 110 thousand from 80 thousand akche. During the second half of the seventeenth century, however, the findings indicate that the average wealth of individuals reached its top, which is approximately 210 thousand akche in the price of 1740. The most notable aspect of the trend of average wealth levels is the consistency with the findings of studies based on the inheritance records of Kastamonu town. This study, in this sense, indicates a declining trend in average wealth levels during the eighteenth century (Canbakal and Filiztekin, 2021: 100).

Furthermore, this study gives average wealth levels regarding the socioeconomic status of individuals, including titles, gender, age, residence, and religion (Canbakal and Filiztekin, 2021: 111). In addition, diverse socioeconomic

groups, including the poor and unskilled workers, generate an important part of the analysis. The main goal of the third focus is to test the effects of the average wealth levels of different socioeconomic groups on changing average wealth levels over time. The major findings indicate that holding a title and being a male had significant effects on having higher wealth levels in the Ottoman Empire (Canbakal and Filiztekin, 2021: 112-113).

Following the earlier studies based on Ottoman inheritance records, there is a significant body of literature focused on individual wealth levels in European societies. It is difficult to give the entire literature in this part. The literature given in this part is related to the method employed in this study. Thus, the literature summarized here provides a partial review of studies focused on individual wealth levels and the distribution of wealth in European societies.

Carole Shammes (1978) conducts one of the earliest studies on individual wealth levels by occupational status and age groups in England for the years 1669 and 1670. This analysis includes different towns regarding their sizes. The main contribution of this study, however, is the first introduction of a new and more efficient method for wealth analysis in economic history studies. The first criticism of Shammas (1978: 297) is that the inheritance records are primary sources that reflect individual wealth levels only partially. However, the data limitations, particularly for the early modern period, make these sources important in executing wealth analysis. Furthermore, this study argues that earlier studies based on tax lists provide more incomplete information in estimating individual wealth levels. The main reason is the lack of tax lists for societies during the early modern period. Even if the earlier registers of tax lists go to the period after Glorious Revolution in England, these lists include a series of biases (Shammas, 1978: 297). Thus, by employing inheritance records in wealth analysis that entails lower bias in aggregate wealth levels, economic historians are able to make more accurate estimates of the individual wealth levels through the Lorenz curve and Gini coefficients (Shammas, 1978: 298).

This study employs a wealth analysis through these methods, and it tests the effects of certain factors that determine the level of individual wealth. Two

independent variables generate the main components of the analysis. The first variable is the occupational status of the deceased individual, including title, farmer, craftsman, and worker. The second variable includes the ages of deceased individuals. The age of 26 is the benchmark of these groups. Through these variables and analysis, the findings indicate that holding a title and individuals over 26 years old had a wealth of almost 327 pounds on average, while this figure was only 217 pounds for individuals younger than 26 years old (Shammas, 1978: 301). These average values are for Worcestershire town of England. Furthermore, Shammas (1978: 309) estimates that the Gini coefficient was 0,532 for the region between 1669 and 1670.

Gini coefficient, however, is relatively smaller than it should be for the early modern period. The main reason is that the number of individuals with larger average wealth levels was very small, and groups with modest average wealth levels had higher proportions in the sample. The average wealth levels of the latter groups are very close to each other regarding the information obtained from the dataset (Shammas, 1978: 301).

Jan Luiten Van Zanden (1995) conducts one of the most comprehensive studies on the distribution of wealth in Western European societies during the early modern period. The importance of this study is not only based on Gini coefficients and average wealth levels but also on more extensive comparisons among different cities with distinct characteristics. According to this comparison, Van Zanden (1995: 650) divides the sample into four different regions regarding their economic characteristics and locations: (i) Amsterdam, as a large-size town, (ii) Large Industrial Towns, (iii) Commercial towns, and (iv) Rural Towns. The data used in this study covers the period between the late fifteenth century and the early nineteenth century in the Netherlands. The first part of the analysis focuses on average wealth levels based on wealth segments, including the wealthiest one and percent as well as the lowest 50 percent (Van Zanden, 1995: 645). Secondly, this study presents the trend of Gini coefficients in the long-term perspective, which has approximately an inverted U-shape curve (Van Zanden, 1995: 647).

Following Gini coefficients and average wealth levels of different segments, this study presents a comparison among different towns with diverse economic characteristics for the Florentine province of Italy in 1427. According to these findings, the distribution of wealth is worse in Florence the largest commercial part of the province, with a 0,79 Gini coefficient while relatively smaller towns like Pistoia and Pescia as well as their countryside have better distribution regarding lower Gini coefficients. Like Florence, other relatively larger commercial cities of Europe such as Lyon, Dresden, Leiden, Konstanz, and Norwich have similar Gini coefficients higher than those of rural towns and countryside (Van Zanden, 1995: 645).

This study conducts such comparisons to test a long-standing presumption of Simon Kuznets (1955), in which the trend of the Gini coefficient will be like an inverted U-shape curve as long as economic growth continues. In other words, Gini coefficients or the distribution of income get worse up to a point when industrialization permeates the economy. Once an industrialized economic structure dominates the economic environment, Gini coefficients will decline, and the distribution of wealth get better over time. The reason is that the working population becomes intense in industrial production, and their share begins to decline in agriculture. Closer wages, in this sense, entail better distribution, particularly after the proliferation of the industrial economy (Kuznets, 1955).

To test this hypothesis, this study employs a self-created dataset based on Gini coefficients for different towns with diverse economic characteristics in 1561. This year clearly reflects an economy based on agriculture and commerce in the Netherlands. In this comparison, Amsterdam generates the largest city with not only a number of houses but also its geopolitical position in commerce. Delft and Leiden are considered as industrial cities, while Rotterdam, Alkmaar, Dordrecht and Hoorn are commercial towns of Netherlands. Furthermore, the dataset includes 15 different rural towns. All in all, the findings indicate that the largest town, Amsterdam, had the highest Gini coefficient with 0,57, and these figures continued to decrease from larger to smaller towns in 1561 (Van Zanden, 1995: 651).

A similar comparison, however, emerges for different towns of the Netherlands in 1750. The classification of these towns is mostly based on the number of houses and their average income. For instance, while the town of Kampen consists of 1.252 houses with 265 gulden incomes, a larger city, Twente, has 9.244 houses with 139 gulden incomes. A notable finding based on the theoretical perspective of Kuznets indicates that while Gini coefficients of rural towns and countryside increase during the early industrial period, these figures decline for relatively larger towns during the same period. Therefore, the trend of the Gini coefficient emerges as an inverted U-shape curve with the economic growth process between the sixteenth century to the early nineteenth century (Van Zanden, 1995: 648).

The pattern of wealth distribution emerges mostly from changing wages and shares of the working population in industry and agriculture. Self-created data over wages justify this theoretical argument for the Netherlands. The findings have shown that the working population becomes intense in industrial production as well as in larger cities. More importantly, these changes entail convergence in wages during the nineteenth century. Thus, the distribution of wealth changes in favor of larger cities rather than rural areas. Van Zanden (1995: 655) argues that the transition of labor from agriculture to industry decreases the income gap, and modern economic growth emerged, particularly from the nineteenth century.

Another important wealth analysis based on inheritance records is conducted for Sweden from a long-term perspective by Erik Bengtsson, Anna Missiaia, Mats Olsson, and Patrick Svensson (2018). As earlier studies focused on Europe, this study employs a similar method, including different wealth segments and Gini coefficients. This analysis employs 1.200 inheritance records from 32 rural towns, covering the period between 1750 and 1900. Instead of establishing an analysis based on time series, this study uses benchmark years of 1750, 1800, 1850, and 1900 (Bengtsson, et. al. 2018: 777).

The analysis starts with a comparison among different socioeconomic groups, including nobility, bourgeoisie, farmers, and workers. The share of workers and the low middle class in the sample generates one of the largest groups with peasants

and farmers. Furthermore, there is a classification regarding ages of deceased individuals starting from 20 and continuing with 10 years intervals up to 70. In terms of ages, the share of individuals between 20 and 59 years old generates the largest groups in the dataset. The share of individuals older than 60 years old, however, appears to be more pronounced only in 1800. Through this self-created data, this study conducts its wealth analysis (Bengtsson, et. al. 2018: 779). The key variables are the wealthiest one and 10 percent as well as Gini coefficients.

Table 9. The distribution of wealth in Sweden

	1750 (%)	1800 (%)	1850 (%)	1900 (%)
Top 1 %	43,00	39,70	41,50	57,60
Top 10 %	68,70	73,60	78,90	86,20
Gini	0,79	0,84	0,87	0,91

Source: Bengtsson, et. al. (2018: 780)

The data presented in Table 9 indicates an increasing trend in the distribution of wealth, spanning from 1750 to 1900. Even if the share of the wealthiest one percent in aggregate wealth remains at almost the same levels, this figure increases up to 58 percent in the last benchmark year. The share of the wealthiest 10 percent, however, has an increasing trend in the long-term perspective. This study evaluates these figures with reference to a Kuznets-style process through the changing shares of agriculture, industry, and service in GDP (Table 10).

Table 10. Sectoral shares and Gini coefficients

	1750	1800	1850	1900
Gini	0,79	0,84	0,87	0,91
Agriculture (%)	50	44	43	28
Industry (%)	12	12	14	31
Service (%)	38	44	43	41

Source: Bengtsson, et. al. (2018: 781)

The data given in Table 10 shows the trend of shares of different sectors in GDP. This information allows for testing Kuznets's approach to the relationship between changing shifts among sectors and the distribution of wealth during the industrialization period. These figures indicate a declining trend in agriculture, and more importantly, an increasing pattern in the shares of the industry until the early twentieth century. Through this dataset, this study discusses that Sweden's economy achieved modern economic growth only from the beginning of the twentieth century. The transition of the economy from agriculture to industry entails increasing Gini coefficients up to the peak, and these figures decline only after industry started to dominate the economic structure. In other words, the dataset shows only the left phase of the inverted U-shaped curve for Sweden during the period between 1750 and 1900 (Bengtsson et. al., 2018: 781). The findings over average wealth levels by different socioeconomic groups show similar outcomes as earlier studies. The highest average wealth levels belong to individuals, who are members of the nobility and bourgeoisie, the figures of workers, peasants, and farmers follow the levels of elites in Sweden between 1750 and 1900 (Bengtsson et. al., 2018: 785).

Finally, Guido Alfani, Matteo Di Tullio, and Mattia Fochesato (2020) conduct a wealth analysis through aggregate assets registered in inheritance records for the Republic of Venice, spanning from 1400 to 1800. This study is based on a comparison among different towns located in the Republic of Venice. Contrary to earlier studies, including both European and Ottoman literature, the main purpose of this study is to examine the effects of endogenous variables on the distribution of wealth. Gini coefficients generate the dependent variable, while independent variables consist of urbanization, population density, per capita tax revenues, geographical location of towns (including altitude, weather, and flora), distance from the capital as well as availability for wheat production. Furthermore, the analysis includes another formalization in examining the effects of these variables on the average wealth of the wealthiest 10 percent. All in all, the findings indicate that the distribution of wealth was better for towns close to the capital (Alfani, et. al., 2020: 20).

1.2. Ottoman Economy in a Long-term Perspective: Tax-Collecting Institutions, State Finance, and Growth

Like other European societies, the Ottoman economy was based on agriculture and commerce, particularly from the middle of the fifteenth century. While the agricultural production was dependent on a tenure system compatible with the traditional structure of the Ottoman Empire, the geopolitical position allowed the central authority to capture the gains from trade around the Mediterranean Sea and trade routes. More importantly, the institutional structure surrounding the tenure system entailed a rapid territorial expansion in favor of the Ottoman Empire. Thus, the central authority had the chance to increase its revenues and enjoy a budget surplus, particularly until the late sixteenth century. From the sixteenth century, the Ottoman economy faced fluctuations due to the exogenous, wars, and endogenous shocks, including changes in the tenure system, dry, state finance, inflation, and devaluations, that influenced individual wealth levels as well as the distribution of wealth. Although the data limitations make it difficult to examine these periods through economic indicators like GDP and per capita GDP, this part summarizes the Ottoman economy in alternative ways, including institutional change in tax-collecting institutions, wages, prices, and partially established per capita GDP levels.

The Ottoman economy was characterized by a highly centralized structure from the first decades of its emergence. In the first decades, the Ottomans were a *beylik* within a small piece of land. The political structure comprised of the central authority (Beg, the leader in general) and its elites, who held not only political privileges but also economic rights. The central authority had the chance to monitor elites in personal relations due to the nature of small lands. Each elite owned his military force to control territories and participate in campaigns which were called *gaza*. These elites started to expand territories on behalf of the central authority. Territorial expansion entailed changes in economic structure from simpler to more complex institutional and organizational forms. Increasing territories caused increases in the costs of sustaining economic and political order for the central authority. While the central authority and the limited number of elites achieved control of small territories, the growth rate of expansion exceeded the growth rate of the numbers of elites in time. The Ottomans developed a merit system in order

to allocate newly conquered territories toward a new group of elites, who were assigned regarding their achievements during campaigns. The elites were responsible for not only maintaining political order but also tax collecting and production. The revenues of the central authority depended on spoils of wars, tributes from periphery societies, and taxes. This economic structure remained similar with small changes in items of the budget until the end of the sixteenth century. The budget started to enjoy gains from trade particularly from the conquest of Istanbul in the middle of the fifteenth century. This achievement also changed the state formation from a *beylik* to an Empire, which would control the whole Mediterranean and trade routes during the sixteenth century (İnalcık, 2001).

Table 11. Europeans' estimates on Ottoman state revenues and expenditure, 1433-1561

Years	Revenues (in Dukat)	Revenues (in Akche)	Expenditure (in Dukat)	Expenditure (in Akche)
1433	2.500.000	90.000.000		
1461	4.000.000	172.000.000		
1476	1.810.000	81.450.000		
1496	3.300.000	174.900.000		
1503	5.000.000	270.000.000		
1510	3.600.000	198.000.000		

1512 – 20	3.130.000	172.150.000			
1522	3.000.000	168.000.000			
1524	4.500.000	256.500.000		3.000.000	171.000.000
1526	4.500.000	256.500.000			
1527	7.000.000	399.000.000			
1530	6.000.000	342.000.000		4.000.000	228.000.000
1534	5.000.000	290.000.000			
1557	4.600.000	276.000.000			
1560	4.000.000	240.000.000			
1561	4.330.396	259.823.760	4.131.639	247.898.340	

Source: Özvar (2006: 200)

The data presented in Table 11 provide information on state finance, spanning from 1433 to 1561 of the Ottoman Empire. These figures consist of estimates by European reporters, particularly from Venice. Erol Özvar (2006: 201) argues that these revenues should be considered as revenues of central treasure rather than aggregate revenues of the Ottoman Empire. In other words, the revenues must be higher than those of the presented estimates in Table 11. From the long-term perspective, these estimates indicate a growing pattern in revenues for the 100-year course. The state revenues appear to be more pronounced, particularly from the late fifteenth century. This increasing trend with reference to İnalcık (2001)'s approach should be related to the changing structure of the Ottomans from a beylik to an empire.

The period until the end of the late sixteenth century was highly centralized in terms of both economic and political structures. Mehmed the Conqueror quelled the continuance of the riot that emerged from the conflict of interest between the central authority and elites. The internal conflict ended on behalf of the Sultan, who imposed centralized institutions following the civil war (Karaman, 2009: 691). The elites, which consisted of members of military organizations, acted as officials of the central authority in state offices. This was the basis of the traditional timar institution of the Ottoman Empire until the last decades of the sixteenth century. The timar system was the basis of agricultural production and therefore the economy (Tabakoğlu, 2008: 219). Once a military elite held a timar right, this elite was responsible for collecting taxes from reaya (taxpayers), keeping the tax base

stable by protecting the çifthane system, maintaining tax source, and providing security on territories (Genç, 2000: 95-96). The çifthane system organized agricultural production that allowed farmers to cultivate a piece of land ranging from 60 to 150 acres (İnalcık, 1997: 147). These allocated financial resources had diverse economic scales regarding the rate of returns. There were three distinct forms: timar, zeamet, has. While has generated the largest economic privileges in terms of gains, zeamet and timar followed has lower economic returns (Darling, 1996: 25). In other words, the economic characteristics of these privileges had a role in accumulating wealth for titled individuals.

This institution was an essential tool for the rapid expansion of the same period. The Sultan allocated new taxable lands toward military-based elites, who were availed in military campaigns. The rapid expansion, therefore, was the main outcome of the traditional institution. The institutional structure is comprised of several mechanisms that created incentives for productive and efficient outcomes. Due to the lack of data limited to measure how the Ottoman economy was prospering in this period. The only variable could be the territorial expansion, which boomed from the beginning of the sixteenth century to the last decades of the seventeenth century. The military achievement was not only based on the ability of military organization but also on economic and political structures under the timar system. Contrary to European societies, the central authority established a centralized structure by employing military-based elites and multilateral monitoring mechanisms. These agents were mostly the members of a military organization or administrative body of the state instead of hereditary families and elites as in Western Europe. In other words, the traditional timar institution emerged without including provincial notables or wealthier groups. The economic privileges were limited by tax collection from allocated lands under contracts. As mentioned above, each elite obtained these privileges and their territories in exchange for tax collecting, training soldiers, providing security, and monitoring producers. The tax revenues were mostly in kind, which directed agents to realize market exchanges in order to convert revenues in kind to cash before transferring to the central authority. Elites' effort decreased the transaction costs on behalf of the state finance, which received revenues as profit. These groups also provided public goods by securing

territories for society and producers, and training soldiers for the army under the timar system. The Ottoman Empire gave importance to the production of strategic goods for campaigns. However, strategic goods could entail lower revenues for producers, and this created incentives to produce commodities with higher added values. In this sense, the elites were responsible for monitoring producers in order to sustain the production of strategic goods for the army. The supply of strategic goods was one of the most important driving forces of territorial expansion (İnalcık, 1997; Tabakoğlu, 2008).

The elites maintained economic and political order in their territories, on the one hand, and the central authority developed different mechanisms in order to achieve cooperative outcomes within the contractual relations on the other hand. Multilateral mechanisms had two main dimensions: the self-enforcing side and the third-party governance side. The mainstream Ottoman literature argued that the self-enforcing mechanism was related to punishment that deprived the future expected benefits of elites by restraining them from economic privileges under the timar system. Self-enforcing also included a reward mechanism that promoted agents to expand their territories and economic privileges within the contracts. Each agent had always an opportunity to increase the economic capacity of contracts as long as they were beneficial during campaigns. Thus, the Ottoman Empire achieved higher payoffs by promoting cooperative gains instead of one-shot gains (Altay 2021; Altay and Oğuz, 2021).

Nevertheless, the central authority developed monitoring mechanisms by imposing third-party governance. As it was mentioned above, the elites were mostly military officials rather than private economic groups as in European societies, who behaved as entrepreneurs to maximize economic gains or religious elites. Military elites comprised of economic actors who were assigned by the central authority regarding merit system related to military achievements. In other words, militarybased elites were employees of the central authority which allowed them to crop shares from tax revenues in return for producing public goods and maintaining economic and political orders on behalf of the state. Employing military-based elites entailed lower costs in monitoring agents and their tax registers in order to collect information about the economic capacity of territories subjected to timar

privileges. Each elite had to participate in campaigns with newly trained soldiers and commodities that were useful within the military organization. More importantly, elites appeared in person with the registers on production and tax revenues that provided direct monitoring for the central authority. In the absence of elites during campaigns, the central authority imposed a penalty fine if this happened one time. Besides, the central authority developed further monitoring mechanisms in order to increase the costs of opportunistic behavior of privileged groups. In other words, the central authority aimed to sustain its future expected benefits from each contract by employing state officials from the center in order to collect other taxes. These state officials were tax collectors and judges, who had the right to monitor the economic activities of agents under the timar system. Tax collectors were responsible for collecting other taxes, and this process provided the chance to investigate the actions of elites, who held timar rights. Second, the central authority assigned kadis (the highest judges) as the highest political player in territories in order to assure law enforcement. These judges were the highest authorized group within the legal organization in the territories. The main purpose of this group was to impose political power on the central authority and to monitor the economic activities of military-based elites or other privileged groups. These judges kept court records at frequent intervals in order to inform the central authority on political and economic issues. While the central authority employed judges for these purposes, there was a merit system that entailed reassignment to different territories with 3 years periods. By doing this way, the central authority confronted the emergence of cooperation between judges and elites. In sum, the Ottoman Empire developed an institutional environment that achieved rapid territorial expansion and tax collection in order to provide financial resources for state finance until the last decades of the sixteenth century (Barkan, 1980).

Table 12. The Ottoman economy in global perspective, 1500-1913

	Absolute Values					
	1500	**1600**	**1700**	**1820**	**1870**	**1913**
Population	6,3	7,9	8,4	10	11,7	15
GDP (millions)	3.780	4.740	5.040	6.478	9.729	18.195

Per Capita GDP	600	600	600	643	825	1.213
Relative Values (World = 100)						
Population	1,44	1,42	1,40	0,98	0,92	0,84
GDP (millions)	1,52	1,43	1,36	0,93	0,88	0,67
Per Capita GDP	106	101	97,5	96,5	95	80
Relative Values (Western Europe = 100)						
Per Capita GDP	78	68	60	54	31	35
Relative Values (East Asia = 100)						
Per Capita GDP	108	108	104	106	139	139
Relative Values (West Asia = 100)						
Per Capita GDP	104	104	104	109	115	121

Source: Maddison (2001; 2003). East Asia consists of Japan, China, India and Indonesia. West Asia includes Iraq and Iran. Absolute values reflect per capita GDP levels in 1990 US Dollars.

As it can be seen in Table 12, the Ottoman Empire achieved higher economic performance in both East and West Asia countries from the beginning of the sixteenth century to the eve of the First World War. In fact, the Ottoman economy diverged from Asia, particularly during the nineteenth century. Although per capita GDP levels of the Ottoman Empire seem to be close to those of the World, there is a divergence between Western Europe and the Ottoman Empire since the eighteenth century. It is seen that the Ottoman Empire achieved a sustainable economic performance in terms of per capita GDP when these values were compared with the average of the World and Asian Empires. Table 1 also presents that the Ottoman Empire remained higher than the World in terms of per capita GDP until the end of the seventeenth century. The per capita GDP estimates for earlier periods before the nineteenth century, however, present relatively lower values than the recent literature on the economic performance of the Ottoman Empire. One particular research should be sufficient to show that the Ottoman Empire achieved more pronounced economic growth between the early sixteenth century and the nineteenth century. Mehmet Bulut and Bora Altay (2022: 115) indicate that per capita GDP levels increased from 600 to 709 US Dollars with the prices of 1990 from the beginning of the sixteenth century to the early nineteenth century. Although these figures still show modest economic growth for the sixteenth century,

the Ottoman Empire has a better performance compared to the Middle Eastern and Asiatic Empires (Table 12). These figures, however, are incomplete to make a comparison among different societies due to the data limitations in estimating per capita GDP levels for the early modern period.

The Ottoman Empire became one of the most important economic and political powers until the end of the sixteenth century (Kennedy, 1988: 9-10; Tilly, 1990: 24; Hoffman, 2015: 14). The centralized economic and political structures promoted rapid territorial expansion and financial resources. However, the expansion started to slow down during the seventeenth century. The growth rate of military agents exceeded the growth rate of territorial expansion during this period. The institutional structure promoted being military-based elites instead of other economic activities. In other words, the rules of the game created incentives for individuals to become a member of military corps that provided higher economic gains under the traditional timar institution. In this sense, the demand for contracts was higher than the supply of contracts, and hence, a shortage emerged within the economic structure. The shortage directed military agents toward opportunistic behaviors due to the demise of the merit system. Even if a military-based elite provided higher achievements during campaigns, this agent could fail to obtain economic privileges, or obtain small-scale economic rights than expected in terms of economic gains. Once an allocation problem emerged, unemployed agents started to transfer their resources toward powerful groups that were high-ranking bureaucrats with the central authority. By doing this way, the elites could maintain their privileges or obtain new rights by transferring economic resources toward rent-seeking activities. Thus, opportunism became the dominant strategy for elites as well as high-ranking bureaucrats, who started to gain economic rents by manipulating the allocation of contracts toward agents (Altay and Oğuz, 2021: 44).

Increasing opportunistic behavior also entailed losses in financial resources for the elites. The larger territories started to be costly due to the long-distance campaigns for these military-based groups. This caused losses in financial resources for not only elites but also state finance. Changing military technology also started to be costly due to its nature in absorbing financial resources during long-distance campaigns. Finally, agents' gains from spoils of wars were at low levels than those of earlier periods such

as the fifteenth and the sixteenth centuries. Long-distance campaigns and longer terms on battlefields provided lower shares due to the conquest of smaller territories and increasing costs. In other words, each militarybased elite gained smaller shares from the spoils of wars, which were lower than the total expenditures of participating campaigns. Therefore, the Ottoman Empire faced economic and military problems due to the lower participation of agents in campaigns. More importantly, the punishment mechanism started to be inefficient because of the collective action of military agents in avoiding participation in campaigns. The state faced difficulties in replacing military elites with a new group of elites because of lower gains from contracts. Furthermore, exogenous shocks such as capital inflow from the New World, the discovery of new trade routes, and changes in military technology forced the Ottoman Empire to develop a new mechanism in the tax-collecting process (Tezcan, 2010).

