

ABSTRACT

Title of Dissertation: ESSAYS ON THE HISTORICAL AND CURRENT
 INSTITUTIONAL DEVELOPMENT OF SOUTH EAST AND
 CENTRAL EUROPEAN STATES

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This dissertation examines the institutional determinants of one set of countries – the former socialist states in South East and Central Europe. It is motivated by the observation that fifteen years after the beginning of transition we see a divergence in the institutional performance of the transition countries. The Balkan (South East European states) have been consistently lagging behind the Central European states. Why is there such a substantial difference in the performance and level of institutions in these two sets of former socialist countries?

Unlike the sparse existing literature, which attempt to answer this question, this dissertation identifies the Ottoman and Habsburg historical legacies, rather than the socialist legacy, as a key source of divergence in institutional performance of the countries of South East and Central Europe.

In Chapter 1, we identify the legacies of the Ottoman Empire and their historical origins. The chapter's main contribution is twofold. First, it identifies and discusses the origins of characteristics of the Ottoman Empire that shaped the institutional structure of its successor states. Second, the chapter analyzes the impact of these characteristics on people's behavior and incentives.

Building upon the key historical dynamics identified in Chapter 1, Chapter 2 develops a stylized theoretical model of the Ottoman Empire. The model attempts to explain the rise and

decline of the Empire and indirectly, the historical evolution of the Ottoman legacy. It, thereby, contributed to the literature by looking at how the Ottoman seemingly irrational and static structure could have been optimal subject to certain constraints.

Chapter 3 attempts to explain the reasons for the 'great divide' in performance of the countries of South East and Central European post-socialist states. By comparing the historical developments and legacies of the Ottoman Empire with those of the Habsburg Empire, Chapter 3 draws a number of hypotheses about the effect of these legacies on current institutional performance. It presents three estimation procedures that allow us to test the hypotheses and discusses the estimation results in light of alternative theories.

ESSAYS ON THE HISTORICAL AND CURRENT INSTITUTIONAL
DEVELOPMENT OF SOUTH EAST AND CENTRAL EUROPEAN STATES

by

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Preface

Institutions comprise of informal constraints (norms and beliefs) and formal constraints (rules and organizations), which are exogenous to the individual and which “conjointly generate a regularity of behavior” (Greif 2006, Ch. 2, p. 1). Since institutions (and in particular informal institutions) develop slowly and incrementally (North 1990, Williamson 2000, Roland 2004), an analysis of current institutional performance necessitates a discussion of history. A growing body of literature has discussed the role of distant historical events or processes on current institutional or economic performance (e.g. Brown 1996, Shleifer & Glaeser 2001, Acemoglu et al. 2005, 2002, La Porta et al. 2003, 2001, Mahoney 2006, 2004, Engerman & Sokoloff 2002). These studies have built upon the assertion of a broader branch of economics literature that institutions have a profound effect on economic development (e.g. Murrell 1991, North 1991, Olson 1993).

This dissertation adopts the historical institutional approach as its foundation and applies it to study the institutional determinants of one set of countries – the former socialist states in South East and Central Europe. It is motivated by the observation that fifteen years after the beginning of transition we see a clear difference in the institutional performance of the transition countries. The Balkan (South-East European states) have been consistently lagging behind the Central European states. Why is there such a substantial difference in the institutional quality in these two sets of former socialist countries?

Unlike the sparse existing literature attempting to answer the above question (Beck & Laeven 2005, Berglof & Bolton 2003), this dissertation identifies the Ottoman and Habsburg historical legacies, rather than the socialist legacy, as a key source of divergence in institutional performance and economic development in the countries of Southeastern and Central Europe.

In Chapter 1, we identify the legacies of the Ottoman Empire and their historical origins. Much like Pamuk (2004), Kuran (2005, 2001) and Brown (1996), we provide a detailed account of historical developments, which led to the rise and decline of the Ottoman Empire. The chapter’s main contribution is twofold. First, building upon the existing studies, it identifies and

discusses the origins of an extensive set of characteristics of the Ottoman Empire that shaped the institutional structure of its successor states. Second, the chapter analyzes from an economic perspective the impact of these characteristics on people's behavior and incentives.