As given above, the demise of the timar system forced the Ottoman Empire to develop "new" mechanisms in tax-collecting practices. The "new" practice emerged from changing mechanisms of the former system by adhering to the traditional structure of the Ottoman society. The flexibility also promoted changes in current relations between the central authority and its elites. The central authority recognized the importance of a stable army because of changing military technology, on the one hand, it had to maintain tax collection in order to bear the costs of new economic and political structures on the other hand. The Ottoman Empire experienced contractual relations in both positive and negative ways. Thus, the central authority imposed some sort of reforms in allocating economic privileges. However, property rights continued to be inviolable where state ownership was the dominant rule within the economic and political structures. The central authority carried out an auction mechanism for the allocation of contracts instead of the merit system. By doing this way, the central authority eliminated the shortage problem by creating a new market for other groups in order to increase density in allocating rights. The auction mechanism directed elites from military purposes to economic ones over time. The auction mechanism introduced that whoever offered the higher prices obtained the economic and political privileges without participating in campaigns. In other words, the structure of agents started

to change and promoted the emergence of a new group of elites or changes in the perception of agents in the long term. The auction also increased competition in obtaining contracts while the merit system failed under the new institutional structure. More importantly, the monitoring mechanism faced changes and deterioration problems due to the changing perceptions of agents with the new rules of the game (Çizakça, 1993; 1996; Darling, 1996; Genç, 2000).

The new institution was called iltizam (tax-farming) in the Ottoman Empire. The mainstream Ottoman literature argued that the agents comprised of the same individuals who were former military-based elites of the traditional timar system. The Ottoman Empire faced problems in terms of budget revenues and per capita tax revenues from the beginning of the seventeenth century compared to the sixteenth century, when the transition from an in-kind-based economy to a monetary-based economy dominated the economic environment (Tabakoğlu, 2008: 228). The taxfarming mechanism, by definition, meant the allocation of economic rights in exchange for cash payments in advance towards rentiers (private entrepreneurs) in order to increase state revenues in cash. From the emergence of this mechanism, military-based elites changed to a new group of elites called mültezim under the tax-farming system (Genç, 2000: 102).

This economic outcome presented the importance of endogenous factors within the Ottoman economy. As it was mentioned above, the shortage directed military-based elites toward opportunistic behavior in obtaining contracts by establishing tacit collusions with high-ranking bureaucrats in the central authority. The deterioration caused increases in numbers of unemployed elite groups, who deserved contracts under the timar system. The group of unemployed elites revolted by receiving support from rival high-ranking bureaucrats within the central authority. The mainstream Ottoman literature presented that the violence caused decreases in production or even stagnations in many parts of Anatolia (Barkey, 2008: 175-178). Thus, the Ottoman Empire faced losses in tax revenues that forced it to change tax-collecting mechanisms from the last decades of the sixteenth century.

The central authority decided to collect economic privileges under the timar system in order to transfer these rights to the new group of elites. The auction

mechanism was for the reallocation of contracts for limited periods from one to 12 years in the beginning (Çizakça, 1993: 233-250; Salzman, 1993: 339; Darling, 1996: 135; Pamuk, 2004a: 240; Pamuk, 2004c: 16; Karaman and Pamuk, 2010: 601). The military-based elites obtained contracts regarding their incumbencies in the army whereas the tax-farming privileges had shorter periods. This change entailed changes in strategies that promoted economic problems under short-term contracts. The mültezims would behave differently when shorter terms were imposed within the contractual relations. Secondly, the mültezims would be shirking military responsibility due to the limited terms. The auction mechanism directed these new groups to offer the highest prices for tax-farming rights, and hence, it was expected that higher prices increased state revenues during the seventeenth century. On the contrary, the central authority gained lower revenues according to the earlier periods. This was because of short-term contracts and shirking from military duties that entailed deeper changes in the perception of elites. The higher prices caused higher transfers of financial resources that directed mültezims toward new ways of creating gains under the tax-farming system (Altay and Oğuz, 2022).

Table 13. Per capita tax revenues in a comparative perspective, 1500-1913 (in grams of silver)

Years	England	France	Spain	Ottomans
1500	73	95	171	100
1550	119	145	255	104
1600	203	242	834	63
1650	516	754	763	89

1700	1.226	580	381	113
1750	1.455	650	616	95
1820	8.791	4.422	2.169	695
1870	3.634	4.671	2.724	987
1913	6.035	6.679	2.840	1.301

Source: These data were mostly derived from Karaman and Pamuk (2013) and from Brandt et. al. (2014), Ma and Rubin (2019), and Altay and Oğuz (2021). The comparison is based on an index in which 1500 is equal to 100 for Ottomans.

Table 13 presents the estimates over per capita tax revenues in a comparative perspective from the early sixteenth century to the First World War. The period covered the sixteenth century represents per capita tax revenues of the Ottoman Empire under the timar system. As discussed above, the tax-collecting practices and several institutional mechanisms provide sufficient tax revenues for the empire compared to certain European societies. These figures decline from the beginning of the seventeenth century when the tax-farming practices dominated the tax collecting practices. These estimates indicate that the transition from military-based elites to mültezims caused lower levels of per capita tax revenues than expected under the new system. The recent literature has argued that these declines mostly emerged from the short-term durations in contracts as well as the capital-absorbing nature of auction mechanisms. Furthermore, it can be argued that mültezims started to crop higher shares from tax revenues due to the maximize their interests and short-term gains. One rough estimate has indicated that the central authority could only receive 24 percent of aggregate tax revenues due to the proposed problems during the late eighteenth century (Çizakça, 1996: 166).

In this sense, mültezims started to force producers and taxpayers to pay their taxes at higher rates than determined by the central authority. By doing this way, mültezims aimed to extract higher revenues than their committed payments to the central authority under the auction mechanisms. Secondly, mültezims also forced producers to change their cultivation from strategic goods to commercial commodities. This would provide higher economic returns. The central authority determined tax rates regarding its rules for each territory or commodity. However, the 10 percent rate created diverse values according to the type of products. A mültezim would gain diverse economic returns when 10 percent was imposed on

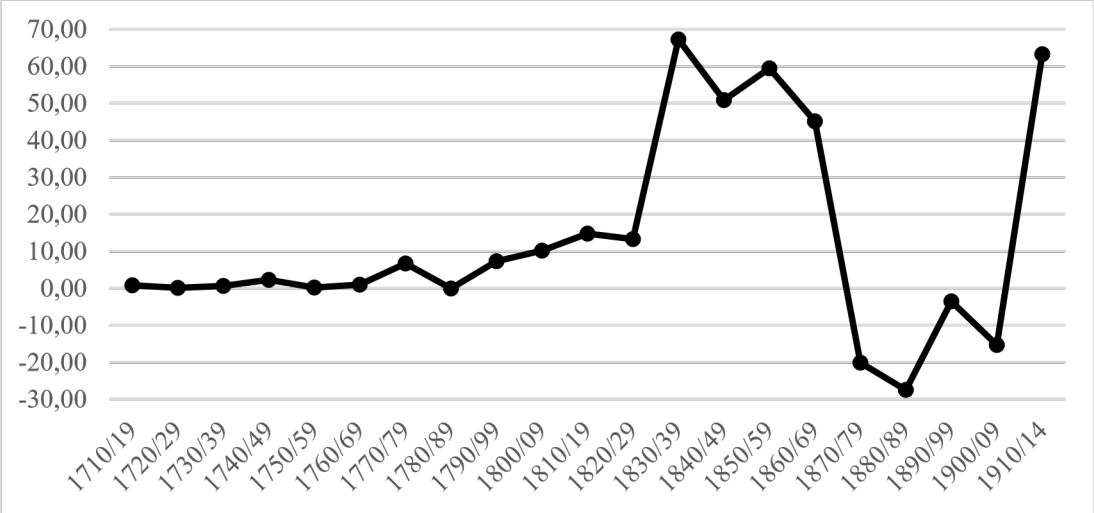
wheat and cotton. In other words, 10 percent of wheat would provide lower gains rather than cotton production at the same unit. In short, the mültezims started to direct producers to produce commodities with high added values under the taxfarming contracts. The agents developed mechanisms to increase their political power for higher economic gains. These practices also deteriorated the multilateral monitoring mechanism of the timar system when these new groups started to transfer financial resources toward high-ranking bureaucrats, elites, and *sarrafs* (money lenders), who had power over the central authority (Pamuk, 2009: 23). In other words, earlier economic gains were useful to enhance political privileges instead of profit-seeking activities. This progress caused emerge a decentralized institutional structure to change economic relations and monitoring mechanisms in the Ottoman economy (Altay and Oğuz, 2021: 7).

To minimize the problems of tax collecting under the tax-farming system, the Ottoman Empire developed a new mechanism called *malikane* to increase its revenues during the eighteenth century. Although the auction mechanism remained within the new system, the central authority imposed longer durations in allocating economic privileges towards mültezims. The central authority recognized the problems caused by frequently changing mültezims and allows mültezims to keep their privileges with lifetime yields (Genç, 2000: 105). In addition to long-term durations, the central authority developed a new payment called *muaccele*, which had to be paid in advance and 10-12 times higher than annual payments. In this sense, a mültezim who offered the higher price (muaccele plus annual payments) had the right of tax collection on financial resources (Genç, 2000: 108). The highest bidder won-rule, however, remained under the lifetime tax-farming system. Thanks to the coercive power, the state maintained its monopoly power in allocating economic privileges towards mültezims, and this rule entailed commitment problems in tax collecting systems. In other words, the difference between the intended and actual durations in allocated economic privileges determined the level of decentralization, which was also crucial in the distribution of wealth in the Ottoman Empire. These rates had an increasing trend from the beginning of the sixteenth century to the nineteenth century (Altay and Oğuz, 2021: 80).

The period of decentralization started in the last decades of the sixteenth century and ended in the first decades of the nineteenth century. This period was decentralized because not only changed the perception of agents but also changed rules in tax collecting practices and monitoring mechanisms. The tax collecting rights provided financial resources without any additional costs except the prices offered during auctions. In other words, the mültezims were exempt from additional costs of participating in long-distance campaigns. The central authority transferred economic gains of participating campaigns within the timar system by imposing an auction mechanism which supposed to provide higher tax revenues because of the competitive structure in auctions. In this sense, the structure of elites moved towards economic groups who preferred to behave for their own interests rather than producing public goods. The main purpose of mültezims was to extract higher revenues as possible they could then commit prices during auctions. More importantly, short-term durations entailed increasing rent-seeking activities. The first strategy of agents was to sustain economic privileges under their controls for longer terms. To this goal, the mültezims directed their financial resources to establish cooperation with high-ranking bureaucrats and wealthier groups. By doing this way, these groups could enhance their political power in addition to economic privileges. This process created two main outcomes: increasing wealth for highranking bureaucrats and wealthier groups, and deterioration in competitive structure. Increasing wealth directed these groups to establish partnerships with locally powerful groups in different regions of the Ottoman Empire. This group started to obtain tax collecting privileges as primary beneficiaries with their increasing financial resources from different parts of the Ottoman Empire. This group started to employ provincial notables as the secondary beneficiaries in order to organize tax collecting practices from different provinces. More importantly, increased economic and political powers entailed changes in multilateral monitoring mechanisms of the timar system. The most determinant factor was the power of assigning kin, relatives, or partners into the state offices, which comprised monitoring mechanisms of the central authority. This partnership provided longerterm privileges for mültezims and their partners by excluding unemployed agents from auctions thanks to the increasing political power. Thus, the central authority failed to capture gains from competition in auctions. Besides, high-

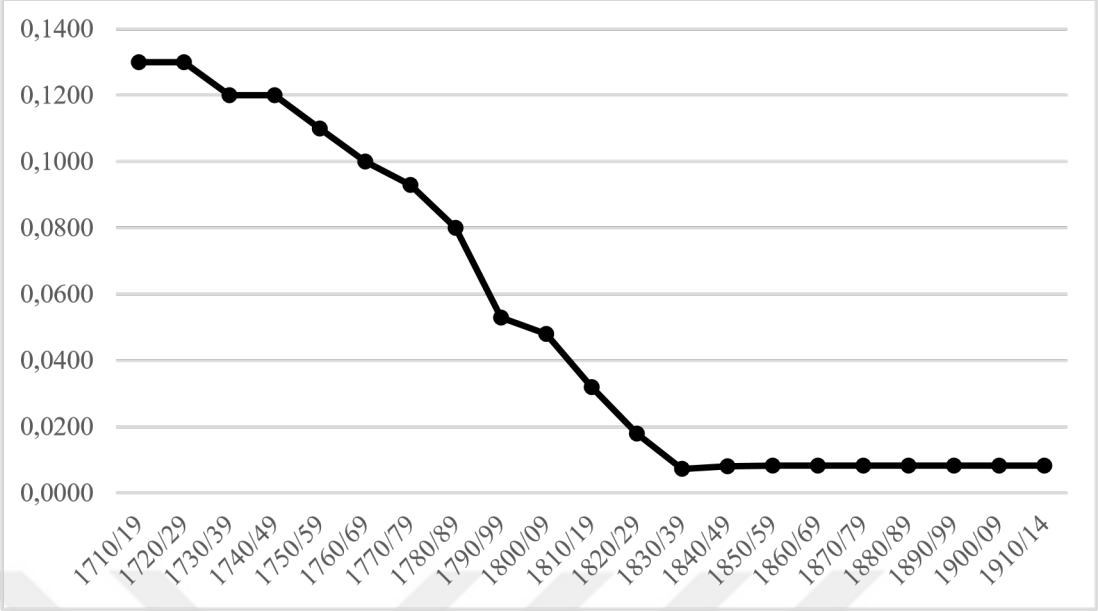
ranking partners became sharecroppers in exchange for providing political power for the agents. One rough estimate indicated that the number of mültezims ranged from 1.000 to 2.000 while their locally powerful partners ranged from 5.000 to 10.000 during the eighteenth century (Pamuk, 2004a: 241).

Following the changing balances within tax collecting systems, the organizational transformation emerged from inflation and devaluations in the last decades of the sixteenth century. Long-distance campaigns, silver-gold inflow from the New World, and increasing demand caused increases in prices. Furthermore, imposed devaluations by the central authority to create revenues in order to pay the salaries of troops entailed inflation during the same period. These practices, however, became commonly used in economic policies until the middle of the nineteenth century. Intense wars and uprisings within the borders deepened these problems. Thus, revenues of the central authority failed to move along with inflation and expenditures increased faster than inflation during this period. Due to the wars, conflicts, and drought, the population declined and stagnation in economic activities became pronounced, particularly during the seventeenth century (Pamuk, 1997: 353-354).



Source: These figures are derived from Pamuk (2004b: 455)

Figure 3. The trend of consumer price index, 1710-1913



Source: These figures are derived from Pamuk (2004b: 455)

Figure 4. The trend of silver content of akche (in grams)

Figure 3 and 4 presents the trends of consumer prices and silver content of akche in the long-term perspective. These figures are spanning from 1710 and 1914 because of the periodization of this thesis. As mentioned above, while price levels increase over time, devaluation entails the decreases in the silver content of akche. The negative relationship among these variables is the expected result of the economic policies of the Ottoman Empire. Instead of discussing the changes period by period, these variables generate crucial determinants of individual wealth levels and the distribution of wealth in the Ottoman Empire. Changes in prices should also affect the perception of mültezims on the way of increasing decentralization during the same period. More importantly, these economic factors should entail the emergence of new mechanisms in the tax collecting mechanism. For these reasons, this thesis also employed such economic variables from reliable secondary sources that provided information from a long-term perspective (Pamuk, 2004b).

1.3 An Assessment of the Historical Background

From the second half of the twentieth century, there is growing literature on individual wealth and its distribution in the Ottoman Empire. In this literature, the economic historians consult inheritance records of individuals registered in

Ottoman courts. The earliest studies employ more simple methods that are based on wealth segments and their changes over time. Furthermore, there are some classifications that depended on the socioeconomic status of individuals in examining wealth levels. The subsequent research that emerged from the first decades of the twenty-first century develop more comprehensive methods for estimating individual wealth levels. These methods include comparisons among different wealth segments, including top one, 10, 20, and 25 percent as well as lower-level groups. Their trends are subjected to a long-term perspective in examining the changing levels over time. In addition to these practices, Gini coefficients become pronounced in estimating the distribution of wealth over time. The effects of exogenous shocks such as wars, conflicts, and drought as well as endogenous shocks such as institutional change are discussed through newly established datasets based on inheritance records.

This literature, however, mostly focuses on the inheritance records of a single city or town for a limited period, particularly for the seventeenth and the eighteenth century. It is difficult to generalize the trend of individual wealth levels and the distribution of wealth through the findings of a single city. For instance, the dataset of large-scale towns, such as Bursa and İstanbul, will indicate higher individual wealth levels compared to medium-size or small-size towns such as Kastamonu. On the other hand, the distribution of wealth will be better in relatively small towns because of the concentration of the working population in agricultural production compared to larger towns. For these reasons, the research based on a single town provides incomplete findings on these issues in the Ottoman Empire.

One particular research establishes a long-term analysis of individual wealth levels without discussing the distribution of wealth for seven different towns of the Ottoman Empire (Canbakal and Filiztekin, 2021). While this study constructs a more complete dataset over individual wealth levels by different socioeconomic groups, the cities included in this study consist of relatively commercial towns. One can expect that the average wealth levels will reflect higher values than they should be due to the incorporation of relatively large towns into the analysis. However, this research provides important background for this thesis to develop a new dataset and

more complete analysis of the individual wealth and its distribution for the Ottoman Empire from a long-term perspective.

Furthermore, the economic history of the Ottoman Empire based on tax collecting mechanisms, wars, conflicts, weather, and price levels allows for establishing an analysis of their effects on the distribution of wealth. The historical background discusses that there was an increasing trend in decentralization, wars, conflicts, prices, and devaluation over time. These findings are directly related to the subject of this thesis, in which increasing decentralization should have a positive effect on individual wealth levels of elites and should have a negative effect on the distribution of wealth in the Ottoman Empire. Through the historical background, this study constructs its structure to test the relationship between changing economic variables and the distribution of wealth. The main aim is to make a new contribution to ongoing discussions over the changing individual wealth levels in the Ottoman Empire and to fulfill the deficiencies of the recent literature by employing self-created data through inheritance records of the Ottoman Empire.

2. DESCRIPTIVE ANALYSIS: SOURCE, DATA AND METHODOLOGY

This study constructs a new dataset based on primary and reliable secondary sources to test the main questions given in this chapter. The first part defines the main sources of the analysis. The main features of inheritance records, the Sharia courts, and *Kadis* (the highest judges) generate the primary focus of this part. Following this information, the second part also provides descriptive statistics through a newly established dataset. The dataset that is generated from reliable secondary sources also gives distinct variables, including state budgets, price levels, the silver content of Ottoman currency (akche), decentralization based on actual and intended durations of tax collecting rights, wars, and weather. Furthermore, this part discusses the effects of commonly encountered data limitations on the new dataset. The third part of this chapter defines the main hypothesis and problems of this thesis on individual wealth levels and the distribution of wealth. To achieve these goals, the following part focuses on Gini coefficients and Lorenz curves in the long-term perspective. These figures focus not only on the aggregate data but also on individual socioeconomic groups from a comparative perspective. Finally, the fifth part provides an assessment of the descriptive statistics based on inheritance records.

2.1. Source

This study uses the microfilms of *Ottoman Sharia court* records stored in the archives of the *Center for Islamic Studies* (ISAM), in Istanbul. This archive includes a substantial proportion of Ottoman Sharia court records from the late fifteenth century to the early twentieth century. This thesis utilizes the entire collection of these records. However, not every court register contains inheritance records. Furthermore, there are lapses in these specific sources. While there are court records belonging to a certain year of a town, there are no records of the same city for the following years or even decades. This problem is smaller for the larger towns compared to small-size or medium-size towns of the Ottoman Empire. Thus, this study consisted of court records that allow for establishing a long-term dataset instead of employing a comparison among different towns. As discussed below,

comparisons based on different towns mostly consist of larger towns, and the figures of these relatively developed cities entail deficiencies in examining the individual wealth levels and their distribution for the Ottoman Empire. Considering that the majority of the population accumulates in the countryside, the wealth levels of larger towns will cause a significant deviation in findings. As given below, this thesis also employs Ottoman Sharia court records, which include inheritance records, from rural towns and the countryside to minimize deviations in average individual wealth levels as well as the distribution of wealth. Before getting detailed information over the dataset, it is important to define the questions of what these courts meant and who operated these legal organizations in the Ottoman Empire?

Ottoman Sharia court records or Kadi *sicils* (registers) generate one of the most important sources in examining the social, cultural, traditional, legal, political, and economic history of the Ottoman Empire. Most of these sources provide information about cities, where they were recorded in the first place. In some cases, based in larger cities, these court registers are organized as detached records to provide specific information on diverse *hüccec* (legal documents), including *ferman* (edict), *narh* (price lists), *ihtisab* (Islamic-Ottoman office for public regularity), waqf documents, *tereke* (inheritance record). For smaller towns, court records include all these legal documents in one register (Özdeğer, 1988: 1).

Kadis of the Ottoman Empire is the representative body of the central authority in different provinces. These individuals, who only receive and implement direct orders from the central authority, are the highest-ranking administrators in their courts. In other words, these groups have no responsibilities to other highranking government officials in their districts. In the same context, Kadi has no right to interfere in military affairs. These groups play a crucial role as intermediaries between the central authority and reaya (taxpayers). A Kadi is responsible for disseminating the orders from the center and ensuring their enforcement. Furthermore, these individuals collect information from economic actors, including farmers, peasants, merchants, and craftsmen, about agricultural and social affairs within the society. If a complaint comes from the taxpayers, whoever the defendant is, Kadis maintain the order in the society by enforcing the laws on behalf of the central authority. All in all, Kadis generate

judicial/religiousbased groups in the administrative body, and these groups had the highest rank in the legal structure of the Ottoman Empire. Their registers, in this sense, consist of all affairs that emerged within the society (Özdeğer, 1988: 3).

Ottoman Sharia courts consist of many cases from different branches of law, including crime and murder cases, marriage contracts and divorces, *vakfiyeler* (waqf contracts), debt securities and suretyship, lease contracts, *berats* (license given by the central authority to an individual to operate certain economic activities), deed of real estates (Özdeğer, 1988: 7-8). In terms of the subject of this study, Kadis also organize the allocation of inheritance if there is a dispute among inheritors. to determine all the assets of the deceased individual through the court. Each asset is recorded individually with its amount and price. Thus, the court incorporates these records into the entire register. These records, in general, are called *tereke* (inheritance records), which were recorded at the request of the inheritors in dispute. In other words, Ottoman Sharia courts fail to include all inheritance records of deceased individuals within the society. These documents emerge only from appeals of inheritors to the courts.

2.2. Problems of the Study and Methodology

The main purpose of this study is to conduct an analysis of individual wealth and its distribution through information from inheritance records in the Ottoman Empire. This analysis is based on multidimensional approaches to different socioeconomic groups. To achieve this goal, socioeconomic groups, including titles, gender, and religion, and wealth segments, including the wealthiest one, 10, 25 percent as well as other quartiles, constitute the multidimensional analysis. Furthermore, Gini coefficients and their long-term trends are crucial variables of the analysis. The main hypotheses of this thesis are determined as follows:

1- *Titled individuals (elites), Non-Muslims,* and *Males* have higher wealth compared to Untitled Individuals, Muslims, and Females, and Gini coefficients of former groups are also higher than those of the latter.
2- Changes in average wealth levels of the former groups have higher effects on Gini coefficients and average wealth levels in the Ottoman Empire.

3- The long-term trend of Gini coefficients is compatible with the inverted Ushaped curve of Kuznets.

4- Wars have an increasing effect on Gini coefficients, while it has a negative effect on average wealth levels in general as well as wealth levels of different wealth groups.
5- The weather has an increasing effect on Gini coefficients, while it has a negative effect on average wealth levels in general as well as wealth levels of different wealth groups.
6- Decentralization (a relationship between intended duration and actual duration of tax collecting rights) has an increasing effect on Gini coefficients, while it has a negative effect on average wealth levels in general as well as wealth levels of different wealth groups.
7- State Finance has an increasing effect on Gini coefficients, while it has a negative effect on average wealth levels in general as well as wealth levels of different wealth groups.
8- Changing price levels and devaluations have an increasing effect on Gini coefficients, while it has a negative effect on average wealth levels in general as well as wealth levels of different wealth groups.

Proposed hypotheses are organized regarding the methods and perspectives of earlier literature. Studies focused on socioeconomic groups classify these groups as males/females, titled/untitled individuals, and Muslims/non-Muslims, and this method shapes the main hypotheses of this thesis. Furthermore, a few of the literature tests the effects of exogenous factors on individual wealth levels and the distribution of wealth. These variables mostly consist of geographic locations of towns, war, weather, and state finance. This thesis also incorporates similar datasets from reliable secondary sources into the analysis, and it develops hypotheses over these variables, as given above.

To achieve these goals, this thesis employs both regression analyses and correlations through the dataset. The regression (1) and (2) are given as follows:

$$ineq_t = \beta_0 + \beta_1 * avwealth_t + \beta_2 * title_t + \beta_3 * untitle_t + \beta_4 * male_t + \beta_5 * female_t + \beta_6 * Muslim_t + \beta_7 * nonMuslim_t + \beta_8$$

$$* dec_t + \beta_9 * War_t + \beta_{10} * Dry_t + \beta_{11} * Rev_t + \beta_{12} * Exp_t + \beta_{13} * CPI_t + \beta_{14} * Silver_t$$

$$avwealth_t = \beta_0 + \beta_1 * title_t + \beta_2 * untitle_t + \beta_3 * male_t + \beta_4 * female_t + \beta_5 * Muslim_t + \beta_6 * nonMuslim_t + \beta_7 * dec_t + \beta_8 * War_t + \beta_9 * Dry_t + \beta_{10} * Rev_t + \beta_{11} * Exp_t + \beta_{12} * CPI_t + \beta_{13} * Silver_t$$

The first equation tests the effects of proposed variables on wealth inequality over time. The second one, however, tests the effects of the same variables on average wealth levels over time. Furthermore, this thesis employs correlations to obtain their relations with each other.

There has been a dual aim in limiting the period of the analysis from 1710 to 1919. The first is based on the problems of primary sources. As discussed above, inheritance records stored in Ottoman Sharia courts are only sporadically. From the beginning of the eighteenth century, the quantity and quality of these sources improve, particularly in favor of females' and non-Muslims' inheritance records. The second is more theoretical background. This aim allows for establishing a comparison between two centuries with different economic characteristics in the Ottoman Empire. The earlier studies and their methods provide reasoning on why the eighteenth and the nineteenth centuries are crucial for wealth analysis. During the eighteenth century, Gini coefficients are smaller in medium and small-size towns compared to larger industrial and commercial towns in Europe. This trend reverses in the following century (Van Zanden, 1995). Another analysis based on Sweden from 1750 to 1914 indicates that Gini coefficients have an increasing effect both in larger towns and the countryside. In other words, the distribution of wealth fails to give an inverted U-shaped curve even if the share of industry increases in GDP toward the early twentieth century (Bengtsson, et. al., 2018: 790-791).

The method of this thesis, in this sense, has four main stages: (i) extracting wealth series from primary sources and preparing them for analysis, and developing other variables from reliable secondary sources (ii) descriptive statistics and their analyses (iii) testing the main hypotheses of the thesis (iv) the assessment of findings. The first two stages constitute the following parts of this chapter. The third and fourth stages, however, generate the third chapter of this thesis.

The first stage includes a three-phased process. The first is to extract inheritance records from Kadı Sicils. The second is to prepare these datasets to test the hypothesis. The crucial process is to deflate nominal values in the aggregate wealth of individuals. This phase also includes the elimination of certain inheritance records related to data limitations. The third phase provides a dataset for other variables subjected to the analysis. The following part (2.3.1. and 2.3.2.) gives detailed information on these processes.

The second stage focuses on descriptive statistics through the newly established dataset from inheritance records. The structure of descriptive statistics is established concerning the methods of earlier studies. Descriptive statistics include not only average wealth levels of different socioeconomic groups but also changing levels of diverse wealth segments over time. In other words, this analysis gives particular attention to the average wealth of the wealthiest one, 10, 25 percent as well as other quartiles. Furthermore, Gini coefficients constitute another important variable of the descriptive analysis. This analysis, in general, focuses on how the data are statistically distributed. As given below, the periodization is based on the 10-year intervals. While the data limitations allow for this kind of periodization, this practice is also useful for econometric analysis. The following part (2.3.3.) provides further information about the second stage. The third stage includes econometric analyses related to regression models (1) and (2). There have been two different models. One is to test the effects of variables on the distribution of wealth, and the second is to test the effects of proposed variables on average wealth levels in the long-term perspective. The fourth stage assesses the findings of the econometric analysis in part 3.3.

2.3. Data and Its Limitation: A Descriptive Analysis through Inheritance Records

This part presents the datasets and their limitations within the analysis. The dataset has included both new series based on inheritance records registered in Ottoman Sharia Courts and deviated series from reliable secondary sources to improve the analysis. The historical dataset, however, comes with its deficiencies, particularly for the periods before the twentieth-century Ottoman Empire (Pamuk,

2006: 809). Defining these data limitations is important for the discussion of the findings and how to evaluate them. Finally, this part provides a descriptive analysis of the statistics of average wealth levels and their distribution over time from a longterm perspective.

2.3.1 Inheritance Records and Their Limitations

This thesis includes 4.434 inheritance records covering the 210 years from 1710 to 1919. As given above, these primary sources are registered in Ottoman Sharia courts located in the archives of the *Center for Islamic Studies* (ISAM), in Istanbul. The first problem that arises here is whether the inheritance records reflect the total wealth of individuals. In this sense, the earlier literature, including both Ottoman and European perspectives, indicates that the inheritance records constitute the most efficient sources in estimating individual wealth levels instead of tax lists or other kinds of historical documents. Thus, this thesis uses these specific sources in the analysis. As given below, this thesis focuses on average wealth levels, titles of individuals, gender, and religious beliefs.

It is useful for the next sections to review the limitations of these datasets before going into the details of inheritance records. These sources are commonly used in examining individual wealth levels and the distribution of wealth in both European and Ottoman literature. For this reason, the total assets in the inheritance records are considered the aggregate wealth of individuals in this thesis. Secondly, it is difficult to establish a complete dataset through inheritance records stored in Ottoman Sharia courts. Pamuk (2007: 105) argues that these sources in court records reflect only 10 percent of all death in towns. This figure is only 3,45 percent in larger Ottoman towns, including Bursa, Kayseri, Manisa, Antep, Trabzon, Manastır, and Diyarbakır, while it is only 7 percent in European cities (Canbakal and Filiztekin, 2021: 103). These arguments entail deviations in average wealth levels. To minimize these problems, the most common method is to increase the number of observations as much as possible.

The third limitation emerges from record-keeping practices in the Ottoman Empire. There are two main problems. The first is related to record-keeping conditions. In other words, courts have insufficient resources to keep records of all

dead individuals. Instead, court registers include inheritance records only in cases when the heirs apply to the court (Shammas, 1978: 297). The second has a more complex nature due to the problems of evaluating the aggregate value of assets. Canbakal and Filiztekin (2021: 95) argue that some inheritance records fail to reflect the market prices of assets. Court officials might record assets with random prices instead of using market prices. This practice also entails deviations in estimating average wealth levels.

To minimize the problems that emerged in record-keeping practices, this thesis uses inheritance records that include "dellaliye" items in the documents. This item shows that Kadis assigned court officials to make firm market prices of assets located in inheritance records. Under this practice, court officials go to the largest market of the town and take prices for each inventory. In other words, these records calculate the value of aggregate assets with retail prices. The item of "dellaliye" provides historical evidence of whether this practice was conducted or not. Thus, the inheritance records included in this item provide an aggregate wealth of individuals with lower deviations. Other inheritance records without "dellaliye" item are excluded from the analysis conducted by this thesis. Earlier Ottoman literature has used inheritance records including "dellaliye" item in studies over the price history of the Ottoman Empire (Barkan, 1966; Öztürk, 1995).

The fourth problem emerges from estimating Gini coefficients through the aggregate wealth of individuals extracted from inheritance records. As Van Zanden (1995) argues that the distribution of wealth and its Gini coefficients would be 0,10 points higher than the figures for the distribution of income because of incomplete datasets. Canbakal and Filiztekin (2021: 106) indicate that the average wealth levels of elites living around Istanbul were higher than those of elites in small and medium-sized towns and towns far from Istanbul. These differences entail diverse Gini coefficients within the Ottoman Empire. In other words, it is expected that the distribution of wealth would be worse in larger cities and towns close to Istanbul than in those of other cities. To minimize these problems, this thesis focuses on a temporal analysis by bringing together data from cities of different economic scales rather than inter-city comparisons. By doing this way, average wealth levels converge to the levels they should be.

The fifth problem is which aggregate data from the records will be taken as wealth. First of all, this thesis takes "yekun" item as the aggregate wealth of individuals. Secondly, the inheritance records also include an item called "yekun'ul tereke" that shows the aggregate value of assets. Under this item, thirdly, another important item takes place, and it is called "mine'l ihracat". This specific item consists of court costs, including "kalemiyye", "dellaliye", "resm-i kıymet" as well as credit and debit amounts based on credit relationships. While "kalemiyye" shows the costs of record-keeping practices, "resm-i kıymet" represents the tax of aggregate assets. Finally, the net wealth amount is shown by subtracting the "mine'l ihracat" item from the "yekun'ul tereke" item. This thesis, in this sense, uses this net wealth called "yekun" in conducting the wealth analysis through inheritance records of the Ottoman Empire.

The proposed data limitations direct this thesis to limit the period, spanning from 1710 to 1919. The main reason is that the quality and quantity of inheritance records improved only after the eighteenth century. In other words, inheritance records belonging to disadvantageous groups such as females, non-Muslims and commoners appear to be more pronounced from this period. As Shammas (1978: 298) suggests that the data limitations could be minimized only by incorporating more records into the wealth analysis, and this could only be achieved by employing datasets from later periods. As mentioned above, one particular research based on the distribution of wealth in Sweden focuses on the period that started from the middle of the eighteenth century to the First World War. This study has the chance to employ 4.524 inheritance records in the analysis (Bengtsson, et. al., 2018). Thus, this thesis constructs its new dataset similar to this study for the same period.

This thesis employs inheritance records from relatively large towns as well as rural areas of Ottoman Anatolia. Ottoman Sharia courts include a special collection of individual terekes (inheritance records). In this context, there are 36 different cities from different regions subjected to this analysis. These cities have different economic activities from agriculture to commerce as well as mining to manufacturing. Since Ottoman Sharia courts include these sources only sporadically for each province, the dataset is developed to conduct a temporal analysis. The cities subjected to the analysis are given in Appendix A.

Table 14. Number of inheritance records in the long-term perspective, 1590-1919

Periods	N	Periods	N	Periods	N
1590-99	14	1700-09	NA	1810-19	392
1600-09	NA	1710-19	22	1820-29	269
1610-19	NA	1720-29	72	1830-39	788
1620-29	NA	1730-39	80	1840-49	662
1630-39	NA	1740-49	74	1850-59	395
1640-49	1	1750-59	6	1860-69	114
1650-59	2	1760-69	250	1870-79	118
1660-69	NA	1770-79	58	1880-89	477
1670-79	4	1780-89	66	1890-99	197
1680-89	16	1790-99	59	1900-09	124
1690-99	8	1800-09	151	1910-19	31

Table 14 presents the allocation of observations by subperiods. As given in this table, the number of observations is highly scattered during the period from the late sixteenth century to the early twentieth century. The problems in the allocation of observations appears to be more pronounced until the eighteenth century. There are 6 empty subperiods for the same period. The rest includes the insufficient number of observations to conduct a long-term analysis of the individual wealth levels and the distribution of wealth. Furthermore, as Shammas (1978: 298) argues that these inheritance records that emerged before the eighteenth century mostly belonged to wealthier groups and elites in the Ottoman Empire. Thus, this thesis excludes the earlier periods from the analysis. Furthermore, the revolts and uprisings that emerged during the early seventeenth century should deteriorate the operations of Ottoman Sharia courts, and hence, there were no inheritance records within the courts of Anatolia (Barkey, 2008). Finally, the eighteenth century is the period when Ottoman Sharia courts were commonly used by society (Coşgel and Ergene, 2012).

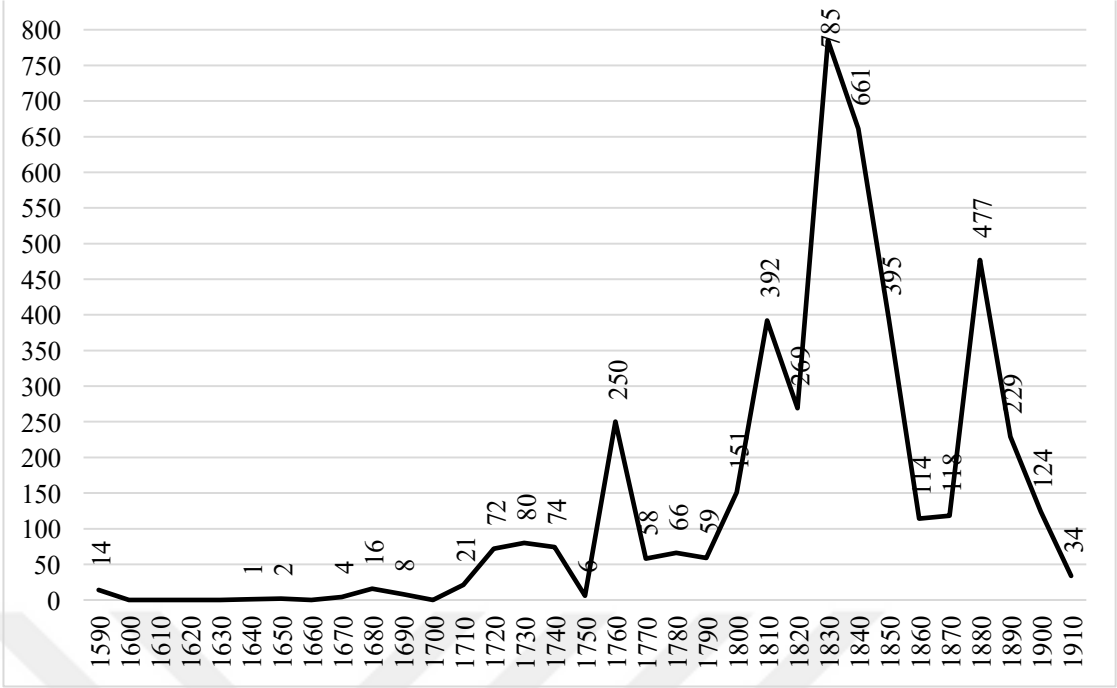


Figure 5. The trend of inheritance records by periods

Figure 5 presents the long-term trend of inheritance records subjected to the analysis in the Ottoman Empire. The number of observations appears to be more pronounced from 1710. Only the period between 1750 and 1759, these figures are insufficient. Although this break in the trend entails a problem in examining individual wealth levels, this thesis utilizes the earlier dataset that focuses on inheritance records located in Ottoman Anatolia to increase the quantity of the dataset (Ergene and Berker, 2009; Coşgel and Ergene, 2012; Canbakal and Filiztekin, 2021). As Figure 5 indicates that the quality and quantity improved from the second half of the eighteenth century and reached their peak during the middle of the nineteenth century. Although a declining trend appears from the second half of the nineteenth period, the number of observations is higher than 30 for each subperiod. The only problem emerges in the last subperiod that covers the years between 1910 and 1919. This subperiod is also improved from reliable secondary sources (Canbakal and Filiztekin, 2021).

Table 15. The number of inheritance records by regions

Periods	Western	Eastern	Center	Periods	Western	Eastern	Center
1590/99	14	NA	NA	1760/69	NA	NA	NA
1600/09	NA	NA	NA	1770/79	NA	NA	4
1610/19	NA	NA	NA	1780/89	NA	NA	16
1620/29	NA	NA	NA	1790/99	4	NA	4
1630/39	NA	NA	NA	1800/09	NA	NA	NA
1640/49	NA	NA	1	1810/19	22	NA	NA
1650/59	2	NA	NA	1820/29	32	14	26
1660/69	NA	NA	NA	1830/39	74	NA	6
1670/79	NA	NA	4	1840/49	102	74	486
1680/89	NA	NA	16	1850/59	NA	53	342
1690/99	4	NA	4	1860/69	61	27	26
1700/09	NA	NA	NA	1870/79	NA	39	79
1710/19	22	NA	NA	1880/89	195	NA	282
1720/29	32	14	26	1890/99	88	1	108
1730/39	74	NA	6	1900/09	65	59	NA
1740/49	9	65	NA	1910/19	31	NA	NA
1750/59	NA	NA	6	**Total**	875	889	2686

In addition to the temporal distribution, related cities and heritage records were also examined by region. Although Ottoman Sharia courts are scattered in each town, this thesis develops a regional distribution based on three main provinces: (i) Western, (ii) Eastern, and (iii) Center. The Western province includes İstanbul as well as cities located around the Aegean Sea and this region. The Center province consists of Ankara and the towns around it. Furthermore, this province also includes towns around the Black Sea and Mediterranean cities located in the close meridians of Ankara. Finally, the Eastern province starts with the town of Sivas and consists of other cities to the east of this city.

Table 15 presents the number of observations by distinct provinces. These provinces consist of 39 towns in total. The Western province has 13 towns that are Balıkesir, Bodrum, Çanakkale, Edremit, Girit, İstanbul, Kandira, Karahisar, Kütahya, Manisa, Milas and Tekirdağ. The Eastern province, however, includes only 8 towns, which are Antep, Fatsa, Mardin, Mesudiye, Samsun, Siirt, and Sivas. Finally, the Center province consists of 18 towns that are Adana, Amasya, Ankara, Antakya, Antalya, Bolu, Bozkır, Çankırı, Çorum, Kalecik, Karaman, Kastamonu, Kayseri, Konya, Maraş, Niğde, Seydişehir and Tokat.

As it can be seen, the dataset includes Ottoman Sharia courts from different towns in terms of their economic sizes and geographic characteristics. The main motivation is to obtain more accurate average wealth levels by employing these different towns. For instance, a military-based individual living in larger towns would have higher aggregate wealth levels compared to an individual with the same title in a small or medium-size town. Taking average wealth levels of this specific group from towns with different characteristics allows for obtaining more welldirected figures rather than getting higher values from employing only larger towns. Furthermore, this thesis chooses the Ottoman Sharia courts randomly. This method is commonly employed in examining individual wealth levels of the Ottoman Empire (Pamuk, 2007: 149).

Although Table 15 presents the allocation of inheritance records by periods, this thesis excludes an analysis based on regional comparisons due to the large differences in the number of observations among provinces. While the Center province includes more than 2.500 inheritance records, this figure is around 880 inheritance records for the other two provinces. Furthermore, the information presented in Table 15 indicates that while certain subperiods have inheritance records from a particular province, there have no inheritance records for other provinces. This problem prevents this thesis from establishing a comparative perspective among provinces. Figure 3 also presents the allocation of inheritance records by different provinces.

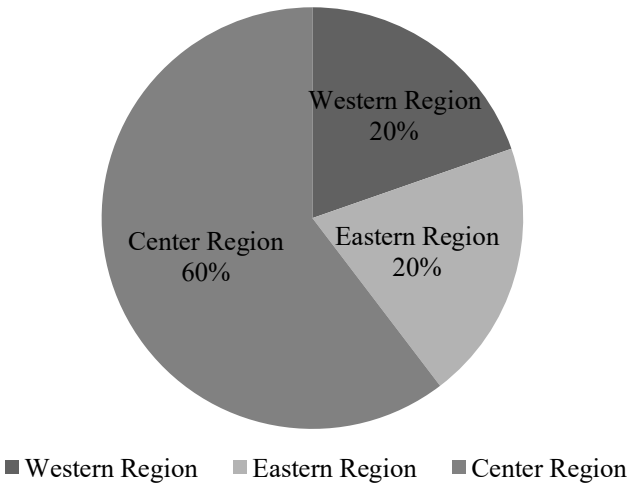


Figure 6. Share of inheritance records by region

The analysis conducted by this thesis is mostly based on different socioeconomic groups within the society. There have been three main segments regarding the socioeconomic status of individuals. The first classification is based on the titles that are given in inheritance records. These titles, however, differ within themselves. More importantly, the determination of whether the titles of individuals are honorific titles is an important debate. Because surnames are absent, the first name and its paternal name are important indicators to determine who is who within the inheritance records. In most cases, the terms "Abdullah oğlu" and "Abdullah kızı" signifies unidentified father for individuals (Özdeğer, 1988). In such cases, the titles are crucial identifiers in distinguishing individuals from each other. In general, the titles of *çelebi, effendi, bey, ağa, paşa,* and *beşe* are commonly used as honorific titles within the society (Tülüveli, 2005: 17).

Ottoman society generally consists of two different groups. The first group called *askeri* class includes individuals from the administrative body of the central authority. The second group consists of *reaya*, which generates taxpayers (Inalcık, 1997: 16). The former group, however, includes different subgroups regarding their position in the state apparatus. Administrative/military-based individuals, *seyfiyye*, constitute the first subgroup, and judicial/religious-based individuals, *ilmiyye*, generate the second one within the askeri class. While the titles of ağa, beşe and bey represent the honorific titles of seyfiyye, other titles such as *efendi, molla, halife, çelebi* and *dede* have belonged to individuals of ilmiyye (Coşgel and Ergene, 2011: 264-265).

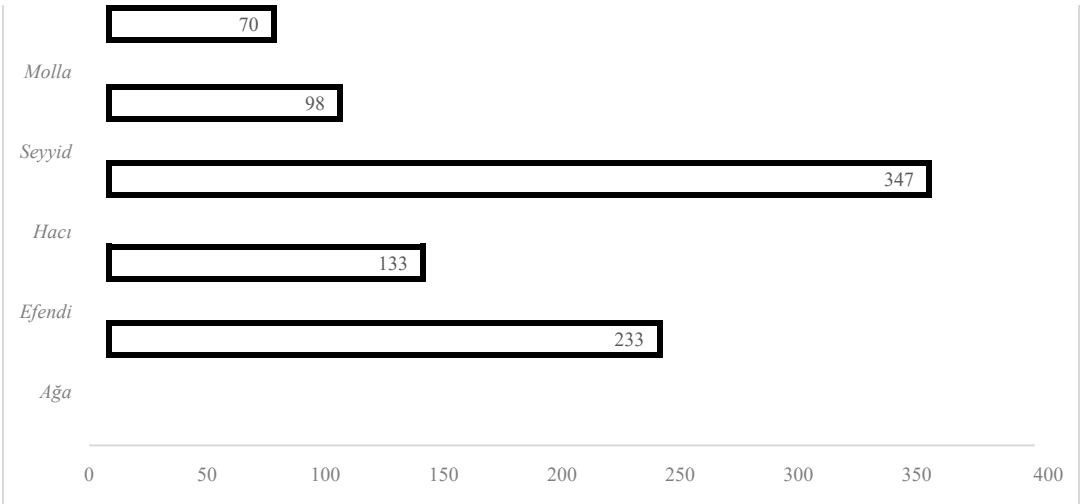


Figure 7. The number of observations for the top five titles

Figure 7 presents the number of observations of the top five titles within the entire sample. These figures indicate that the most common title was *Hacı* in inheritance records. However, it is difficult to determine whether these individuals

held this title as an honorific or not. This title may have been given to these individuals among the people where they live, or they may have taken it because they made pilgrims. To minimize these problems, this thesis excludes the inheritance records of individuals, who held only the title of Hacı. Thus, the number given in Figure 7 represents individuals who held two honorific titles, including Hacı. Following this title, individuals with the title of *Ağa* generate the secondhighest group, which represents administrative/military-based groups. For judicial/religious-based groups, individuals with the title of Efendi constitute the third highest group. Individuals with the title of *Seyyid* (seyfiyye) and others with the title of *Molla* (ilmiyye) follow the first three groups.

Table 16. Number of inheritance records by titles

Periods	Commoners (untitled)	Titleholders	Periods	Commoners (untitled)	Titleholders
1590-1599	10	4	1760-1769	163	87
1600-1609	NA	NA	1770-1779	30	28
1610-1619	NA	NA	1780-1789	48	18
1620-1629	NA	NA	1790-1799	47	12
1630-1639	NA	NA	1800-1809	117	34
1640-1649	1	NA	1810-1819	333	59
1650-1659	1	1	1820-1829	197	72
1660-1669	NA	NA	1830-1839	639	149
1670-1679	NA	4	1840-1849	524	138
1680-1689	7	9	1850-1859	316	79
1690-1699	5	3	1860-1869	82	32
1700-1709	NA	NA	1870-1879	96	22
1710-1719	12	10	1880-1889	382	95
1720-1729	32	40	1890-1899	134	63
1730-1739	45	35	1900-1909	82	42
1740-1749	47	27	1910-1919	15	16
1750-1759	2	4	**Total**	3367	1083

Table 16 provides information on the number of observations for both titled and untitled individuals within the entire sample. In general, the share of

commoners is approximately 76 percent while this figure is only 24 percent for titled individuals in the long-term perspective. The main reason behind this large premium is that the wealthier groups and titled individuals should refrain from applying to courts in the allocation process of wealth. As Shammas (1978: 297) argues that there would be problems in estimating average wealth levels and their distribution due to the motivation of elites in preventing their wealth from being registered by the courts. These figures indicate a similar outcome for the Ottoman Empire.