Building upon the key historical dynamics identified in Chapter 1, Chapter 2 develops a stylized theoretical model of the Ottoman Empire. The model, inspired by papers on organized violence (e.g. Bates et al. 2002, Grossman 2002, Moselle & Pollak 2001, Muthoo 2002, Hirshleifer 1991), attempts to explain the success and decline of the Empire and, indirectly, the historical evolution of the Ottoman legacy. A key question, investigated in Chapter 2, is how the Ottoman Empire could have survived for so long if it were an inefficient system, as is predominantly believed (e.g. Cameron & Neal 2003, Landes 1999). Economic historians (e.g. Pamuk 2004, Brenner 1989, Fogel 1971) have long discussed the persistence of seemingly inefficient features. Chapter 2 thereby contributes to this literature by providing a rationale for how the Ottoman seemingly irrational and static structure could have been an optimal response to contemporary constraints.

Chapter 3 attempts to explain the reasons for the 'great divide' in performance of the countries of South-East and Central European post-socialist states. The chapter's point of departure is the historical fact that two fundamentally different empires contemporaneously ruled the set of countries under investigation. The countries of South East Europe were ruled by the Ottoman Empire. In contrast, the countries of Central Europe were ruled by the Habsburg Empire. By comparing the historical developments and legacies of the Ottoman Empire with those of the Habsburg Empire, Chapter 3 draws a number of hypotheses about the effect of these legacies on current institutional performance of the Empires' successor states and tests them empirically. The results are then discussed in light of our findings in Chapters 1 and 2. The empirical approach of Chapter 3 follows closely papers on the determinants of economic development (e.g. Acemoglu et al. 2003, Rodrik et al. 2002, Easterly et al. 2003, Zak & Knack 2001).

By proposing a novel explanation for the ‘great divide,’ Chapter 3 also provides an alternative to existing views (e.g. Beck & Laeven 2005, Berglof and Bolton 2003, Ericson 1991, De Melo et al. 1997), which have primarily focused on the effects of socialism on the economic and institutional performance of the transition countries. The motivation for our claim is the inherently incremental and slow change of informal institutions (e.g. Roland 2004, North 1990, Williamson 2000). Due to their slow-moving nature, the latter affect formal institutional elements (Roland 2004, Greif 2006). This, in turn, implies that an evaluation of historical legacies in a study on divergence of institutional and economic performance is warranted.

Dedication

I dedicate this dissertation to my son, Paul Grajzl, who was born during the writing of this work.

Paulci, you have been my inspiration. You have shown me the miracle of a new life and the richness a soul can possess. Thank you for being such a lively and amazingly wonderful child.

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Chapter 1

The Ottoman Economic Legacy on the Balkans: A Case Study of Historical Path Dependence

“A look at the region’s economic history over this period will uncover the legacies that will shape its economic future. Tracing out the long-term pattern of relative backwardness will give clues about the region’s potential for catching up. Analyzing long-term patterns of continuity and change in institutions and international economic relations will provide a perspective on their likely path.”(Good 1994, p. 4)

I. Introduction

The collapse of socialism in Eastern Europe accelerated the discussion of what factors contribute to successful economic development. Simple transplantation of foreign institutions was shown to be an insufficient approach (Pistor et al. 2000). A careful evaluation of domestic conditions, such as cultural aspects of institutional persistence and the role of historical specifics in path-dependent behavior, appear to be essential. Hence, tracing historical origins of persistence and evolution of institutional frameworks is fundamental for a better understanding of how institutions work. Furthermore, “since institutions are a product of history, so is rationality or rather various rationalities” (Zukowski 2004, p. 958). Therefore, there is no universally binding rational behavior (Zukowski 2004); rather, rationality is defined within a given institutional set by historical specifics.