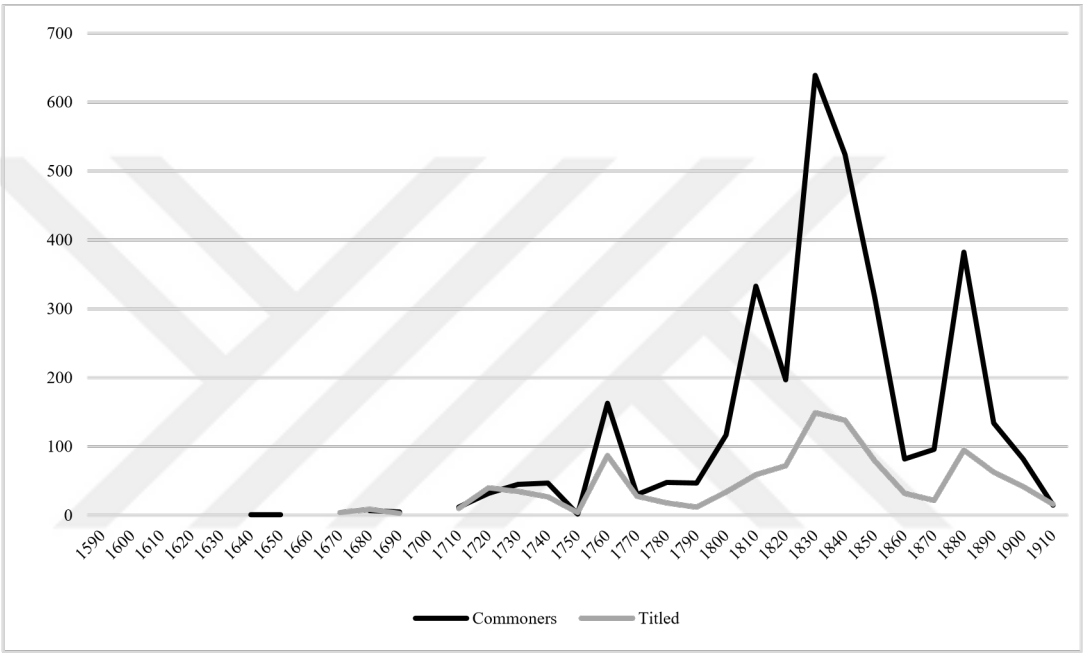


Figure 8. The trend of inheritance records by titles

Figure 8 presents the trend of inheritance records by titles of individuals. This trend shows how observations change over time. The bold line represents the figures of untitled individuals, particularly from the middle of the seventeenth century. The lighter colored line, however, shows the trend of inheritance records belonging to individuals with honorific titles. While the number of observations is close to each other until the late eighteenth century, the divergence emerges in favor of untitled individuals from the early nineteenth century. In other words, the trend of titled individuals is more stable than that of untitled individuals. The lower number of inheritance records of titled individuals is mostly based on their motivations. On the other hand, the increasing number of inheritance records of untitled individuals

should be related to their perception of applying Ottoman Sharia courts over time (Coşgel and Ergene, 2012).

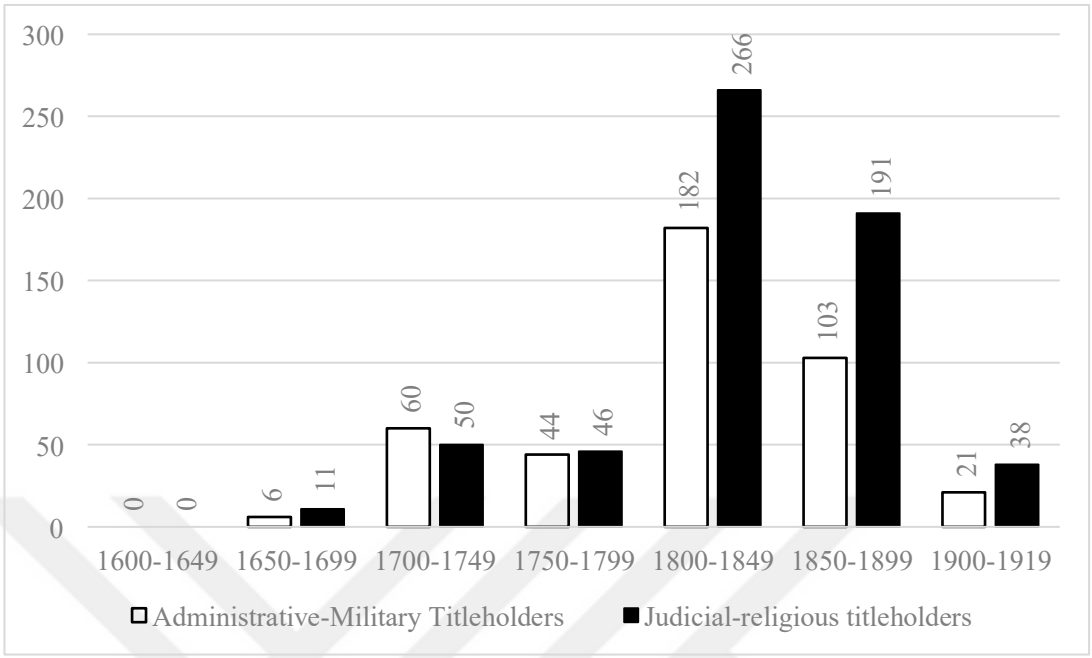


Figure 9. Allocation of inheritance records by types of titles

The dataset also allows for a comparison among the numbers of inheritance records among seyfiyye and ilmiyye groups. The information given in Figure 9 presents the comparison regarding the number of observations from the seventeenth century to the early twentieth century. Until the eighteenth century, the number of observations of both groups is close to each other. During the following century, the numbers jump approximately between 4 to 6 times higher for both groups. However, the premium between the observations of judicial/religious-based and administrative/military-based groups increases in the same period. Finally, these figures decline substantially due to the more limited period and lower numbers of sources in the early twentieth century.

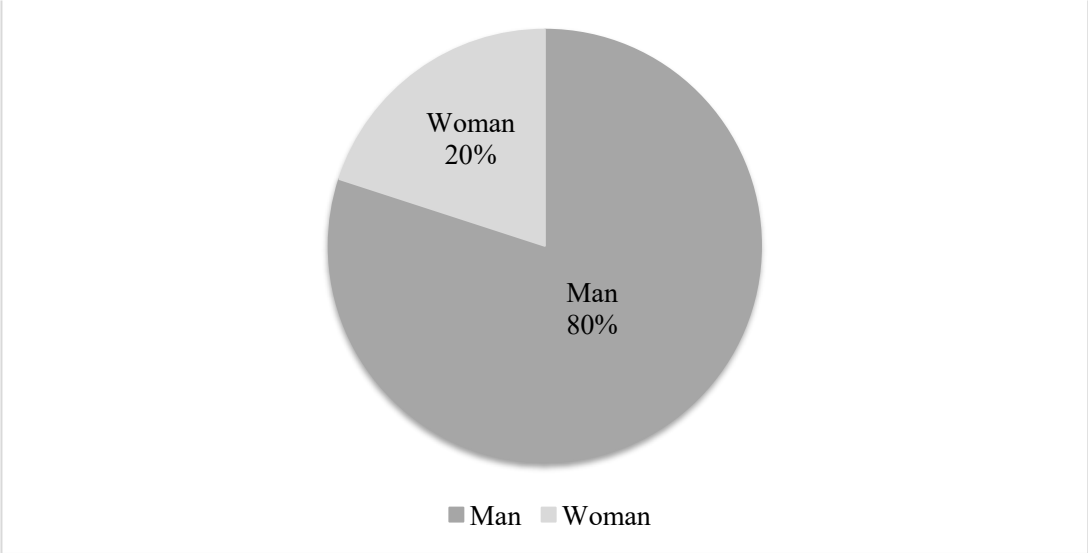


Figure 10. Allocation of inheritance records by gender

Another important classification is based on gender. The dataset established within this thesis allows for comparison by gender. However, there is a significant difference in the number of observations among males and females within the entire sample. Figure 10 indicates that the share of males is 80 percent while this figure is only 20 percent for females. These figures, however, provide limited information on the development of the inheritance records for both groups. To make a further evaluation the allocation of inheritance records is given regarding subperiods from a long-term perspective.

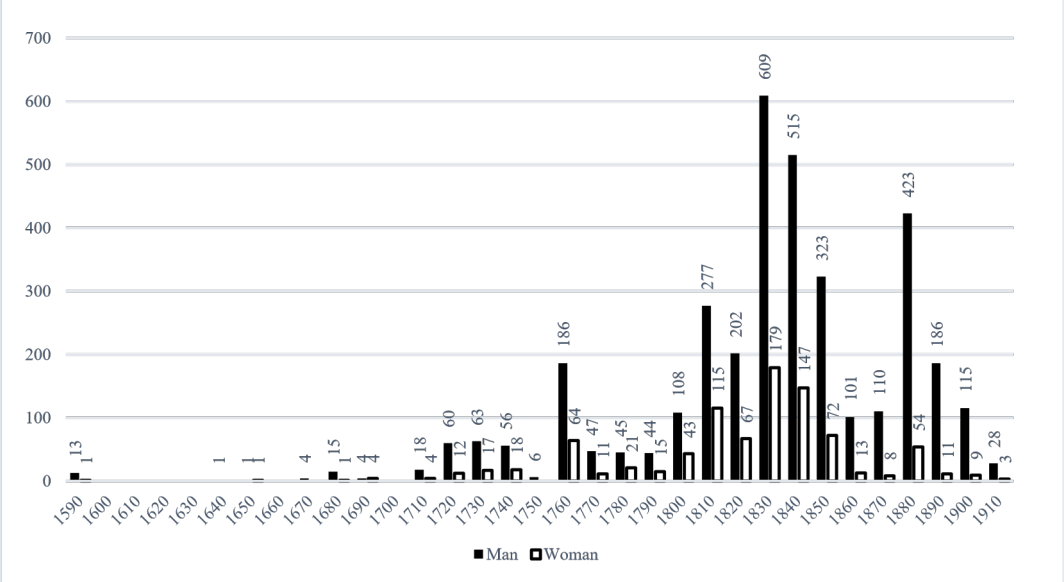


Figure 11. The trend of inheritance records by gender in a long-term perspective

Figure 11 gives a piece of more detailed information on the allocation of inheritance records over time. Until the end of the seventeenth century, there are very limited observations for both groups. The quality and quantity of observation improve only from the early eighteenth century. The number of inheritance records of females remains at modest levels for all periods in the long-term perspective. Only during the nineteenth century, do these figures appear to be more pronounced compared to earlier periods. However, these increases for females are still insufficient compared to the data for males. The inheritance records of males have an increasing trend, particularly until the middle of the nineteenth century. Even if these figures decline during the second half of this century, the figures for males are much higher than those for females until the early twentieth century. These figures presented were nevertheless sufficient for average wealth.

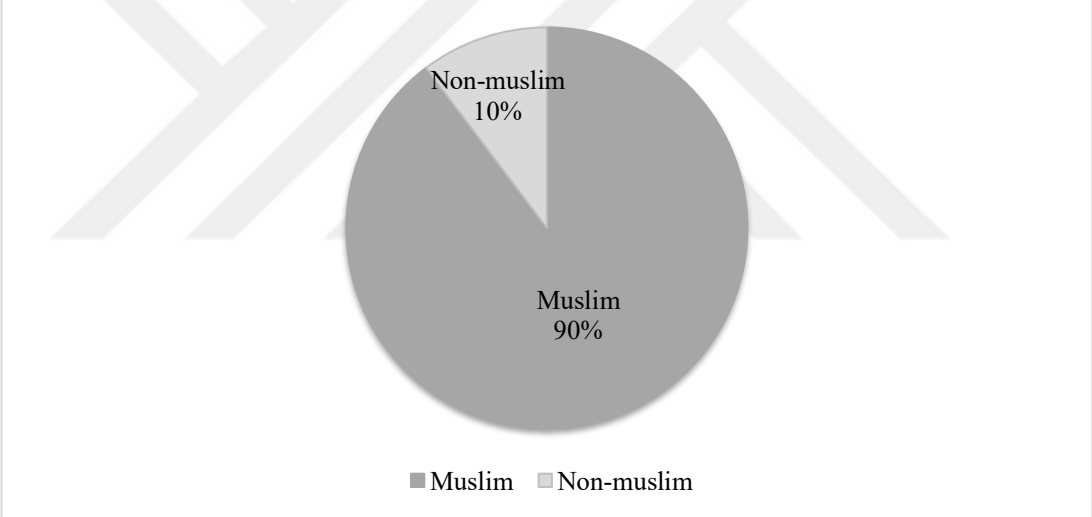


Figure 12. Share of inheritance records by religion

Figure 12 presents the share of observations by religion. This classification is based on whether individuals are Muslim or not. In this sense, the dataset indicates that the substantial share of observations was Muslims in Ottoman Anatolia (90 percent). The rest constitute the non-Muslim minority of the sample. These groups mostly consist of Jews and Orthodox Rums while very few of them represent the Christian minority.

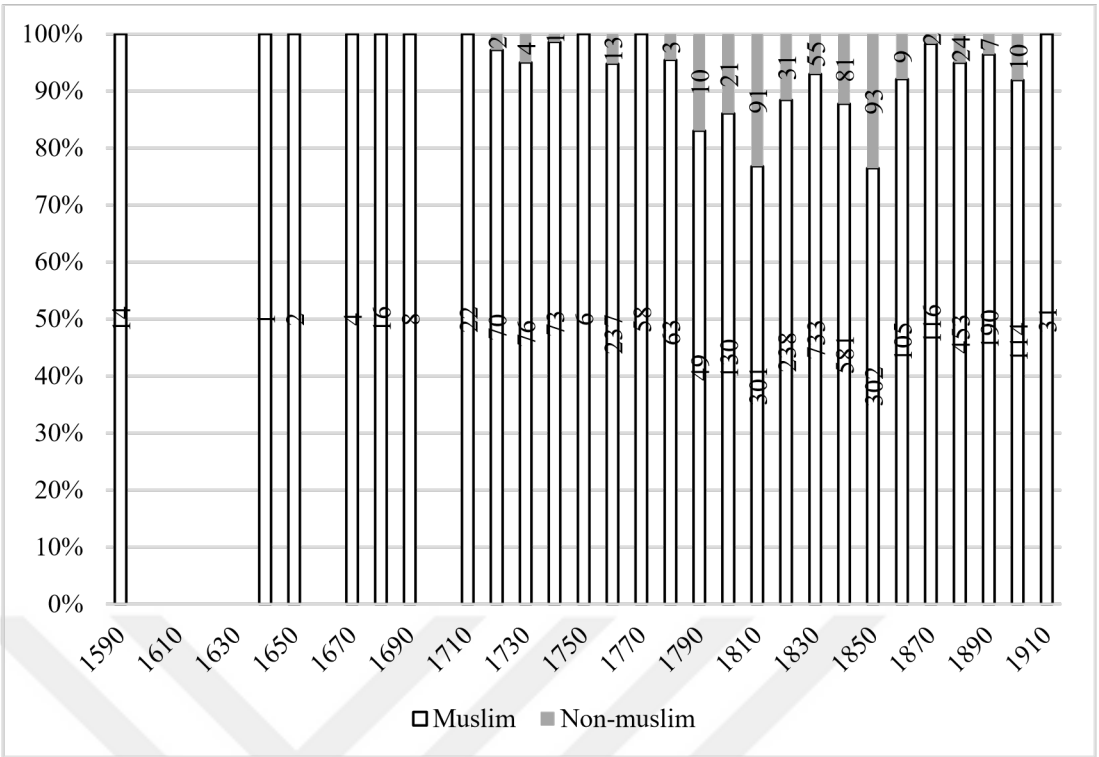


Figure 13. Allocation of inheritance records by religion

Although the number of observations for non-Muslim subjects is much lower than that of Muslims, the inheritance records of this group appear to be more pronounced from the late eighteenth century. There have no records for nonMuslims before 1710. During the eighteenth century, these figures remain at modest levels compared to the nineteenth century. These differences among centuries probably result from the fact that non-Muslims mostly apply to their courts instead of Ottoman Sharia courts during the eighteenth century. The increasing numbers during the nineteenth century, however, should emerge from the changing perception of non-Muslims in applying to Ottoman courts. More importantly, these non-Muslim subjects should have a credit relation with Muslim subjects, and their death direct lender Muslims to apply to Ottoman Sharia courts for repayments of their credits. Thus, this practice may entail an increase in the number of inheritance records of non-Muslims over time.

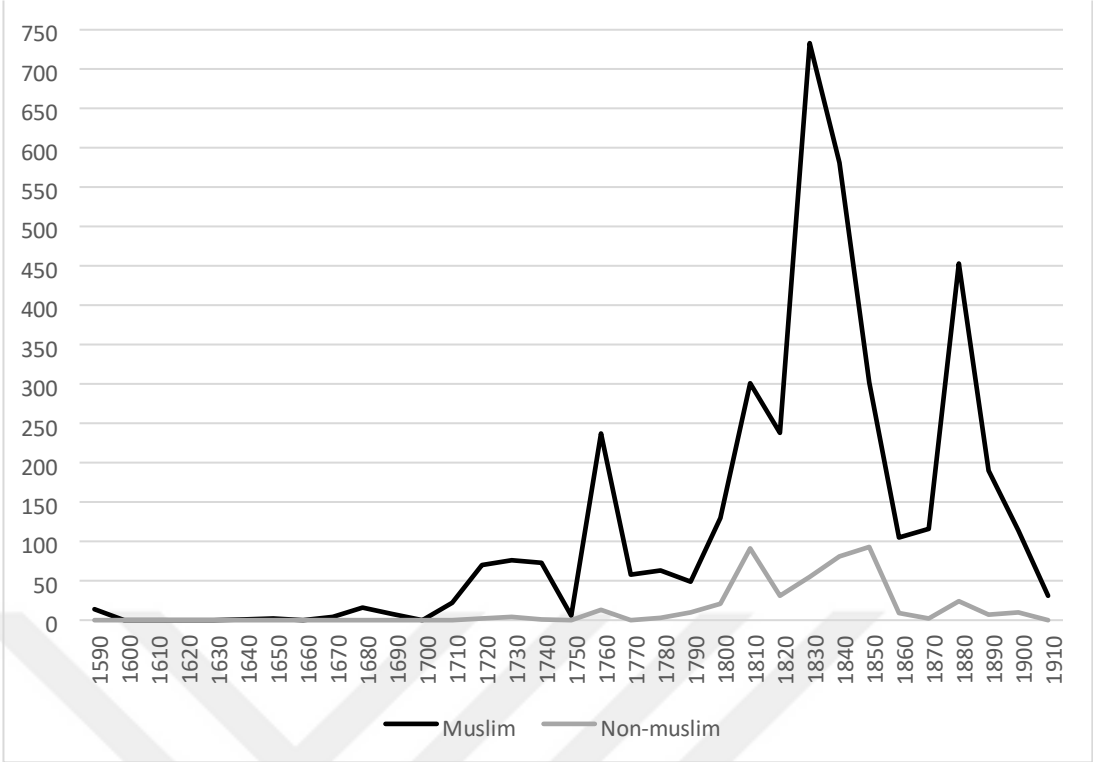


Figure 14. The long-term of inheritance records by religion

Finally, Figure 14 shows the long-term trend of inheritance records by religion from the late sixteenth century. As mentioned above, there have been no inheritance records that belonged to non-Muslim subjects until the early eighteenth century. The existing inheritance records have belonged to Muslims, and their numbers are at modest levels until the 1700s. From the beginning of the eighteenth century, the dataset provides sufficient information to establish a comparison between two groups. In the long-term perspective, the number of observations for non-Muslims remains at modest levels and the trend is more stable than that of Muslims. The most striking change occurs for both groups during the nineteenth century. Towards the early twentieth century, however, the number of observations for both groups decline sharply, and these figures converged with each other. This probably results from the fact that prolonged wars, rapidly changing borders, and demographics deteriorated the record-keeping practices of Ottoman Sharia courts.

2.3.2. Other Variables and Their Limitations: State Finance, Decentralizations, Prices, Wars, and Weather

This thesis also employs diverse variables in examining individual wealth levels and their distribution in the Ottoman Empire. To achieve this goal, the dataset based on reliable secondary sources includes commonly used parameters in the literature. The data limitations, covering the early modern period, allow for using a limited number of variables in the analysis. As given in the historical background (Part 1.2.), these variables mostly include state finance, decentralization depending on durations of privileges, prices, monetary-based parameters, wars, and weather. The main feature of these data is that they are not only obtained from reliable secondary sources but also used in similar analyses (Coşgel and Ergene, 2012).

The first focus is on the consumer price index and monetary parameters given in the previous sections (Part 1.2.). The consumer price index provides information to determine changes in price levels for the subperiods of this thesis. Figure 3 shows the trend of changes in prices by subperiods. This trend indicates that inflation rates of the Ottoman Empire were more stable from the early eighteenth century to the second quarter of the nineteenth century in which the trend ranged from 0 to 15 percent for 10-year intervals. There is a jump in the trend of inflation from 13 to 67 percent during the period between 1830 and 1839. While this increasing trend continued with small-size fluctuations until 1870, there has been a declining trend in price levels from this year to the end of the first decade of the twentieth century. Finally, price levels increase approximately 64 percent due to the increasing wars from North Africa to Balkan territories on the eve of the First World War.

The consumer price index established by Pamuk (2004b), however, includes certain limitations. The first of these is that this price index reflects Istanbul prices. Although long-term price movements occur similarly in other cities, the price levels in Istanbul are generally higher than in other cities (Ceylan, 2016). Thus, it is expected that the consumer price index based on İstanbul prices would reflect higher figures than it should be for the Ottoman Empire. However, this index generates the only reliable source for consumer prices. The second problem with the consumer prices index is that this dataset reflects only the prices of foodstuffs. This index excludes textiles from the dataset because this commodity was mostly consumed by

higher-income groups in the Ottoman Empire. Following the textile, the dataset excludes residential rents from the index due to the lack of data. Finally, the index excludes prices of sugar and coffee, which generated very limited consumption by households in the Ottoman Empire. Although the inclusion of these items in the index is considered to affect inflation rates between 5 and 10 percent, the fact that commodities with higher price increases are staple goods causes lowincome groups to be more affected than seen (Pamuk, 2007: 121-122).

Another important variable that should influence individual wealth levels and the distribution of wealth is the silver content of Ottoman currencies. As mentioned below, the dataset established in this thesis presents values in terms of akche. As Figure 4 indicates that the Ottoman Empire imposed devaluations to increase its revenues in the short term. Thus, there is a declining trend in the silver content of akche from the early eighteenth century to the period between 1840 and 1849. The historical evidence indicates that the central authority fixed the silver content of Ottoman qurush and akche, in which a qurush included only one gram of silver, and an akche contained only 0,0083 grams of silver (Pamuk, 2004b: 455). The trend in Figures 3 and 4 also shows a relationship between CPI and silver content of akche in a long-term perspective. During the first half of the eighteenth century, the silver content of akche declines 0,30 percent annually, and the CPI increases only 0,44 percent. From the last decades of this century to the middle of the nineteenth century, the negative relationship between these two variables appears to be more pronounced compared to the earlier period. While the silver content of akche decreases by 3,49 percent annually, price increases emerge by 3,81 percent annually (Pamuk, 2007: 120-121). Table 17 presents aggregate values with 10-year intervals from a long-term perspective.

Table 17. The CPI, inflation, and silver content of *akche*

Periods	The CPI (1910/19=100)	Inflation	Silver Content (In grams of silver)
1710-1719	2,33	0,82	0,1300
1720-1729	2,37	0,11	0,1300
1730-1739	2,59	0,64	0,1200
1740-1749	3,37	2,31	0,1200
1750-1759	3,43	0,17	0,1100
1760-1769	5,70	1,00	0,1000
1770-1779	6,05	6,70	0,0930
1780-1789	5,84	-0,06	0,0800
1790-1799	8,32	7,30	0,0530
1800-1809	11,79	10,20	0,0480
1810-1819	16,82	14,80	0,0320
1820-1829	21,34	13,30	0,0180
1830-1839	44,22	67,30	0,0073
1840-1849	61,52	50,90	0,0081
1850-1859	81,74	59,50	0,0083
1860-1869	97,11	45,20	0,0083
1870-1879	90,27	-20,10	0,0083
1880-1889	80,93	-27,50	0,0083
1890-1899	80,08	-3,50	0,0083
1900-1909	75,08	-15,30	0,0083
1910-1919	100	63,30	0,0083

Source: Pamuk (2004b: 455)

Following the consumer prices and devaluations, this thesis uses the information on state finance from the beginning of the eighteenth century to the end First World War. The sources have deficiencies to establish a complete dataset of state finance, particularly for the period before the 1840s. The state revenues and expenditures presented in the literature mostly reflect the values of the central treasure. Record-keeping practices for state finance starts from the early sixteenth century and encompass the early twentieth century in the Ottoman Empire. Even if modern approaches argue that these records represent the state budgets, these sources should be considered as the statement of accounts until 1840 (Özvar, 2006: 197). In general, Ottomans have two types of items within state finance. The first is called *hazine-i amire* which constitutes central treasure, and it consists of financial

resources except for waqf organizations as well as timar and tax-farming systems. The second represents more general revenues and expenditures that also included hazine-i amire and other revenues of financial resources. Baki Çakır's estimate indicates that hazine-i amire generated 46 percent of the aggregate revenues during the early sixteenth century. This figure declines to 25 percent in the second half of the seventeenth century, in which 600 million out of 2.400 million akche has belonged to the central treasure (Çakır, 2006: 167-168). The earlier budgets that are subjected to the literature of state finance are based on the values given in hazine-i amire instead of all revenues and expenditures (Özvar, 2006: 197). Thus, these figures fail to provide a piece of complete information on the state finance of the Ottoman Empire. However, these sources are the only evidence to conduct an analysis between state finance and other variables.

Table 18. State finance in a long-term perspective (billions of akche)

Periods	Revenues	Expenditures	Balance
1710-1719	56	43	13
1720-1729	55	57	-2
1730-1739	54	57	-3
1740-1749	48	51	-3
1750-1759	48	50	-2
1760-1769	31	30	1
1770-1779	29	31	-2
1780-1789	29	37	-8
1790-1799	20	25	-5
1800-1809	15	18	-3
1810-1819	10	13	-3
1820-1829	8	10	-2
1830-1839	4	5	-1
1840-1849	126	134	-8
1850-1859	130	145	-15
1860-1869	192	205	-13
1870-1879	272	343	-71
1880-1889	246	328	-82
1890-1899	275	299	-24

1900-1909	343	385	-42
1910-1919	341	482	-141

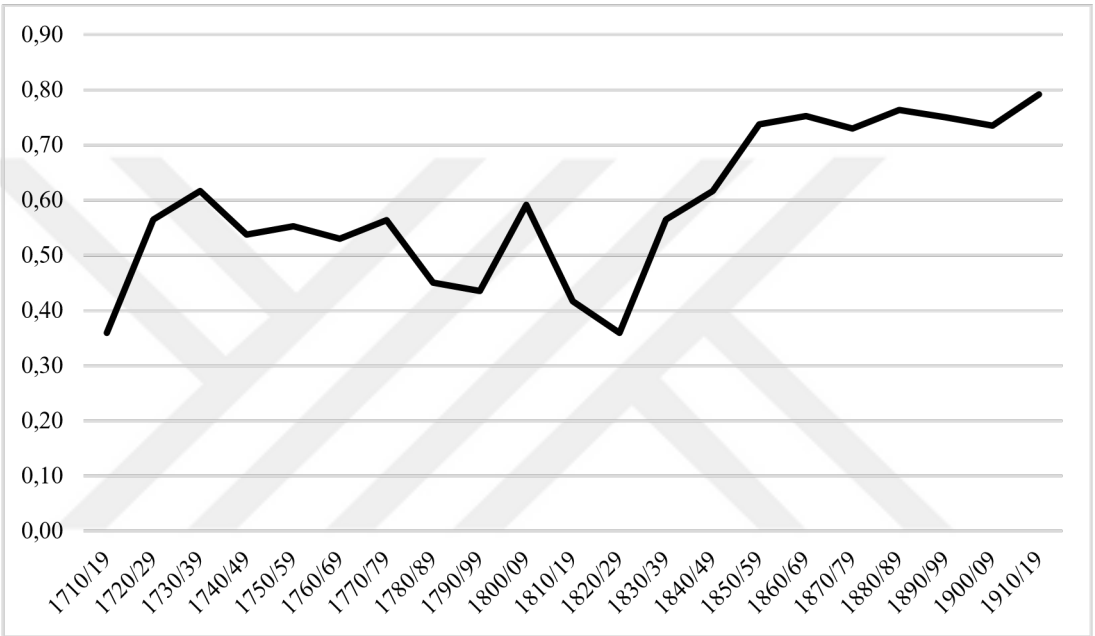
Source: This data is derived from reliable secondary sources. See, Genç and Özvar (2006), Özvar (2006), Çakır (2006), Güran (2003), Güran (2017).

Table 18 presents the aggregate values of Ottoman state finance from the early nineteenth century to the early twentieth century. This data fails to show absolute values of state revenues and expenditures because of proposed limitations in constructing finance accounts of the Ottoman Empire. The data given in Table 18 provide information for the central treasure, particularly until the middle of the nineteenth century. The datasets focused on the period after 1840 achieve to provide more complete figures for the aggregate revenues and expenditures of the Ottoman Empire. The jump that emerged in the 1840s is the main outcome of changing practices in constructing account books for state finance. The approximate values given in this table also reflect real values with the prices of 1910/19. To deflate nominal values, this thesis uses the index given in Table 17. Although there have been data limitations on state finance, these figures generate the only sources in employing state finance in the analysis.

In the analysis of individual wealth levels and the distribution of wealth, this thesis uses the data of war and weather (drought) as dummy variables. The dataset is established in the 10-year intervals, and each subperiod takes "1" if large-scale war and drought exist. On the other hand, this thesis defines "0" as there has been no war and drought within the subperiod. The share of war, in this sense, is higher than that of drought. Only three subperiods take "0" out of 21 subperiods, and this figure indicates that 86 percent of subperiods constitute war periods for the Ottoman Empire. On the other side, 14 subperiods out of 21 take "1" in the drought sample. In other words, 66 percent of subperiods generates the period of drought in the Ottoman Empire. While the dataset for war periods is obtained from commonly known military affairs, the data of drought is derived from a reliable secondary source (Akkemik, et. al., 2005).

The final variable that is based on reliable secondary sources is the duration of privileges held by elites of the Ottoman Empire. As discussed in the historical background, the tax collecting practices are dependent on the allocation of economic rights and privileges towards elites and provincial notables, particularly

from the late sixteenth century. These privileges and rights have limited durations under the tax-farming system, and these durations increase up to the lifetime of advantageous groups within the lifetime tax-farming system. Recall that the main purpose of the central authority is to increase revenues through these practices, and the key rule is that the central authority had the right to transfer these rights and privileges to new groups, who had offered higher prices. This practice entails differences between the intended and actual durations under tax collecting systems (Altay and Oğuz, 2021: 80-81).



Source: This data is derived from various sources focused on the duration of economic rights and privileges under tax collecting systems. See, Çizakça (1993; 1996), Genç (2000), Altay and Oğuz (2021).

Figure 15. The trend of decentralization and centralization

Figure 15 shows the long-term trend of the ratio of actual durations to intended durations in the Ottoman Empire. These variables range between "0" and "1" that determine the level of centralization as well as decentralization. If the average ratios approach "1", then there is an effective relationship between the central authority and powerful groups, and centralization is strong. On the other side, the levels close to "0" indicate higher decentralization in tax collecting systems, in which inefficiency surrounds the economic structure. In other words, higher decentralization means more resource transfers to advantageous groups, and this may be a reason for increasing inequality over time (Coşgel and Ergene, 2012: 324-325).

This thesis incorporates this variable into the analysis by utilizing reliable secondary sources. However, these sources include limitations because of their nature as historical statistics. One rough estimate has argued that a substantial share of revenues, ranging from 50 to 80 percent, came from these privileges and rights from the late sixteenth century (Genç and Özvar, 2006). The data given in Figure 15, however, reflect the trend through a very limited number of rights and privileges under tax-farming and lifetime tax-farming systems. For the period covering more than 200 years, there have been approximately 600 arrangements included in the analysis. Although there has been incomplete data over decentralization levels, these sources employed in this thesis are studies that provide collective data in this field. While these variables generate the main sources of the analysis, the following part focuses on individual wealth levels and the distribution of wealth through the newly established data as defined in part 2.3.1.

2.4. The Distribution of Wealth in the Ottoman Empire: Lorenz Curves and Gini Coefficients

This part focuses on the descriptive statistics of individual wealth and its distribution through a temporal analysis, spanning from 1710 to 1919. This part employs methods that are commonly used in earlier studies. The average wealth levels generate the primary focus in 10-year intervals. Furthermore, this part presents these levels from a comparative perspective among different socioeconomic groups. The analysis based on individual wealth levels consists of distinct wealth segments, including the wealthiest one, 10, 25 percent as well as other quartiles in the long-term perspective. The changes in these figures provide a deeper understanding over the long course of wealth levels. Finally, contrary to earlier studies, this part also gives a detailed analysis of Gini coefficients and Lorenz curves to examine the economic performance of the Ottoman Empire.

Table 19. Average nominal and real wealth (in akche)

Periods	Nominal Values	Index (1910/19=100)	Real Values	Periods	Nominal Values	Index (1910/19=100)	Real Values
1710/19	3741314	2,33	160571416	1820/29	404140	21,34	1893814
1720/29	775236	2,37	32710380	1830/39	653524	44,22	1477892
1730/39	3354949	2,59	129534710	1840/49	8254575	61,52	13417710
1740/49	74001	3,37	2195875	1850/59	1216332	81,74	1488050
1750/59	47400	3,43	1381924	1860/69	1347086	97,11	1387175
1760/69	129261	5,70	2267737	1870/79	599865	90,27	664523
1770/79	224545	6,05	3711488	1880/89	619503	80,93	765480
1780/89	79314	5,84	1358116	1890/99	9927334	80,08	12396771
1790/99	137798	8,32	1656226	1900/09	27973850	75,08	37258724
1800/09	6346494	11,79	53829466	1910/19	10055805	100	10055805
1810/19	421363	16,82	2505131	**General**	3798116	-	22501353

Table 19 presents the overall average levels in a long-term perspective. The dataset includes both nominal and real values. The data given in Table 19 indicates fluctuations in average wealth levels. These fluctuations emerge from several reasons in addition to changing economic performance of the Ottoman Empire. First of all, significant differences in sample size are the most important reason. Secondly, inheritance records registered in Ottoman Sharia courts fail to provide a piece of complete information on the wealth levels of all deceased individuals. As discussed above, these sources have deficiencies in representing all individuals, who passed away during the court registration period.

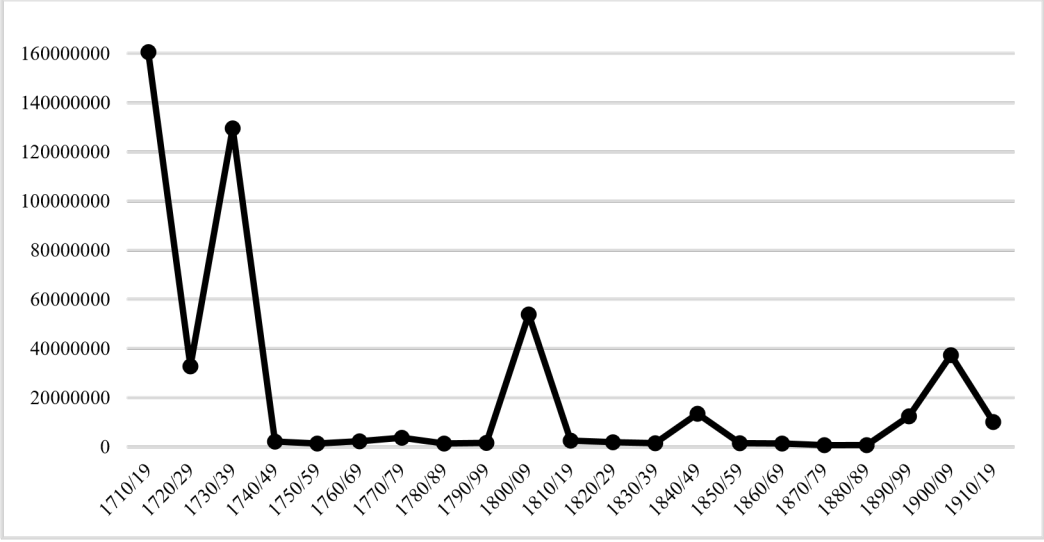


Figure 16. The trend of average wealth levels in real terms

Figure 16 presents the trend of average wealth levels from the early eighteenth century to the early twentieth century. This figure provides a better understanding of the changing levels of wealth over time. The findings indicate a declining trend in average levels. The highest average levels emerge in the first subperiod, covering the period between 1710 and 1719. Although there has been a sharp decline in the following subperiod, the average wealth levels remain at higher levels compared to the subsequent periods. From the middle of the eighteenth century, the average wealth levels decrease to modest levels, and these figures continue in a more stable pattern until the last decades of the nineteenth century. Figure 16 shows a break in average wealth levels during the first subperiod of the nineteenth century. Although there is a jump in wealth levels, this figure is not as high as the earlier periods of the previous century. Finally, there has been an increasing trend in the later subperiods that mostly covers the periods from the late nineteenth century and the early twentieth century. These figures suggest two main outcomes. First is that the inheritance records of wealthier individuals appeared to be more pronounced in courts during the earlier periods. The second tells that the increasing numbers of inheritance records emerged from higher participation of commoners entailed declines in average wealth levels over time. To examine these propositions, this thesis gives particular attention to the average wealth levels of different socioeconomic groups.

Table 20. Wealth levels of titled and untitled individuals

Periods	Nominal Values	Index (1910/19=100)	Real Values	Periods	Nominal Values		Real Values
Titled Individuals							
1710/19	4573853	2,33	196302704	1820/29	659748	21,34	3091603
1720/29	1118374	2,37	47188776	1830/39	1060243	44,22	2397655
1730/39	4581438	2,59	176889498	1840/49	27169667	61,52	44163958
1740/49	129404	3,37	3839881	1850/59	3107238	81,74	3801368
1750/59	53700	3,43	1565598	1860/69	2207741	97,11	2273444
1760/69	1852686	5,70	32503263	1870/79	1693958	90,27	1876546
1770/79	397579	6,05	6571554	1880/89	1283678	80,93	1586158
1780/89	149255	5,84	2555736	1890/99	11586313	80,08	14468423
1790/99	293255	8,32	3524700	1900/09	67992143	75,08	90559594
1800/09	23253451	11,79	197230288	1910/19	15690875	100	15690875
1810/19	1114550	16,82	6626338	**General**	8093769	-	40700380
Untitled Individuals							
1710/19	3116910	2,33	133772961	1820/29	310720	21,34	1456045
1720/29	346312	2,37	14612321	1830/39	559027	44,22	1264195
1730/39	2401012	2,59	92703166	1840/49	3263595	61,52	5304933
1740/49	42174	3,37	1251454	1850/59	743605	81,74	909720
1750/59	34800	3,43	1014577	1860/69	1011220	97,11	1041314
1760/69	993677	5,7	17432930	1870/79	349135	90,27	386767
1770/79	63046	6,05	1042083	1880/89	454328	80,93	561384
1780/89	53036	5,84	908151	1890/99	9241213	80,08	11539976
1790/99	98106	8,32	1179159	1900/09	7476675	75,08	9958278
1800/09	1433360	11,79	12157422	1910/19	4420736	100	4420736
1810/19	298545	16,82	1774941	**General**	1748154	-	14985357

Table 20 presents the average wealth of titled and untitled individuals from a long-term perspective. In terms of real values, these figures have fluctuations due to the data limitations as discussed above. The average wealth levels of titled individuals, however, are higher than those of average levels of both the entire sample and untitled individuals. This outcome emerges as is expected. It is argued that the titled individuals of the Ottoman Empire enjoyed higher economic gains through rights and privileges granted by the central authority under the tax-farming

systems. Furthermore, these groups should capture economic gains from rapid territorial expansion, particularly during the sixteenth and the seventeenth centuries.

More importantly, state offices should provide higher returns for titled individuals. Thus, these higher wealth levels emerge as expected for the Ottoman Empire.

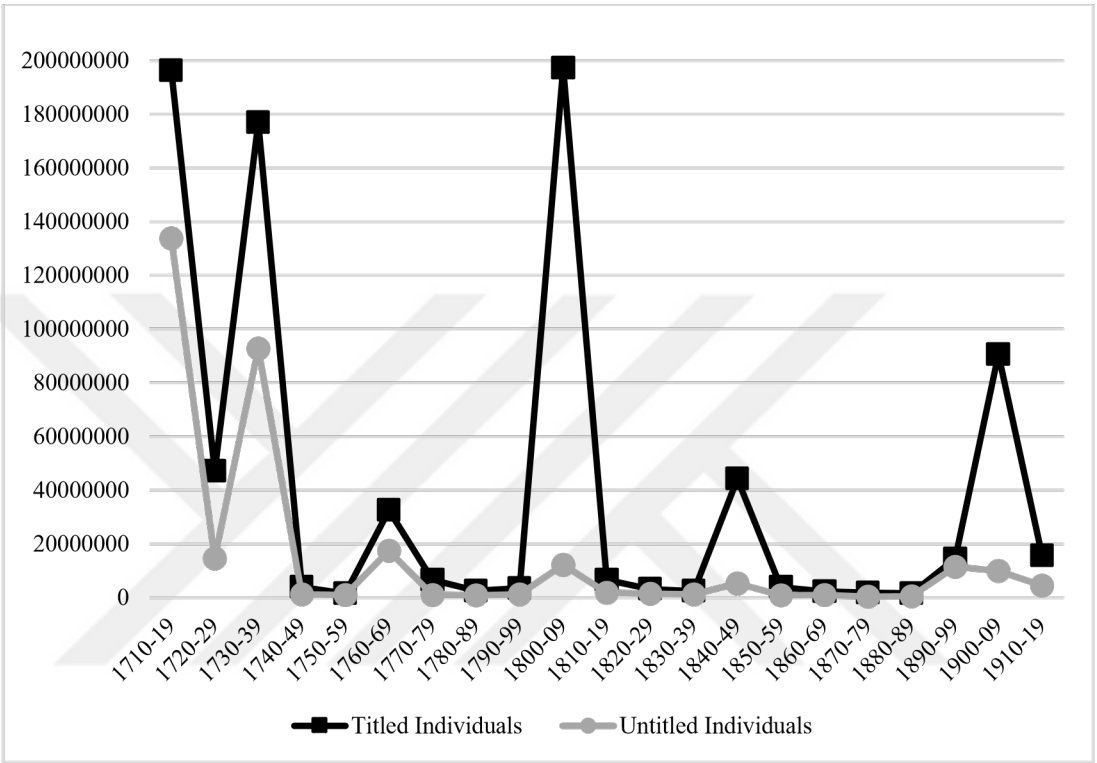


Figure 17. The trend of average wealth levels of titled and untitled individuals

Figure 17 gives the trend of average wealth levels of both titled and untitled individuals for the long term. Contrary to general average values, there have been more fluctuations in these figures. During the early eighteenth century, the trend is similar to that of average levels. One of the most important changes emerges in the early nineteenth century. The increase in levels is higher, and the average wealth of this group raises to the level of earlier periods. The same is valid for the figures of the mid-nineteenth century. Finally, a significant increase is seen during the last subperiods, which is higher than those of both average wealth levels and the levels of untitled individuals.

Table 21. Average wealth levels by gender

Periods	Nominal Values	Index (1910/19=100)	Real Values	Periods	Nominal Values		Real Values
			Males				
1710/19	4501672	2,33	193204807	1820/29	449461	21,34	2106190
1720/29	900240	2,37	37984810	1830/39	730322	44,22	1651565
1730/39	3854820	2,59	148834749	1840/49	10103439	61,52	16423015
1740/49	89730	3,37	2662611	1850/59	1414558	81,74	1730558
1750/59	47400	3,43	1381924	1860/69	14505445	97,11	14937128
1760/69	1439251	5,7	25250018	1870/79	631039	90,27	699057
1770/79	265080	6,05	4381488	1880/89	659157	80,93	814478
1780/89	90329	5,84	1546729	1890/99	10484091	80,08	13092022
1790/99	164512	8,32	1977308	1900/09	26594361	75,08	35421365
1800/09	8470857	11,79	71847812	1910/19	10631555	100	10631555
1810/19	497345	16,82	2956867	**General**	4596413	-	28073146
			Females				
1710/19	509790	2,33	21879399	1820/29	267502	21,34	1253524
1720/29	150216	2,37	6338228	1830/39	393526	44,22	889928
1730/39	1502485	2,59	58011004	1840/49	1789842	61,52	2909366
1740/49	25067	3,37	743828	1850/59	327069	81,74	400133
1750/59	N/A	3,43	N/A	1860/69	543295	97,11	559463
1760/69	866443	5,7	15200754	1870/79	171225	90,27	189681
1770/79	51349	6,05	848744	1880/89	308878	80,93	381661
1780/89	55710	5,84	953938	1890/99	1377129	80,08	1719692
1790/99	59436	8,32	714375	1900/09	45600655	75,08	60736088
1800/09	1010883	11,79	8574071	1910/19	4106400	100	4106400
1810/19	238345	16,82	1417033	**General**	2967762	-	9391365

The data given in Table 21 presents the average wealth levels by gender in both nominal and real values. The average values indicate that males had higher wealth than those of females. This outcome is expected because of several reasons. The first emerges from the fact that the sample of males includes different groups, especially from the administrative/military and judicial/religious-based groups. The second is based on the fact that females derived their wealth from very limited

resources. The wealth of females is mostly dependent on inheritance from their spouses or fathers. A very limited number of observations indicates that females accumulated their wealth through economic activities. However, these economic activities also depend on the inheritance from their spouses or fathers (Yakın and Aydoğan, 2019: 31).

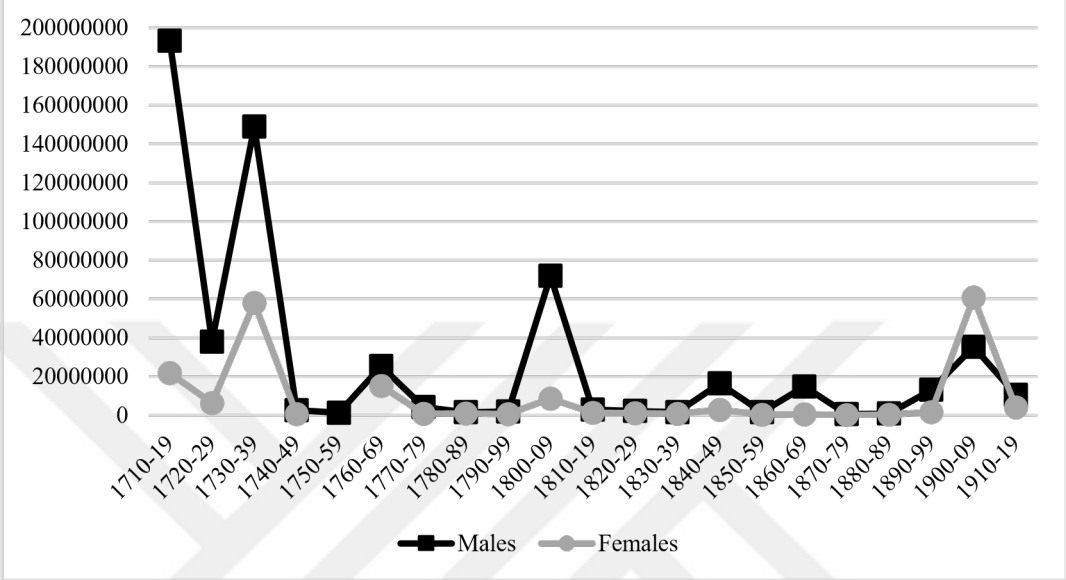


Figure 18. The trend of average wealth levels by gender

Figure 18 shows the average wealth levels of both males and females from a long-term perspective. Higher wealth levels appear to be pronounced in favor of males. This finding is expected as discussed above. This trend, however, proposes another important finding in the wealth levels of males and females. The premium is much higher for the first subperiods. From the middle of the eighteenth century, a convergence emerges until the early nineteenth century. In the period between 1810 and 1819, the average wealth level of males significantly increases while there has been a modest increase in the value of females. The data given in Figure 18 also indicates that there has been a convergence among average wealth levels of both groups in the long run. More importantly, the average wealth levels of females exceed the values of males during the early twentieth century. In this sense, it can be argued that there is a better distribution surrounding the economic structure from the first quarter of the nineteenth century compared to earlier periods in terms of gender.

Table 22. Average Wealth Levels by Religion

Periods	Nominal Values	Index (1910/19=100)	Real Values	Periods	Nominal Values		Real Values
			Muslims				
1710/19	3741314	2,33	160571416	1820/29	423662	21,34	1985295
1720/29	795788	2,37	33577553	1830/39	664923	44,22	1503670
1730/39	3317556	2,59	128090965	1840/49	9248234	61,52	15032890
1740/49	74785	3,37	2219139	1850/59	1123327	81,74	1374268
1750/59	47400	3,43	1381924	1860/69	1109845	97,11	1142874
1760/69	1078213	5,7	18916018	1870/79	608762	90,27	674379
1770/79	224545	6,05	3711488	1880/89	602327	80,93	744257
1780/89	81295	5,84	1392038	1890/99	10401437	80,08	12988807
1790/99	139326	8,32	1674591	1900/09	29643768	75,08	39482909
1800/09	7151698	11,79	60659016	1910/19	10055806	100	10055806
1810/19	456152	16,82	2711962	**General**	3856674	-	23804345
			Non-Muslims				
1710/19	N/A	2,33	N/A	1820/29	254259	21,34	1191467
1720/29	55920	2,37	2359494	1830/39	502228	44,22	1135749
1730/39	4065420	2,59	156966023	1840/49	1139488	61,52	1852224
1740/49	16800	3,37	498516	1850/59	1518349	81,74	1857535
1750/59	N/A	3,43	N/A	1860/69	4114907	97,11	4237367
1760/69	5201280	5,7	91250526	1870/79	83820	90,27	92855
1770/79	N/A	6,05	N/A	1880/89	943686	80,93	1166052
1780/89	37720	5,84	645890	1890/99	531480	80,08	663686
1790/99	130308	8,32	1566202	1900/09	8936784	75,08	11903015
1800/09	1361897	11,79	11551289	1910/19	N/A	100	N/A
1810/19	306291	16,82	1820993	**General**	1717685	-	17103463

Table 22 presents the average wealth levels of individuals by their religious beliefs. Due to the lack of data, this thesis gives this sample by dividing it into two groups. The first group consists of Muslims, which includes titled and untitled individuals as well as males and females. This structure entails the emergence of lower average wealth levels than those of titled individuals and males. The group of non-Muslims consists of Orthodox Rum, Jew, and Christian subjects of the Ottoman Empire. Furthermore, this group also includes females, who had limited

sources of wealth accumulation. In constructing the dataset for non-Muslims, the data limitations prevented this thesis to give more complete ———— data than for the earlier subgroups. Thus, Table 22 shows empty slots for non-Muslims. These slots are fulfilled for the econometric analysis through a reliable secondary source than contains data for non-Muslim inheritance records (Canbakal and Filiztekin, 2021:

122).

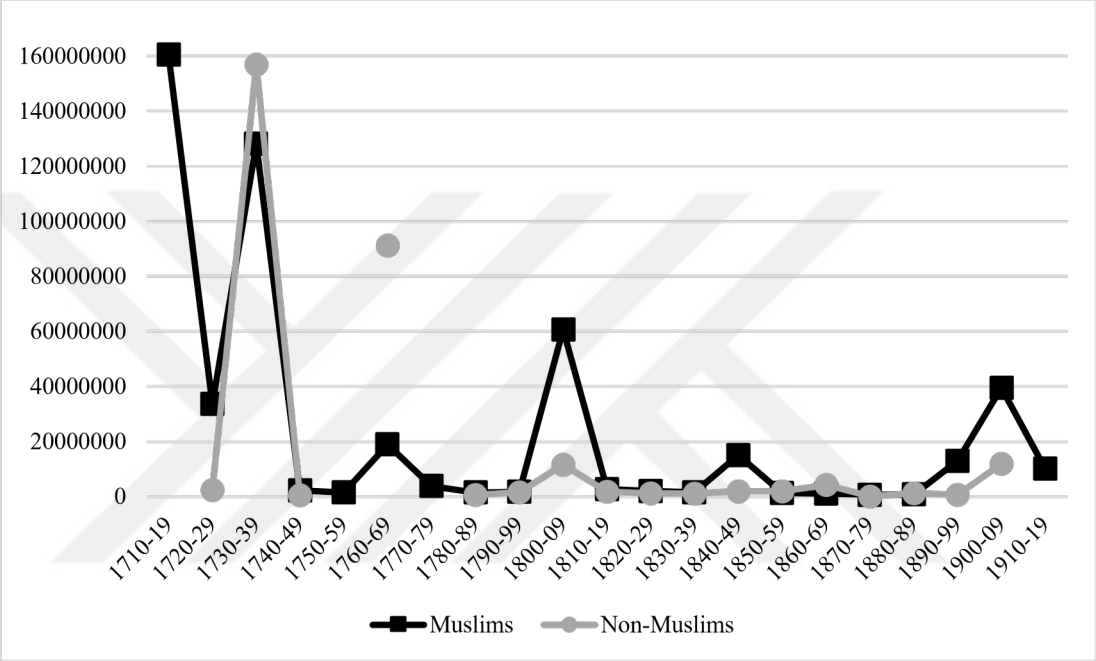


Figure 19. The trend of average wealth levels by religions

Figure 19 shows the trend of average wealth levels of individuals from different religions from a comparative perspective. This trend is similar to the trends of average wealth levels of males and females. During the early subperiods, average wealth levels are higher than those of subsequent periods. In this trend, the average wealth levels of non-Muslims are higher than that of Muslims during the period between 1730 and 1739 as well as 1760 and 1769. Although there have been larger premiums in average wealth levels in favor of Muslims, the long-term trend indicates that there has been a convergence among the two groups. The average wealth levels have an increasing trend since the nineteenth century. In this period, however, there is a divergence in average wealth levels in favor of Muslims.

Table 23. Average wealth levels by segments

	Average Wealth	Shares (%)	N
Entire Sample	2.700.000.000	-	4.434
Top 1 %	7.080.000.000	60	45
Top 10 %	111.240.000	93	444
First 25 %	46.200.000	97	1.109
Second 25 %	912.000	2	1.109
Third 25 %	404.400	0,8	1.109
Fourth 25 %	135.000	0,2	1.109
Gini		0,93	

Table 23 shows average wealth levels from a different perspective. The data presented in this table focuses on the distribution of wealth in different wealth segments and the Gini coefficient. The wealth segments consist of the wealthiest one, 10, and 25 percent as well as other quartiles. These segments are determined regarding the method of earlier studies given in Chapter 1. The second column of the table presents the average wealth levels in terms of akche with the prices of 1910/19. These values are seemed to be high than they should be. Recall that the price index is based on the prices of the subperiod when the highest inflation emerged in the Ottoman Empire. To show the distribution of wealth, the third column gives the shares of wealth segments in aggregate wealth. While the wealthiest one percent holds 60 percent of the aggregate wealth, this figure increases up to 93 percent for the wealthiest 10 percent. The share of the wealthiest quartile is the highest with 97 percent. Finally, the lowest two wealth segments hold only one percent of the aggregate wealth. These figures provide information for evaluating the distribution of wealth. However, employing the Gini coefficient, the distribution of wealth becomes more explicit, and it emerges as 0,93 for the entire sample. Even if this figure is seemed higher than it should be, a similar outcome is also valid for Sweden (Bengtsson, et. al., 2018).

Table 24. Average wealth level and its distribution by periods

	1710/19	1720/29	1730/39	1740/49	1750/59	1760/69	1770/79
Gini	0,72	0,69	0,68	0,66	0,41	0,75	0,70
Top 1 %	1134206009	543751899	1594239382	36708605	N/A	631747368	62035041
Top 10 %	920510730	247243038	694525483	11516617	N/A	192359649	21984298
First 25 %	509515880	118067932	405933977	6563501	N/A	88057368	11444628
Second 25 %	118218026	9587764	79140927	1176855	N/A	1340175	1736661
Third 25 %	39026180	2654008	27338610	571217	N/A	437368	859008
Fourth 25 %	6366524	532068	5725483	285757	N/A	182982	394380
Average	160571245	32710549	129534749	2195846	N/A	22677368	3711570
N	21	72	80	74	6	250	58
	1780/89	**1790/99**	**1800/09**	**1810/19**	**1820/29**	**1830/39**	**1840/49**
Gini	0,58	0,57	0,68	0,71	0,67	0,68	0,72
Top 1 %	19360274	12230769	1650015267	48921879	27158201	62154274	779771505
Top 10 %	6511815	779087	514968787	15282759	10108950	10388150	128331583
First 25 %	3622603	4439543	211520102	7956897	5746298	4947580	52772741
Second 25 %	889041	1212981	1611450	1286445	1179194	601266	646294
Third 25 %	522432	636178	591179	568787	490112	285007	262858
Fourth 25 %	285445	241947	194148	208323	187910	84803	69854
Average	1358048	1656250	53829432	2505113	1900890	1477883	13417718
N	66	59	151	392	268	785	661
	1850/59	**1860/69**	**1870/79**	**1880/89**	**1890/99**	**1900/09**	**1910/19**
Gini	0,74	0,73	0,62	0,56	0,64	0,67	0,64
Top 1 %	5376364	23305530	12003960	7555370	593661600	1474344000	75364320
Top 10 %	9644715	8733220	3200020	2786480	94541670	257504160	45459330
First 25 %	4868706	4631016	1763800	1650210	38918990	110840450	30141735
Second 25 %	682726	583205	363560	460410	538580	632720	7876470
Third 25 %	319452	290773	198600	252520	277990	297500	2434350
Fourth 25 %	115464	127845	104420	119080	145390	124740	995775
Average	1488047	1387179	599870	619500	9927340	27973850	10055800
N	395	114	118	477	229	124	35

Table 24 presents the aggregate data by different wealth segments from a long-term perspective. These values are given in terms of akche in real terms. The average wealth of the wealthiest one percent is approximately 1.134 million akche during the first half of the eighteenth century. This figure decreases to almost 800 million akche in the second half of the eighteenth century. Although a decrease emerges in average wealth levels of the wealthiest segment, the share of this group in aggregate wealth increases from 22 to 38 percent in the same period. This figure increases from 71 to 91 percent for the wealthiest 10 percent during the eighteenth century. During the nineteenth century, the share of the wealthiest one percent ranges between 70 and 72 percent, while this rate ranges between 85 and 92 percent for the wealthiest 10 percent. In the long-term perspective, the share of the wealthiest 25 percent is higher than 90 percent until the early twentieth century. The share of the lowest three quartiles, on the other hand, ranges between two and nine percent from the early eighteenth century to the early twentieth century. The highest

ratio for this group emerges during the first half of the eighteenth century with approximately nine percent, and this figure declines in the following periods up to two percent.

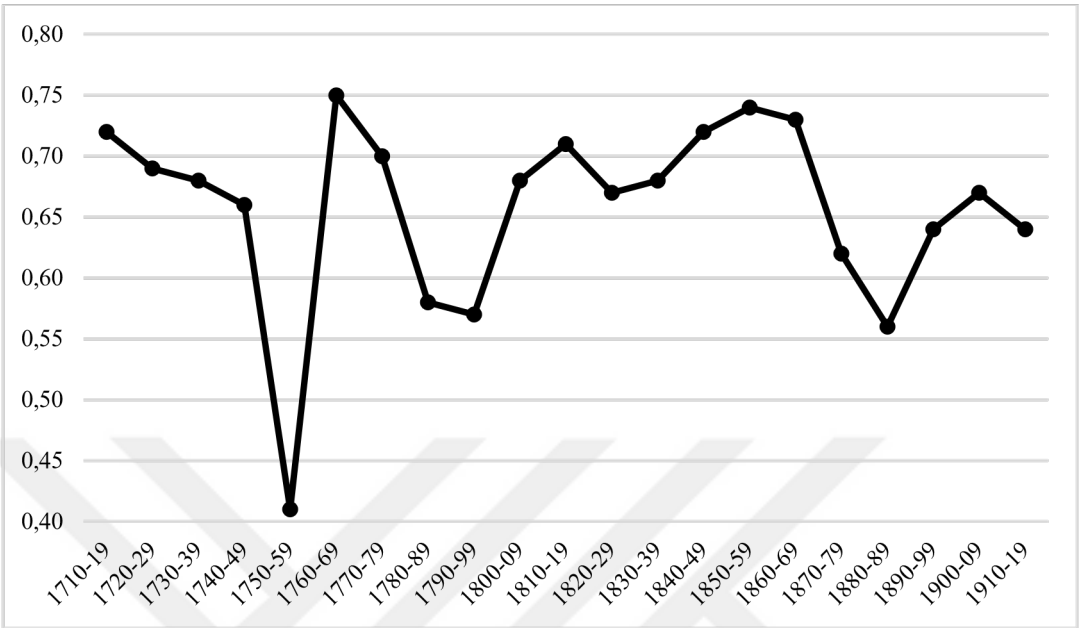


Figure 20. The trend of Gini coefficients by periods

Figure 20 presents the distribution of wealth through changing Gini coefficients in the long term. The distribution of wealth has a declining trend until the middle of the eighteenth century, and it increases during the second half of the eighteenth century. The increasing trend in Gini coefficients continues during the nineteenth century. The trend of Gini coefficients, however, is more stable than that of the earlier period. But these figures fail to decline to lower levels as emerged in the eighteenth century. Only in the last decades of the nineteenth century, the distribution of wealth becomes better than in the earlier century. Although Gini coefficients have an increasing trend in the early twentieth century, these figures range from 0,60 to 0,70. Even if these findings can be evaluated as higher values, the distribution of wealth in the Ottoman Empire is close to those of European societies (Bengtsson, et. al., 2018).

Table 25. Average wealth levels of titled individuals by periods

	1710/19	1720/29	1730/39	1740/49	1750/59	1760/69	1770/79
Gini	N/A	0,63	0,64	0,55	N/A	0,84	0,93
Top 1 %	N/A	543751800	1594239300	36708600	N/A	1066736800	62035000
Top 10 %	N/A	344107500	855213100	18788100	N/A	256657000	34134800
First 25 %	N/A	170424000	588755200	12357800	N/A	129540500	20047900
Second 25 %	N/A	13823700	121409000	2925400	N/A	3805400	3833700
Third 25 %	N/A	3847500	36927600	937000	N/A	877500	1649800
Fourth 25 %	N/A	659700	6229000	356000	N/A	200300	754700
Average	196302700	47188700	176889500	3839800	1565500	32503200	6571500
N	9	40	35	27	4	87	28
	1780/89	**1790/99**	**1800/09**	**1810/19**	**1820/29**	**1830/39**	**1840/49**
Gini	0,39	N/A	0,86	0,59	0,58	0,67	0,89
Top 1 %	19360700	N/A	1797007600	54823300	24134900	23021300	1638866000
Top 10 %	14053500	N/A	1566737900	34560700	13911000	12536100	404515100
First 25 %	8514100	N/A	823023600	21778900	8485000	7403100	176363200
Second 25 %	1528700	N/A	10769100	3943400	2398400	1403400	2018200
Third 25 %	702300	N/A	3097500	1355100	114000	615600	702500
Fourth 25 %	463900	N/A	845400	437900	368900	168400	144700
Average	2555700	3524700	197230200	6626300	3091600	2397600	44163900
N	18	12	34	59	72	178	138
	1850/59	**1860/69**	**1870/79**	**1880/89**	**1890/99**	**1900/09**	**1910/19**
Gini	0,61	0,54	0,47	0,56	0,70	0,64	0,60
Top 1 %	138001700	20377800	1329700	16150200	263202700	1963691300	75364300
Top 10 %	26641800	11904600	9354100	6827500	125691300	828898200	65252300
First 25 %	12606900	6560000	2896300	4185600	54723400	342798400	38909900
Second 25 %	1527500	1540700	1353000	1219500	1515500	2233200	13339600
Third 25 %	724800	719800	635500	626000	578800	617700	3958500
Fourth 25 %	242000	273100	229500	258000	217500	197600	750500
Average	3820000	2273400	1907900	1586100	14468400	90559500	15690800
N	79	32	22	95	67	42	17

Table 25 and 26 presents the average wealth levels of titled and untitled individuals by different wealth segments in a long-term perspective. These figures indicate that the average wealth of the wealthiest groups of titled individuals is higher than those of untitled individuals. There has been a declining trend in average wealth levels of the lowest wealth segments in titled individuals, the declining trend appears to be more pronounced in the average wealth of the wealthiest segments. In other words, the trend of average wealth levels of lower-level groups is more stable than that of wealthier groups.

Table 26. Average wealth levels of untitled individuals by periods

	1710/19	1720/29	1730/39	1740/49	1750/59	1760/69	1770/79
Gini	N/A	0,43	0,65	0,45	N/A	0,90	0,42
Top 1 %	N/A	170121500	711474900	13054000	N/A	414252600	4496500
Top 10 %	N/A	98275100	447075500	5200200	N/A	154319300	3022100
First 25 %	N/A	50841700	262414200	3318100	N/A	67957600	2212100
Second 25 %	N/A	5238900	64738500	837900	N/A	810500	975600
Third 25 %	N/A	1896700	22918300	495800	N/A	367900	528000
Fourth 25 %	N/A	471900	5313200	272200	N/A	174600	294800
Average	133772900	14612300	92703100	1251400	N/A	17432900	1042000
N	12	32	45	47	2	163	30
	1780/89	**1790/99**	**1800/09**	**1810/19**	**1820/29**	**1830/39**	**1840/49**
Gini	0,45	0.42	0.90	0.57	0.62	0.81	0.95
Top 1 %	5837260	9852400	303090070	31368010	26508240	61227750	251067620
Top 10 %	3111900	45006340	108896690	9536720	8017810	9065210	49286450
First 25 %	2076550	2742120	45903800	5273250	4469570	4213720	20411600
Second 25 %	826540	1082930	955350	1082540	823270	496940	483450
Third 25 %	462240	566400	431930	513120	405430	252960	223200
Fourth 25 %	270730	247550	176940	188690	155620	74600	61440
Average	909010	1179160	12157420	1774940	1463470	1264190	5304930
N	48	47	117	333	196	637	523
	1850/59	**1860/69**	**1870/79**	**1880/89**	**1890/99**	**1900/09**	**1910/19**
Gini	0,80	0,74	0,67	0,75	0,81	0,64	0,33
Top 1 %	18847730	23305530	3847790	4905760	872955040	449031430	19335000
Top 10 %	5005340	7491580	1508700	2187410	112853820	95747560	13566360
First 25 %	2738740	3350120	925110	1358350	44614210	37829010	9162790
Second 25 %	543300	383480	323600	468090	511390	607670	3671070
Third 25 %	271080	235710	192680	279470	511390	314240	2313840
Fourth 25 %	103630	113380	105660	132200	315630	156170	1349730
Average	914190	1041310	386760	561380	167510	9958270	4420730
N	316	82	96	382	162	82	17

A similar pattern is valid for the levels of untitled individuals. **The key is that the share of the wealthiest groups in aggregate wealth has also an increasing pattern for both groups from the early eighteenth century to the early twentieth century.** This increasing trend entails higher Gini coefficients for both groups in the long-term perspective. A comparison of Gini coefficients among these groups is given below with a long-term perspective.

Table 27. Average wealth levels of males by periods

	1710/19	1720/29	1730/39	1740/49	1750/59	1760/69	1770/79
Gini	0,59	0,63	0,66	0,52	N/A	0,87	0,60
Top 1 %	1134206000	543751800	1594239300	36708600	N/A	710768400	62035000
Top 10 %	920510700	276933700	801686400	13643300	N/A	20496800	24636200
First 25 %	580409800	135214000	488336000	8030400	N/A	99556900	14639800
Second 25 %	163055700	12646400	95236600	1612800	N/A	1791600	2273500
Third 25 %	64557900	3300000	28446400	692800	N/A	547400	1125700
Fourth 25 %	10477500	778700	4538600	314300	N/A	185900	490200
Average	193204800	37984800	148834700	2662600	N/A	25250000	4381400
N	17	60	63	56	N/A	186	47
	1780/89	**1790/99**	**1800/09**	**1810/19**	**1820/29**	**1830/39**	**1840/49**
Gini	0,39	0,57	0,90	0,65	0,66	0,68	0,94
Top 1 %	19360200	12230700	1650015200	51751700	32305800	76650800	859080624
Top 10 %	7376400	8434900	808591600	17308500	11249600	11942900	158304127
First 25 %	4317500	5451100	284398300	9274559	6342900	5620300	64861146
Second 25 %	1042500	1364600	2113100	1635300	1398290	636500	747047
Third 25 %	635100	823400	686024	705200	558600	293000	274566
Fourth 25 %	304600	269900	193700	251500	204900	75700	63270
Average	1546700	1977300	71847800	2956800	2116600	1651500	16423015
N	45	44	108	277	201	606	514
	1850/59	**1860/69**	**1870/79**	**1880/89**	**1890/99**	**1900/09**	**1910/19**
Gini	0,66	0,67	0,49	0,54	0,75	0,60	0,51
Top 1 %	540050400	23305500	13297800	9935900	9941171800	1963697300	75364300
Top 10 %	11197500	9964600	3728500	3693700	122481200	330675466	54167400
First 25 %	5679400	5005100	2033200	2186600	51818400	144047000	32526900
Second 25 %	825900	612300	415100	606000	717700	819300	9231700
Third 25 %	374100	291600	229200	326200	366400	399200	1508600
Fourth 25 %	133900	120600	120800	156100	192300	165600	995700
Average	1739000	1493713	694200	814400	13092000	35421300	10631500
N	323	101	109	423	215	115	31

Table 27 gives the average wealth levels of males from a long-term perspective. The levels of males are higher than those of females as it is expected. One of the key determinants in evaluating the distribution of wealth for males and females is the share of wealth segments in aggregate wealth levels for each period. The data presented in Table 27 indicates that the share of the wealthiest one percent was approximately 18 percent in the first half of the eighteenth century, and this figure increases to 36 percent in the second half of the century. Furthermore, the share of the wealthiest one percent raises approximately 72 percent during the nineteenth century and declines to 62 percent in the early twentieth century. The trend of shares for the wealthiest 10 percent has an increasing pattern in the long term. While the share of the wealthiest 10 percent is 69 percent in aggregate wealth

during the first half of the eighteenth century, this figure increases up to 98 percent in the period between 1910 and 1919. The share of the wealthiest 25 percent is higher than 90 percent, spanning from 1710 to 1919.

Table 28. Average wealth levels of females by periods

	1710/19	**1720/29**	**1730/39**	**1740/49**	**1750/59**	**1760/69**	**1770/79**
Gini	N/A	N/A	0,48	0,24	N/A	0,70	N/A
Top 1 %	N/A	N/A	231891800	2759600	N/A	473705200	N/A
Top 10 %	N/A	N/A	178362100	2522800	N/A	145068400	N/A
First 25 %	N/A	N/A	139628500	1689600	N/A	59719600	N/A
Second 25 %	N/A	N/A	59071000	703200	N/A	587200	N/A
Third 25 %	N/A	N/A	30700772	520500	N/A	310200	N/A
Fourth 25 %	N/A	N/A	13717000	242800	N/A	185900	N/A
Average	21879300	6338236	58010900	74800	N/A	15200700	848700
N	4	12	17	18	0	64	11
	1780/89	**1790/99**	**1800/09**	**1810/19**	**1820/29**	**1830/39**	**1840/49**
Gini	0,30	0,36	0,49	0,57	0,57	0,61	0,70
Top 1 %	5837200	1776900	97282400	30537900	12539800	16317600	106455100
Top 10 %	4350300	1589400	68931200	8472200	65977000	5073800	25151000
First 25 %	2482500	1505200	34950400	4481100	3851000	2714400	11074400
Second 25 %	715400	936700	1116200	721300	768600	504800	458600
Third 25 %	431900	497200	431500	425800	391200	265100	232000
Fourth 25 %	313800	280000	195800	145300	155900	115800	32900
Average	953900	714300	8574000	1417000	1253500	889900	2909300
N	21	15	43	115	67	179	147
	1850/59	**1860/69**	**1870/79**	**1880/89**	**1890/99**	**1900/09**	**1910/19**
Gini	0,51	N/A	N/A	0,41	N/A	N/A	N/A
Top 1 %	2953300	N/A	N/A	1979300	N/A	N/A	N/A
Top 10 %	1570300	N/A	N/A	1098000	N/A	N/A	N/A
First 25 %	979800	N/A	N/A	806100	N/A	N/A	N/A
Second 25 %	364300	N/A	N/A	410200	N/A	N/A	N/A
Third 25 %	185800	N/A	N/A	237800	N/A	N/A	N/A
Fourth 25 %	78200	N/A	N/A	104800	N/A	N/A	N/A
Average	402100	559400	189600	381600	1719600	60736000	4106400
N	72	13	8	54	14	9	3

Table 28 gives the average wealth levels of females with different wealth segments. Contrary to the dataset of males, there are empty slots in the dataset of females. As mentioned above, these empty slots are filled through a reliable secondary source (Canbakal and Filiztekin, 2021: 122). The shares of the wealthiest one percent within the female sample are lower than those of males. These figures range from 6 to 37 percent in the eighteenth and the nineteenth centuries. The data limitations prevent this thesis from establishing a comparison for the period between 1900 and 1919. The shares of the wealthiest 10 percent are also lower, which range from 50 percent to 94 percent in the same period. One of the crucial findings emerges in the shares of the wealthiest 25 percent. Even if the share of this group is

approximately 97 percent in the second half of the eighteenth century, this figure decreases up to 68 percent in the second half of the nineteenth century. These figures indicate a better distribution of wealth among females.

Table 29. Average wealth levels of Muslims by periods

	1710/19	1720/29	1730/39	1740/49	1750/59	1760/69	1770/79
Gini	0,55	0,82	0,66	0,58	N/A	0,87	0,61
Top 1 %	1134206000	543751800	1594239300	36708600	N/A	608498200	62035000
Top 10 %	920510700	247243000	694525400	12457300	N/A	162865900	21984200
First 25 %	459231700	118067900	402967300	6563500	N/A	72991500	11444500
Second 25 %	87831700	9587600	76889200	1199800	N/A	1159700	1736600
Third 25 %	31329700	2592000	26992500	585900	N/A	415600	859000
Fourth 25 %	4160300	503700	5514600	285800	N/A	180600	394300
Average	160571400	33577500	128090900	2219100	1381900	18916000	3711400
N	21	70	76	73	6	237	58
	1780/89	**1790/99**	**1800/09**	**1810/19**	**1820/29**	**1830/39**	**1840/49**
Gini	0,44	0,45	0,90	0,65	0,66	0,67	0,94
Top 1 %	19360200	12230700	1650015200	51860500	27158200	68707400	859080600
Top 10 %	7148100	7300900	573984700	16934900	10676300	10654400	144414200
First 25 %	3768600	4249300	236358300	8685900	5979500	5023400	67411800
Second 25 %	936300	1294700	1779800	1285100	1227800	605300	749800
Third 25 %	513800	693800	650500	579000	507100	288400	336000
Fourth 25 %	2797000	245700	196500	218000	192600	83000	56800
Average	1392000	1674500	60659000	2711900	1993600	1503600	15032800
N	63	49	130	301	237	730	580
	1850/59	**1860/69**	**1870/79**	**1880/89**	**1890/99**	**1900/09**	**1910/19**
Gini	0,61	0,69	0,62	0,56	0,70	0,87	0,50
Top 1 %	54983000	20377881	13297800	9335600	994171800	1963697300	75364300
Top 10 %	9103900	6483200	3544900	3338700	123287200	393926900	54167400
First 25 %	4471600	3510600	1953900	1958900	50315100	153921000	28266500
Second 25 %	629800	557900	402700	556400	655300	784000	6791200
Third 25 %	286100	286100	221800	307500	342700	363600	2301300
Fourth 25 %	105300	125600	119000	143200	178800	157900	995700
Average	1381000	1142800	674300	744200	12988800	39482900	10055800
N	302	105	116	453	218	114	34

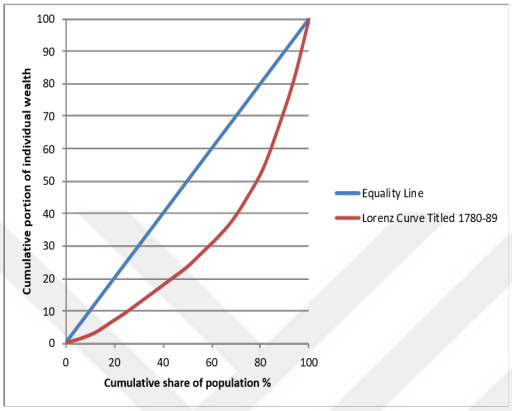
The data given in Table 29 shows the average wealth levels of Muslims in the long term. This group has higher wealth levels compared to non-Muslims. The main reason is that this group includes titled individuals, while non-Muslims consist of commoners and females. The average wealth levels in the early periods are higher than those of subsequent periods. The increasing number of observations should influence these levels over time. While decreases in average wealth levels of the wealthiest segments appear to be more pronounced in the long term, average wealth levels of lower wealth segments have a more stable pattern, spanning from 1710 to 1919.

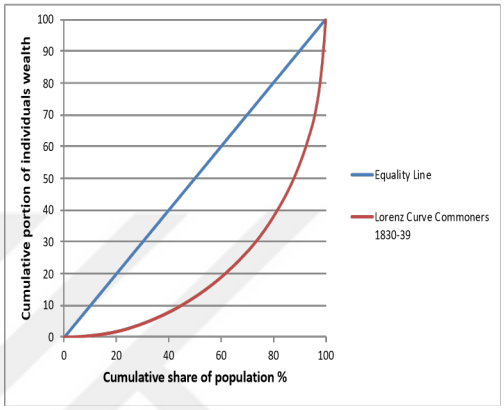
Table 30. Average wealth levels of non-Muslims by periods

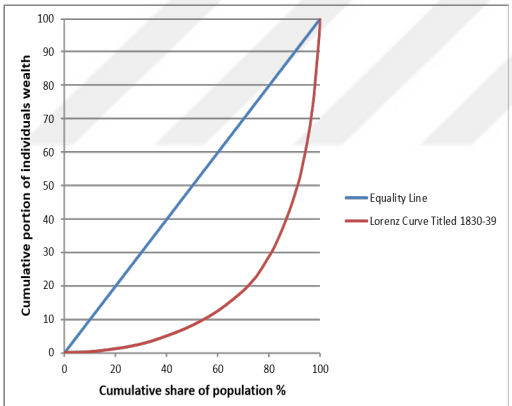
	1710/19	1720/29	1730/39	1740/49	1750/59	1760/69	1770/79
Gini	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Top 1 %	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Top 10 %	N/A	N/A	N/A	N/A	N/A	N/A	N/A
First 25 %	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Second 25 %	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Third 25 %	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fourth 25 %	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Average	N/A	2359400	156966000	498500	N/A	91250500	N/A
N	N/A	2	4	1	N/A	13	N/A
	1780/89	**1790/99**	**1800/09**	**1810/19**	**1820/29**	**1830/39**	**1840/49**
Gini	N/A	N/A	0,68	0,53	0,52	0,46	0,70
Top 1 %	N/A	N/A	211920600	26108200	7057100	16282200	28847000
Top 10 %	N/A	N/A	110845800	9297100	5198100	7087200	11333000
First 25 %	N/A	N/A	47157600	5283300	3376200	3656600	5995000
Second 25 %	N/A	N/A	741000	1243000	736900	482800	848100
Third 25 %	N/A	N/A	377200	504900	358200	230500	272500
Fourth 25 %	N/A	N/A	199500	181200	166200	95600	86000
Average	645800	1566200	1151200	1820900	1131400	1135700	1852200
N	3	10	21	91	31	55	81
	1850/59	**1860/69**	**1870/79**	**1880/89**	**1890/99**	**1900/09**	**1910/19**
Gini	0,47	N/A	N/A	0,70	N/A	N/A	N/A
Top 1 %	43034100	N/A	N/A	6481700	N/A	N/A	N/A
Top 10 %	12272300	N/A	N/A	5539100	N/A	N/A	N/A
First 25 %	5864600	N/A	N/A	3258700	N/A	N/A	N/A
Second 25 %	846100	N/A	N/A	798600	N/A	N/A	N/A
Third 25 %	418300	N/A	N/A	392500	N/A	N/A	N/A
Fourth 25 %	163700	N/A	N/A	214100	N/A	N/A	N/A
Average	1866600	4237300	92800	1166000	663600	11903000	N/A
N	93	9	2	24	11	10	N/A

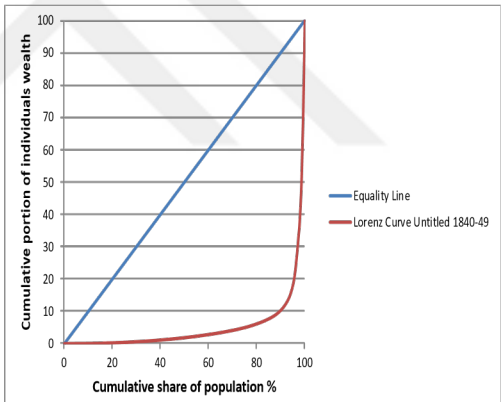
Table 30 presents the average wealth levels of non-Muslims for the long term. There is a lower number of observations compared to other socioeconomic groups. For these problems, the dataset fails to present complete information on the average wealth levels of non-Muslims. However, the dataset indicates a declining trend in average wealth levels of non-Muslim subjects of the Ottoman Empire. These declines have a stable pattern compared to Muslims. Furthermore, the average wealth levels of the lower-level groups remain at similar levels, particularly from the early nineteenth century to the late periods of the same century.

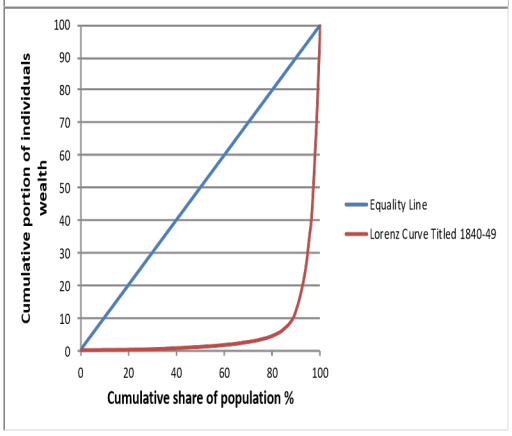
The evaluation of the distribution of wealth levels through different wealth segments provides sufficient information for the long term. These findings, however, give a partial perspective due to the problems that emerged in the number of observations. The scattered allocation of observations prevents this thesis from establishing the pattern of wealth distribution in the long term. To construct a more complete perspective, this thesis also employs Lorenz curves and Gini coefficients, which provide a theoretical perspective on the distribution of wealth.











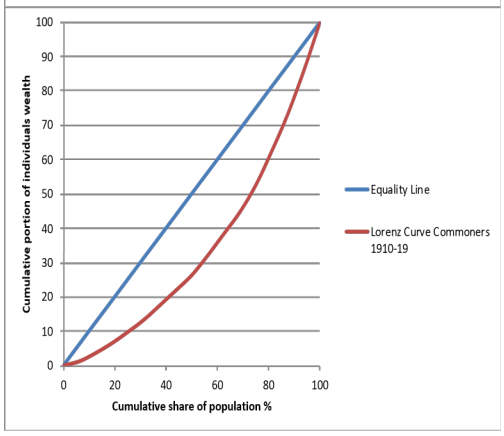


Figure 21. Lorenz curves by title

Figure 21 gives the Lorenz curves for both titled and untitled individuals from a comparative perspective. These figures represent the curves of different subperiods instead of focusing on aggregate levels. The left column shows the Lorenz curves based on the distribution of wealth for titled individuals. There have been three subperiods, including 1780-89, 1830-39, and 1840-49. For titled individuals, the distribution of wealth is getting worse over time. On the other side, the distribution of wealth for untitled individuals become better from the first half of the nineteenth century to the early twentieth century. These probably result from the fact that the wealth levels of titled individuals had higher fluctuations compared to untitled individuals, and more importantly, the higher observation of titled individuals entailed decreases in average wealth levels.

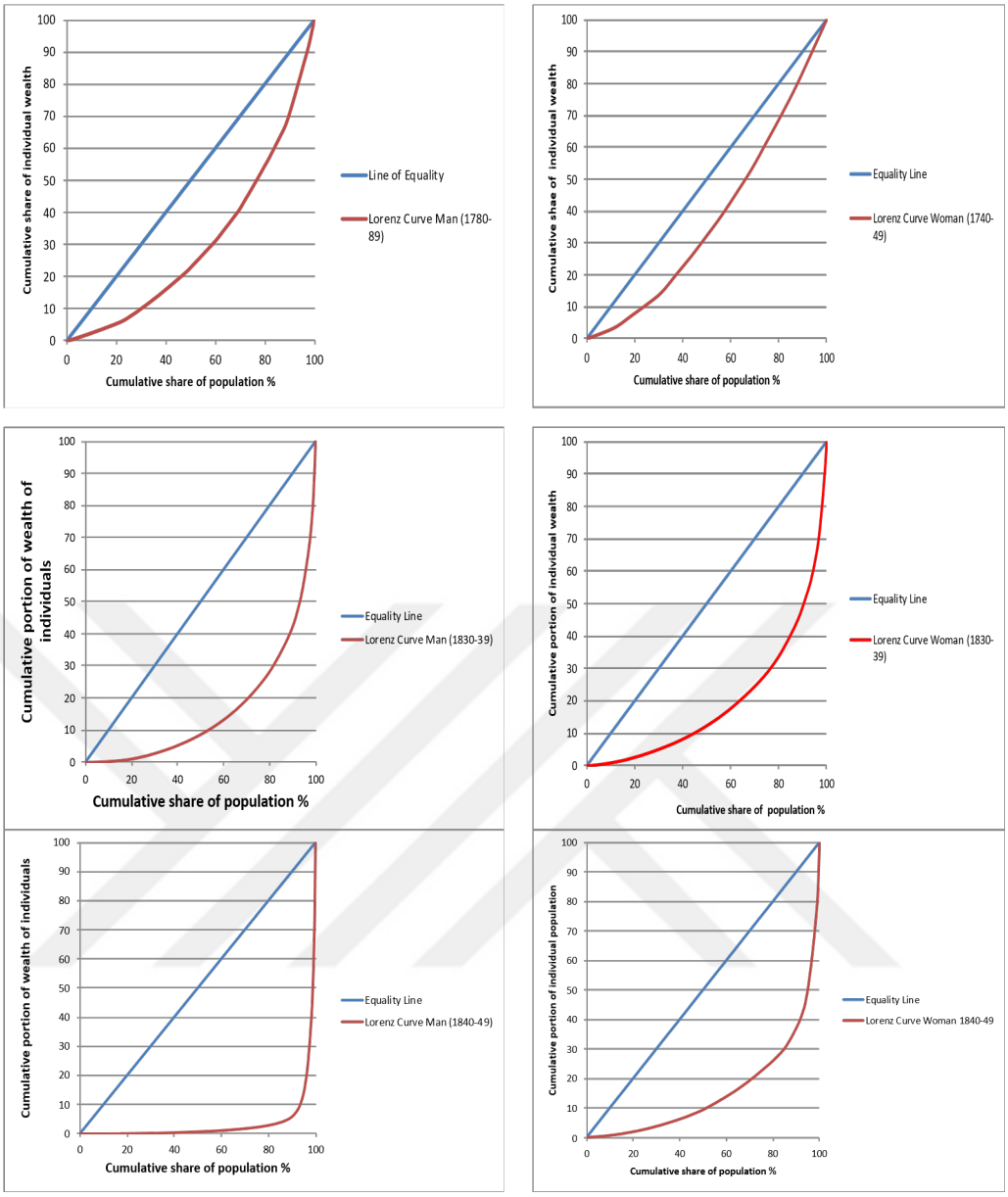


Figure 22. Lorenz curves by gender

Figure 22 presents a similar comparison for males and females. These representative Lorenz curves focus on similar subperiods. The dataset indicates that the distribution of wealth for females is much better than those of males. The uneven distribution of samples may be one reason for this. However, the distribution of wealth is getting worse for both males and females over time. This downturn in the distribution of wealth appears to be more pronounced for males compared to the trend for females.

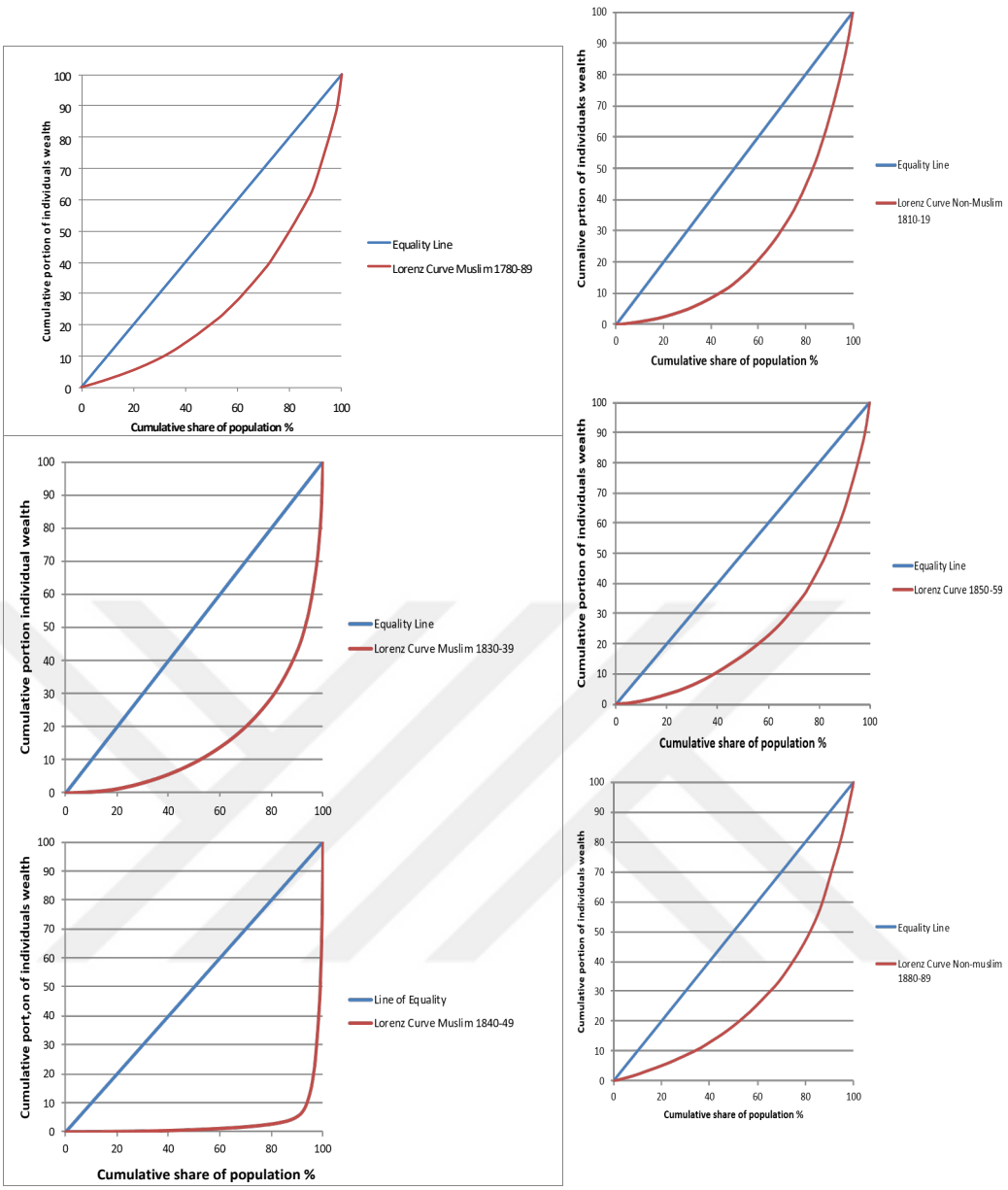
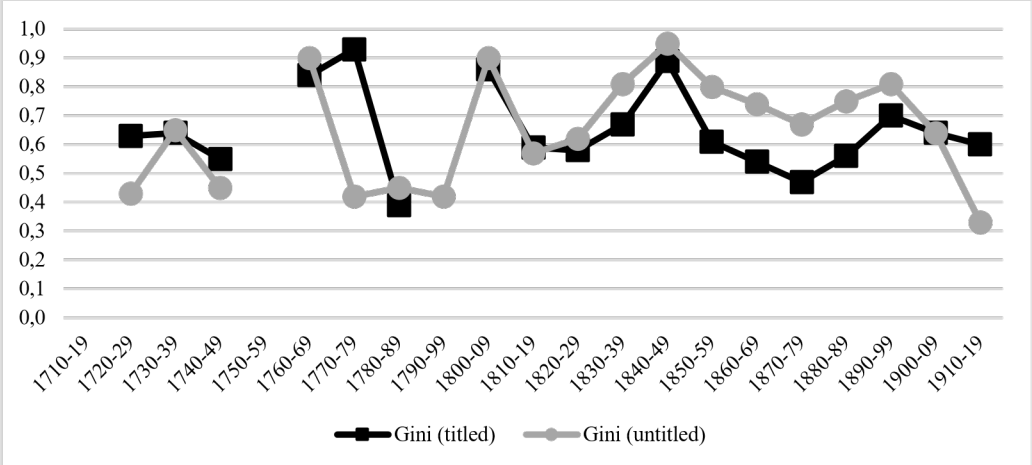
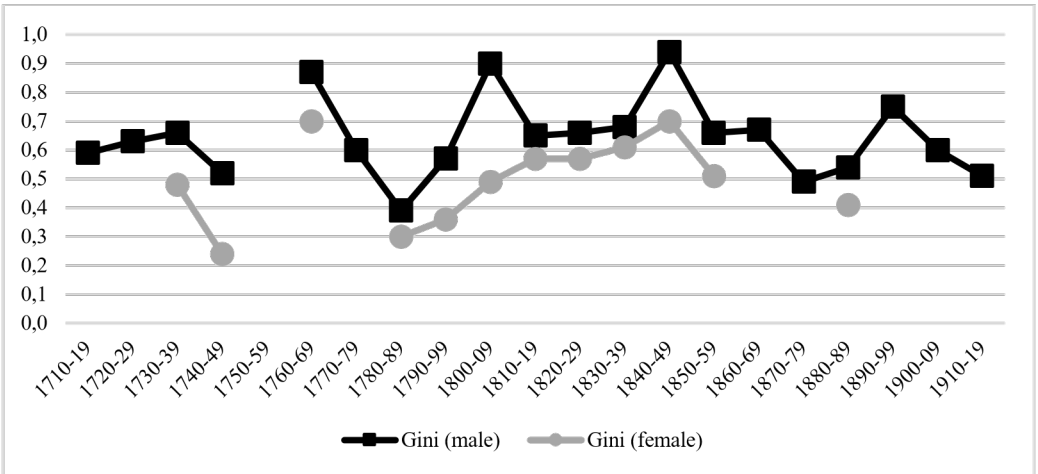


Figure 23. Lorenz curves by religion

Finally, Figure 23 compares the Lorenz curves by religion. In the period between the late eighteenth century and the early nineteenth century, the distribution of wealth is better for Muslims, but this figure changed in the first half of the nineteenth century in favor of non-Muslims. During the late nineteenth century, for non-Muslim subjects, the distribution of wealth is much better than that of Muslims. The number of observations should cause to emerge these differences in Lorenz curves.

The differences in the Lorenz curves indicate that the average wealth levels of titled individuals, males, and Muslims were more affected by changes in economic and political structures over time. On the other side, the wealth levels of other groups were less affected by both exogenous and endogenous shocks over time. Through the dataset and figures, the findings have allowed for developing certain hypotheses on the long course of average wealth levels and the distribution of wealth. Before moving on to these aspects, this part finally presents the long-run Gini coefficients for each group comparatively.





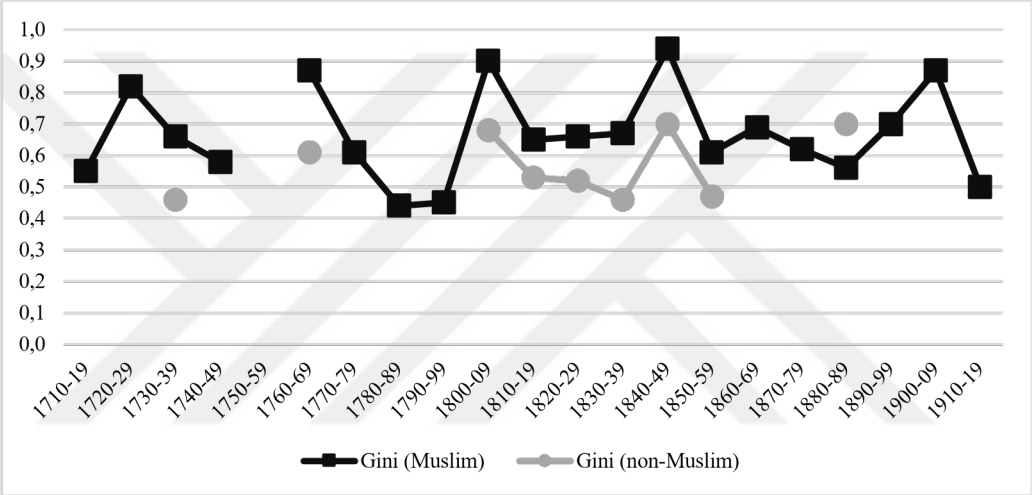


Figure 24. Gini coefficients by socio-economic groups 1710-1919

Figure 24 offers a much broader perspective in comparing the distribution of wealth among diverse socioeconomic groups. The advantageous groups, including titled individuals, Muslims, and males, have a worse distribution of wealth in the long term. These findings probably result from the fact that lower advantageous groups had limited opportunities in accumulating their wealth because of lowerlevel occupations within the Ottoman Empire. Non-Muslim subjects, for instance, have no chance to obtain economic privileges and rights under the tax-farming systems. A substantial share of this group contains merchants and craftsmen in society. Furthermore, the wealthiest individuals of non-Muslims probably choose to use their courts instead of applying Ottoman Sharia courts, particularly in the second half of the nineteenth century. This practice entails the emergence of observations with lower-income non-Muslims in the dataset. As mentioned above, females have

also limited opportunities in enhancing their wealth. A substantial proportion of this group has accumulated their wealth through inheritance from their spouses and fathers. Finally, untitled individuals mostly contain merchants, craftsmen, and farmers, and these groups should have limited opportunities to obtain economic privileges and rights as titled individuals. These practices should prevent these groups from enjoying higher returns to accumulate wealth on large scale.

2.5. Assessment of Descriptive Analysis

The major finding of this part is the declining trend of average wealth levels and the distribution of wealth in the long term. Furthermore, this newly established dataset indicates that advantageous groups contained titled individuals, males and Muslims had higher wealth levels than those of others, including untitled individuals, females, and non-Muslims. On the other side, the latter group has a better distribution of wealth than the former group. Although data limitations may entail these outcomes, there should be a better explanation for such differences among these groups. One particular study based on interest rates in borrowing mechanisms argues that there had been a partial rule of law and diverse practices in courts for these advantageous groups (Kuran and Rubin, 2016).

A similar outcome emerges in the distribution of wealth. Even if these groups have higher wealth levels because of their advantageous positions within the economic and political environment, the distribution of wealth is much worse for these groups. Their advantageous position in accumulating wealth should have had a significant effect on the worsening distribution of wealth in the Ottoman Empire from the early eighteenth century to the early twentieth century. The first aim of this thesis is to test the effects of changing average wealth levels of these socioeconomic groups on the distribution of wealth, which is defined as Gini coefficients. This method is common in the recent literature that focuses on the effects socioeconomic status of individuals on the individual wealth levels and the distribution of wealth (Shammas, 1978; Van Zanden, 1995; Ergene and Berker,
2009; Coşgel and Ergene, 2011; Ergene, et. al., 2013; Bengtsson, et. al., 2018; Canbakal and Filiztekin, 2021).

In addition to the socioeconomic status of individuals, this thesis also employs different variables in examining changing average wealth levels and the distribution of wealth. As the first chapter summarizes that the Ottoman economy faced a series of changes in economic and institutional structures. These changes emerge from not only endogenous shocks such as inflation, state finance, tax-farming and monetary issues but also exogenous shocks such as wars. One particular study, for the first time, tests the relationship between average wealth levels and these shocks through quantitative and systematic analysis. The dataset employed in this study, however, contains inheritance records from a small-size town in the Ottoman Empire, Kastamonu. The period of this analysis covers only the eighteenth century. Even if this study provides information on these relations, the findings are limited due to the limited period and location (Coşgel and Ergene, 2012).

In the following part, this thesis develops a new quantitative and systematic analysis of individual wealth in the Ottoman Empire and its distribution through the dataset given in this part. Instead of using average wealth levels from inheritance records, this analysis contains inheritance records from different towns of the Ottoman Empire with diverse economic scales. Furthermore, this analysis covers a longer period than that of earlier studies. By employing different size towns, more accurate average wealth levels could be obtained rather than using inheritance records from relatively developed towns. This thesis, in this sense, construct its sample from this perspective. The dataset established through inheritance records is also enhanced with different datasets from reliable secondary sources to execute a more comprehensive analysis. The main purpose of this process is to examine the effects of diverse factors on individual wealth and its distribution. Thus, the following part presents the quantitative and systematic analysis of these issues.

3. THE EMPIRICAL ANALYSIS: DETERMINANTS OF THE DISTRIBUTION OF WEALTH, 1710-1919

This part presents the econometric analyses that are employed to test the effects of endogenous and exogenous variables on the distribution of wealth and individual wealth levels. These analyses are conducted through regression models, in which Gini coefficients or inequalities are dependent variables and others generate independent ones. This chapter is organized into three main parts. The first presents the variables that are used in econometric models. The second part recalls the main hypothesis and problems that are subjected to the econometric analysis. The third part provides an assessment of the findings of regression models.

3.1. Variables of the Analysis

The variables employed in this thesis consist of datasets established from both primary and reliable secondary sources. The primary sources consist of inheritance records registered in Ottoman Sharia courts. As given in Chapter 2, these figures are in Ottoman akche with the prices of 1910/19. For the econometric analysis, this thesis employs logarithmic forms of these figures that give proportional changes over time. By doing this way, smaller indicators are used instead of large-digit figures, and the data has become stationary. The following terms define the variables from primary and secondary sources.

Table 31. Description of the data

ineq	Gini coefficients
avwealth	Average wealth levels
title	Average wealth of titled individuals
untitle	Average wealth of untitled individuals
male	Average wealth of males
female	Average wealth of females
muslim	Average wealth of Muslims
nonmuslim	Average wealth of non-Muslims
dec	Decentralization (Actual/Intended durations of tax-farming rights)
rev	State revenues
exp	State expenditures
cpi	Consumer price index

silver	Silver content of *akche*
war	Dummy variable
dry	Dummy variable

Table 31 presents the parameters used in regression analysis to test the main hypothesis and the problems of this thesis. This analysis has two main pillars. In the first stage, the dependent variable is inequality (*ineq*) while the others constitute independent variables. In the second stage, this thesis takes average wealth levels (*avwealth*) as the dependent variable and runs regression analysis by employing other parameters as independent variables. The main purpose of the first stage, in this sense, is to measure the effects of exogenous and endogenous shocks on the distribution of wealth. The second, however, aims to test the question of how these shocks changed the level of wealth over time in the Ottoman Empire. Among these variables, except for *cpi*, the figures are used in their logarithmic forms. Furthermore, the variables of *war* and *dry* generates the dummy variables. Finally, the entire data is established through the 10-year intervals because of data limitations as discussed above.

Table 32. Unit root test results

	ADF Test		**PP Test**	
Variables	**Constant**	**Constant & Trend**	**Constant**	**Constant & Trend**
ineq	-4.248	-4.142	-4.330	-4.360
avwealth	-3.642	-3.441	-3.919	-3.476*
title	-4.094	-4.033	-4.120	-4.078
untitle	-3.995	-3.915	-4.442	-4.279
male	-3.671	-3.495	-4.005	-3.628*
female	-3.030	-2.975	-2.999*	-2.964*
muslim	-3.607	-3.401	-3.906	-3.442*
nonmuslim	-3.762	-4.298	-3.760	-4.295
□*dec*	-4.943	-4.924	-8.579	-10.773
□*rev*	-4.729	-4.835	-4.728	-4.835
□*exp*	-4.752	-4.881	-4.752	-4.889
□*cpi*	-4.257	-4.082	-4.257	-4.082
□*silver*	-2.781	-2.757	-2.781*	-2.257*

Notes: □ denotes difference operator. * denotes 10 % significance level and the rest denotes 5 % significance level.

The test results given in Table 32 show that series for the variables *ineq, avwealth, title, untitle, male, female, muslim,* and *nonmuslim* are stationary, while the variables of *dec, rev, exp, cpi* and *silver* have unit root. For this reason, as a common method, the first difference is used for the variables which have unit root to obtain stationary structure. From this point, regression models with the OLS method are executed to obtain results. The next part presents the regression results.

3.2. Testing the Hypothesis

The model of the analysis is given in part 2.2. The effect of each independent variable on the dependent variable is tested individually because of the data limitations. It is very difficult to establish a complete dataset through historical sources, particularly for developing economies from the early eighteenth century. The data limitations allow for running these regression tests for only 21 periods with the 10-year intervals from the early eighteenth century to the early twentieth century. Although this figure is lower for conducting a complete econometric analysis based on complete datasets, the newly established data of this thesis provide certain findings for the distribution of wealth and individual wealth levels of the Ottoman Empire. These findings are also compatible with establishing a comparative perspective with earlier studies. Thus, the results of regression models are given in this part. It should be noted that the effects of each factor on dependent variable are tested individually due to the lack of data in conducting more comprehensive analysis.

Table 33. Coefficients and descriptive statistics (dependent variable, *ineq*)

Variables	Coefficients	t-statistic	F-statistic	R-square
avwealth	0.04*	1.948	3.798	0.166
title	0.04*	1.891	3.579	0.158
untitle	0.04*	1.869	3.493	0.155
male	0.04*	2.026	4.108	0.177
female	0.00	0,281	0.079	0.004
muslim	0.04*	1.883	3.548	0.157
nonmuslim	0.00	0.421	0.177	0.009

dec	0.14	0.643	0.413	0.022
rev	0.03	0.650	0.423	0.022
exp	0.03	0.625	0.391	0.021
cpi	0.00	0.142	0.020	0.001
silver	0.01	0.070	0.004	0.000
war	0.13*	3.235	10.469	0.355
dry	-0.04	-1.062	1.128	0.056

Note: * denote statistical significance at 5 % and 10 % respectively.

Table 33 presents the results of the regression analysis. According to these findings, effects of *avwealth, title, untitle, male, muslim* and *war* on *ineq* are positive and significant at 5 and 10 percent. While increases in these variables deteriorate the distribution of wealth, the effect of war is the highest among them. Furthermore, the coefficients of these variables emerge as positive as expected. On the other side, the effects of *female, nonmuslim, dec, rev, exp, cpi, silver*, and *dry* on *ineq* are statistically insignificant. These findings indicate that there has been no power of these parameters on the distribution of wealth in the Ottoman Empire. This method is similar to earlier studies that focused on the distribution of wealth and its determinants in eighteenth-century Kastamonu (Ergene and Berker, 2009; Coşgel and Ergene, 2011, 2012; Ergene, et. al., 2013).

Table 34. Coefficients and descriptive statistics (dependent variable, avwealth)

Variables	**Coefficients**	**t-statistic**	**F-statistic**	**R-square**
ineq	3.89*	1.948	3.798	0.166
title	0.97*	11.527	132.878	0.874
untitle	0.95*	12.692	161.110	0.894
male	0.98*	101.569	10315.640	0.998
female	0.79*	5.189	26.926	0.586
muslim	0.99*	97.942	9592.663	0.998

nonmuslim	0.47*	2.607	6.801	0.263
dec	2.48	1.409	1.987	0.099
rev	0.22	0.516	0.266	0.014
exp	0.22	0.496	0.246	0.013
cpi	0.00	0.042	0.001	0.000
silver	0.52*	1.755	3.081	0.139
war	0.26	0.548	0.301	0.015
dry	-0.57*	-1.649	2.720	0.125

Note: * denote statistical significance at 5 % and 10 % respectively.

Table 34 presents the results of regression analysis that tests the effects of independent variables on average wealth levels in the Ottoman Empire, spanning from 1710 to 1910. This method is partially similar to the method employed in one recent study conducted by Canbakal and Filiztekin (2021). Although this particular study executes an econometric analysis to measure the effects of average wealth levels of different socioeconomic groups on the average wealth, the method employed in this thesis enhances the scope of the analysis by incorporating different independent variables into the regression. Thus, the findings emerge as given in Table 34.

According to econometric results, effects of *ineq, title, untitle, male, female, muslim, nonmuslim*, and *silver* on average wealth levels are significant and positive at 5 and 10 percent. In other words, increases in these variables entail higher average wealth levels in the Ottoman Empire. Furthermore, the coefficient of dry is negative and this parameter has a significant effect on average wealth levels as expected. On the other side, the effects of *dec, rev, exp, cpi*, and *war* on average wealth levels are statistically insignificant in the Ottoman Empire. These findings based on diverse independent variables on average wealth levels are tested for the first time within the Ottoman literature. The discussion and assessment of these results are given in the following part.

3.3. An Assessment over Findings

This thesis constructs a new dataset through inheritance records registered in Ottoman Sharia courts from different towns of the Ottoman Empire in a long-term perspective. This dataset differs from previous studies in the method. The earlier

studies mostly focus on a single town for a limited period. Even if there has been a study that contributes to the literature with an econometric analysis based on different towns of the Ottoman Empire, the dataset reflects the average wealth levels of relatively larger towns. The first distinction of this analysis emerges regarding the structure of the sample. The dataset given in this thesis includes towns with different economic scales. In other words, the entire sample consists of commercial towns near the important ports, towns specializing in agriculture, rural towns, and the countryside. This method allows for obtaining more accurate average wealth levels in conducting a wealth analysis. Secondly, the method of this thesis is similar to the earlier studies. By doing this way, the findings are suitable for comparison. The key difference, however, is that this thesis imposes similar methods to a more comprehensive dataset instead of using a single town or only relatively larger towns. Although such distinctions have remained in this thesis, the findings contain both similarities and differences compared to earlier studies.

In terms of the findings of the first regression, the main determinants of inequality are the increasing wealth levels of individuals with honorific titles, males, and Muslims. These findings are compatible with the earlier literature. These advantageous groups have a comparative advantage in enhancing their wealth through economic rights and privileges under the tax-farming systems. This practice allows these groups to enjoy higher returns through production, and hence, increases in their wealth have a positive and significant effect on the increasing Gini coefficients over time. These findings are compatible with empirical results of the earlier literature, including Ergene and Berker (2009), Coşgel and Ergene (2011), Ergene, et. al. (2013), and Canbakal and Filiztekin (2021). Furthermore, the findings based on advantageous groups are similar to the European literature that argues the increasing wealth levels of elites entail inequality, particularly from the early modern period (Shammas, 1978; Bengtsson, et. al., 2018). The European literature, however, has more complete data on changing wage levels in examining the distribution of wealth. This thesis faces difficulties in testing the effects of changing wage levels on inequality due to data limitations. The findings of the first regression model also indicate the significant effect of wars on inequality in the long term. On the other hand, there has no significant effect of dry on inequality in the Ottoman

Empire. The former finding is compatible with the finding of an earlier study conducted by Coşgel and Ergene (2012), which also points out that drought had a statistically significant effect on inequality. This thesis, however, finds the opposite result in a dataset based on a longer period and large geography of the Ottoman Empire.

The second regression results provide different outcomes for the wealth analysis of the Ottoman Empire. The findings indicate the increasing average wealth levels of advantageous groups, including titled individuals, males, and Muslims, had a higher effect on the average wealth levels as expected. This finding is also compatible with empirical results of earlier studies, including Ergene and Berker (2009), Coşgel and Ergene (2011, 2012), Ergene, et. al. (2013), and Canbakal and Filiztekin (2021). In terms of the European perspective, this outcome is similar to findings that indicate the positive effect of increasing wealth levels of elites on the average wealth levels (Shammas, 1978).

In terms of average wealth levels, two endogenous factors have a statistically significant effect in the long term. The first is the changing silver content of Ottoman akche over time. Secondly, and more importantly, drought has a significant and negative effect on average wealth levels as expected. This outcome is compatible with the findings of Coşgel and Ergene (2012).

Finally, the endogenous factors based on state finance have no significant effect on the distribution of wealth as well as average wealth levels in the Ottoman Empire. Changes in tax collection systems increase the effect of decentralized structures and cause a substantial share of tax revenues to shift towards powerful groups. Coşgel and Ergene (2012) discuss the possible effects of these parameters on inequality, and hence, the findings of this study present that there had no significant effect on inequality in eighteenth-century Kastamonu. This thesis imposes a similar method with a different dataset based on the rate of actual to intended duration in tax-farming rights. Although these figures provide sufficient information on the state structure from centralization to decentralization, the econometric results give a similar finding to earlier studies. In sum, state finance and its mechanisms have no statistically significant effect on the individual wealth

levels as well as the distribution of wealth. The final and interesting result of this analysis is that the CPI has no significant effect on both individual wealth levels and inequality in the Ottoman Empire, spanning from 1710 to 1910.

CONCLUSION

This thesis examines various aspects of individual wealth levels and the distribution of wealth in the Ottoman Empire from the early seventeenth century to the early twentieth century. Like earlier studies, this analysis is based on inheritance records registered in Ottoman Sharia courts as well as court records of European

societies. Examining individual wealth levels and inequality, the findings have shown that there had been a declining trend in individual wealth levels while inequality had increased over time. The first indicator is the increasing share of the wealthiest groups in aggregate wealth in the long term. Secondly, the premium between the wealthiest and poorest segments has also an increasing pattern during the same period. The Gini coefficients estimated for each subperiod provide a deeper understanding of the trend of changing inequality over time. Although the findings indicate relatively worse results in individual wealth levels, there has been a convergence in these figures among advantageous groups and disadvantageous groups within society. The advantageous groups consist of titled individuals, males, and Muslims, who had the right to obtain economic privileges and rights under the tax-farming systems. The advantageous groups, including commoners, females, and non-Muslims, generate individuals, who had limited opportunities in accumulating wealth. The newly established data of this thesis has presented the convergence in average wealth levels of these groups in the late nineteenth century and the early twentieth century. During the same period, the distribution of wealth in the Ottoman Empire is better compared to earlier periods, particularly in the eighteenth century and the early nineteenth century.

The analysis based on individual wealth levels and Gini coefficients is followed by an econometric analysis through regression models. These models are established regarding the methods of earlier studies. While some of the econometric results are compatible with the findings of earlier literature, there have been different outcomes because of the scope of this analysis and the dataset. The key findings, however, indicate that the figures of advantageous groups have statistically significant effects on both the distribution of wealth and individual wealth levels. Furthermore, while wars have a significant effect on the distribution of wealth, devaluations and drought have significant effects on individual wealth levels. The changing structure in tax-farming systems and the relationship between the central authority and provincial notables have no significant effect on the wealth in the Ottoman Empire.

Using the newly established dataset from inheritance records, this thesis has contributed to the quantitative analysis of wealth inequality in the Ottoman Empire.

The findings of this study have filled a significant gap in knowledge about the source and evolution of wealth inequality in Anatolia provinces of the empire. It is expected that this thesis will stimulate further studies on the wealth inequality in different provinces and periods of the Ottoman Empire. Furthermore, it is also expected that this thesis provides new perspectives on individual wealth and its distribution. If prospective research confirms these findings presented in this thesis, this practice will entail the emergence of a new question to understand the sources of inequality at the macro level. In other words, increasing numbers of studies will force economic historians to develop new presumptions about the experience of the Ottoman Empire in economic growth and development.

APPENDIX A: PRIMARY SOURCES

Adana, 10 - 129; Amasya, 22 - 61; Ankara, 1 - 945; Antakya, 18; Antalya, 7 - 34; Antep, 71 - 131; Balıkesir, 692, 1229; Bodrum, 167; Bolu, 836; Bozkır, 337; Çanakkale, 163; Çankırı, 22-26; Çorum, 11; Fatsa, 72; İstanbul, 62; Kandıra, 381; Karahisar, 544 - 652; Karaman, 296; Kastamonu, 60; Kayseri, 91 - 212; Konya, 7 - 80; Kütahya, 1 - 72; Manisa, 6 - 189; Mardin, 179; Mesudiye, 1465; Milas, 149; Niğde, 11; Rize, 1495; Samsun, 1759, 1763; Seydişehir, 230; Siirt, 420; Sivas, 14 - 590; Tekirdağ, 1751; Tokat, 3-63; Vidin 10.

106

107

REFERENCES

Akkemik Ü, Köse N, Aras A, Dalfes HN. (2005). Anadolu'nun son 350 yılında yaşanan önemli kurak ve yağışlı yıllar. Türkiye Kuvaterner Sempozyumu, Istanbul – Turkey, TURQUA-V Conference Book: 129-135.

Altay B. (2021). Game theory and economic history: theoretical reflections of new perspectives on studies for the pre-modern period. In: Ş Karabulut (eds). *Theoretical and Empirical Perspectives on Economic and Financial Issues*, 1st ed. Gazi, 247-270.

Altay B, Oğuz F. (2021). *Rules, Contracts and Law Enforcement in the Ottoman Empire: The Case of Tax-Farming Contracts,* 1st ed. Palgrave Macmillan, London, 1112.

Alfani G, Di Tullio M, Fochesato M. (2020). The determinants of wealth inequality in the Republic of Venice, 1400-1800. *CAGE Onine Working Paper Series*, no.483: 1-28. Barkan ÖL. (1966). Edirne askeri kassamına ait tereke defterleri (1545-1659). *Belgeler*, 3(5-6): 1-479.

Barkan ÖL. (1980). *Türkiye'de Toprak Meselesi*, 1. Baskı. İstanbul, Gözlem Yayınları, 23-904.

Barkey K. (2008). *Empire of Difference*, 1st ed. Cambridge University Press, 1-360.

Brandt L, Ma D, Rawski TG. (2014). From divergence to convergence: Reevaluating the history behind China's economic boom. *Journal of Economic Literature*, *52*(1): 45-123.

Bengtsson E, Missiaia A, Olsson M, Svensson P. (2018). Wealth inequality in Sweden, 1750-1900. *Economic History Review*, 71(3): 772-794.

Bulut M, Altay B. (2022). The Ottoman economy (1870-1913): Preliminary secondgeneration estimates. *Turkish Journal of Islamic Economics*, 9(1): 95-118.

Canbakal H. (2009). Reflections on the distribution of wealth in Ottoman Ayntab. *Oriens*, 37(1): 237-252.

Canbakal H, Filiztekin A. (2021). Wealth and demography in Ottoman probate inventories: A database in very long-term perspective. *Historical Methods*, 54(2): 94127.

Ceylan P. (2016). Ottoman inheritance inventories as a source for price history. *Historical Methods*, 49(3): 132-144.

Çakır B. (2006). Geleneksel Dönem (Tanzimat Öncesi) Osmanlı Bütçe Gelirleri. İçinde: M. Genç and E. Özvar (Editör). *Osmanlı Maliyesi Kurumlar ve Bütçeler 1*, 1. Baskı. İstanbul, Osmanlı Bankası Arşiv ve Araştırma Merkezi, 167-196.

Coşgel M, Ergene B. (2011). Intergenerational wealth accumulation and dispersion in the Ottoman Empire: Observations from eighteenth-century Kastamonu. *European Review of Economic History*, 15(2): 255-276.

Coşgel M, Ergene B. (2012). Inequality of wealth in the Ottoman Empire: War, weather, and long-term trends in eighteenth century Kastamonu. *Journal of Economic History*, 72(2): 308-331.

Çizakça M. (1993). Tax-farming and financial decentralization in the Ottoman Empire, 15201697. *The Journal of European Economic History,* 22: 219-250.

Çizakça M. (1996). *A comparative evolution of business partnerships: The Islamic world and Europe, with specific reference to the Ottoman archives*, 1st ed. Brill, 3-193.

Darling LT. (1996). *Revenue-rising and legitimacy: Tax collection and finance administration in the Ottoman Empire, 1560-1660*, 1st ed. Brill, 1-186.

Ergene B, Berker A. (2009). Inheritance and intergenerational wealth transmission in eighteenth-century Ottoman Kastamonu: An empirical investigation. *Journal of Family History*, 34(1): 25-47.

Ergene B, Kaygun A, Coşgel M. (2013). A temporal analysis of wealth in eighteenthcentury Ottoman Kastamonu. *Continuity and Change*, 28(1): 1-26.

Genç M. (2000). *Osmanlı İmparatorluğu'nda Devlet ve Ekonomi*, 1. Baskı. İstanbul, Ötüken Yayınları, 39-358. Genç M, Özvar E. (2006). *Osmanlı Maliyesi Kurumlar ve Bütçeler 1*, 1. Baskı. İstanbul, Osmanlı Bankası Arşiv ve Araştırma Merkezi, 115-328.

Güran T. (2003). *Ottoman Financial Statistics Budgets, 1841-1918*, 1st ed. Turkish Statistical Institute, 17-178.

Güran T. (2017). *Resmi İstatistiklere Göre Osmanlı Toplum ve Ekonomisi*, 1. Baskı. İstanbul, İş Bankası Yayınları, 1-480.

İnalcık H. (1953-54). 15. Asır Türkiye iktisadi ve içtimai tarihi kaynakları. *İstanbul Üniversitesi İktisat Fakültesi Mecmuası*, 15(1-4): 51-75.

İnalcık H. (1997). *An Economic and Social History of the Ottoman Empire*, 1st ed. Cambridge, Cambridge University Press, 1-380.

İnalcık H. (2001). *The Ottoman Empire: The Classical Age 1300-1600*, 1st ed. Phoenix Pub., 1-272.

Kennedy P. (1988). *The rise and fall of the great powers*, 1st ed. London, Unwin Hyman, 1-677.

Karaman K. (2009). Decentralized coercion and self-restraint in provincial taxation: The Ottoman Empire 15th-16th centuries. *Journal of Economic Behaviour and Organization.* 71(3): 690-703.

Karaman K, Pamuk Ş. (2010). Ottoman state finances in European perspective, 15001914. *The Journal of Economic History*, *70*(3): 593-629.

Karaman K, Pamuk Ş. (2013). Different paths to the modern state in Europe: The interaction between warfare, economic structure, and political regime. *American Political Science Review*, *107*(3): 603-626.

Kuran T, Rubin J. (2016). The financial power of the powerless: Socio-economic status and interest rates under partial rule of law. Economic Journal, 128(609): 758796.

Kuznets S. (1955). Economic growth and income inequality. *The American Economic Review*, 45(1): 1-28.

Ma D, Rubin J. (2019). The paradox of power: principal agent problems and administrative capacity in imperial China (and other absolutist regimes). *Journal of Comparative Economics* 47: 277-294.

Maddison A. (2001). *The World Economy: A millennial Perspective.* OECD Publishing.

Maddison A. (2003). *The World Economy: Historical Statistics.* OECD Publishing.

Özdeğer H. (1988). *1463-1640 Yılları Bursa Şehri Tereke Defterleri*, 1. Baskı. İstanbul, İstanbul Üniversitesi, 1-252.

Özmucur, P, Pamuk, Ş. (2002). Real wages and standards of living in the Ottoman Empire, 1489-1914. The Journal of Economic History, 62(2): 293-321.

Öztürk S. (1995). *İstanbul Tereke Defterleri*, 1. Baskı. İstanbul, Osmanlı Araştırmaları Vakfı, 1-499. Özvar E. (2006). Osmanlı Devleti'nin Bütçe Harcamaları. İçinde: M. Genç and E. Özvar (Editör). *Osmanlı Maliyesi Kurumlar ve Bütçeler 1*, 1. Baskı. İstanbul, Osmanlı Bankası Arşiv ve Araştırma Merkezi, 197-238.

Pamuk Ş. (1997). In the absence of domestic currency: Debased European coinage in the seventeenth-century Ottoman Empire. *The Journal of Economic History*, 57(2): 345-366.

Pamuk Ş. (2004a). Institutional change and the longevity of the Ottoman Empire, 1500-1800. *The Journal of Interdisciplinary History*, *35*(2): 225-247.

Pamuk Ş. (2004b). Prices in the Ottoman Empire, 1469-1914. *International Journal of Middle East Studies*, *36*: 451-468.

Pamuk Ş. (2004c). The evolution of financial institutions in the Ottoman Empire, 1600-1914. *Financial History Review*, 11(1): 7-32.

Pamuk Ş. (2006). Estimating economic-growth in the middle east since 1820. *The Journal of Economic History,* 66(3): 809-828.

Pamuk Ş. (2007). *Osmanlı Ekonomisi ve Kurumları*, 1. Baskı, İstanbul, İş Bankası Yayınları, 1-180.

Pamuk Ş. (2009). Changes in factor markets in the Ottoman Empire, 1500-1800. *Continuity and Change*, 24(1): 1-30.

Rubin J. (2017). *Rulers, religion and riches: Why the west got rich and the Middle East did not?*. Cambridge University Press, 1-221.

Salzmann A. (1993). An ancien regime revisited: "Privatization" and political economy in the eighteenth-century Ottoman Empire. *Politics & Society*, *21*(4): 393423.

Shammas C. (1978). Constructing a wealth distribution from probate records. *Journal of Interdisciplinary History*, 9(2): 297-307.

Tezcan B. (2010). *Second Ottoman Empire: Political and social transformation in the early modern world.* Cambridge University Press, 1-245.

Tabakoğlu A. (2008). *Türkiye İktisat Tarihi*, 8. Baskı. İstanbul, Dergâh Yayınları, 19351.

Tilly C. (1990). *Coercion, Capital and European States*, 990-1992, 1st ed. Cambridge, Basil Blackwell, 1-288.

Tülüveli G. (2005). Honorific titles in Ottoman parlance: A reevaluation. *International Journal of Turkish Studies*, 1(2): 17-27.

Van Zanden JL. (1995). Tracing the beginning of the Kuznets Curve: Western Europe during the Early Modern Period. *Economic History Review*, 48(4): 643-664.

Yakın B, Aydoğan E. (2019). Osmanlı'da kadınların ekonomik hayata katkısı: Beratlı kadınlar. *Turkish Science Research Foundation*, 12(4): 26-44.