When discussing South-East Europe, the Ottoman Empire stands out in history as a prime candidate for such an inquiry on historical path-dependence of institutions in the region. The question, then, arises: how much of the Ottoman Legacy has persisted to the present? The prevalent view is that the Ottoman legacy was completely overridden by 20th century developments, such as socialism. Hence, when considering contemporary issues, historians and economists have largely disregarded the Ottoman legacy (e.g. Ericson 1991, De Melo et al. 1997, Beck & Laeven 2005, Todorova 1996). The minority view, which has gained momentum only in the past decade, is that it is not possible to evaluate the region thoroughly without looking at the Ottoman legacy (e.g. Kuran 2005, Brown 1996). Given the long presence of the Ottoman Empire

in South East Europe, it seems unlikely that its legacy would have dissipated so fast. “To imply that ideas and institutions developed over centuries, indeed over millennia, could so readily disappear comes dangerously close to accepting that the only dynamic variable in the modern history of this part of the world has been the impact of the West on the non-West world”(Brown 1996, p. 7).

It is generally true that a legacy of a more recent period is stronger than a legacy of a distant period. However, when we look at patterns of behavior, i.e. mental models and cultural beliefs, which were shaped over many centuries, we would expect a path-dependent evolution over long periods of time. If we view culture as a series of ideas that have been reinforced by a number of events (Blumenthal 1936), then it is necessarily the case that culture does not exist in the short-run but is rather a long-term phenomenon. Given the nature of culture, therefore, we would expect slow change and a strong persistence of centuries-old views and traditions (Roland 2004).

This chapter analyzes the historical origins of the Ottoman legacy and identifies the legacy with particular pertinence to the economic performance of the South East European (Balkan) states.¹ The chapter distinguishes the legacy a propos social values and beliefs as the one, which has had the most persistent and profound effect on the Ottoman successor states’ paths of economic development. In Chapter 3, we develop hypotheses about how the Ottoman legacy has affected current institutional performance in the successor states and empirically test our hypotheses.

The chapter proceeds in the following way. Section II provides an overview of the Ottoman social structure, which establishes the setting for the discussion on the historical origins of the Ottoman legacy. Section III briefly discusses key factors, other than the social dynamics identified in Section II, that played a role in the decline of the Ottoman Empire. Sections IV

¹ Since we are only concerned with factors that affect economic development most profoundly, we largely ignore some important legacies of the Ottoman Empire, such as language, architecture and literature.

through VIII discuss the historical developments with respect to property rights, taxation, government, judicial and legal systems, civil society and culture. In each section, based on the historical analysis presented, we establish a number of hypotheses regarding the Ottoman legacy for its successor states. Table 1 provides a summary of all legacies and their historical origins. Section IX concludes.

II. The Ottoman State, Religion and Social Structure

The Ottoman Empire was centered on the Sultan and on the Ottoman duty to expand the domain of Islam (Cameron & Neal 2003, Sugar 1977). Its main objective was military expansion and the strengthening of the Ruler's power (Inalcik 1994, p. 44). The Ottomans emphasized expansion as a way to increase the state's revenues, i.e. by taxing newly conquered areas, rather than by increasing domestic revenue in industry or trade (Issawi 1996, pp. 236-238). The Empire was primarily agrarian-based, with peasants being its main producers (Landes 1999).

The Empire was a highly centralized state that had two closely linked bureaucratic orders: the Ruling Institution and the Religious Institution (Stavrianos 2000)². There was a strict social order within the Empire, which ensured that the particular responsibilities and privileges or rights of all subjects were fixed and enforced by the state central and provincial administration.³ The Ottomans kept survey registers as an instrument for regulating and monitoring the Empire (Inalcik 1994). According to Peter Sugar (1977, p. 32), the Empire's structure ensured that all individuals in the Empire had limited power. The initial structure assumed that the Sultan himself had limited power since he was subject to the sacred religious law.

² The dichotomy within the Ottoman structure between Religious and Ruling branches, presented mostly in traditional literature from the early 20th century, has been re-established in recent works (see Faroqhi et al. 1994, Findley 1980).

³ This view is supported by the older historical research. Some recent historical literature on the Ottoman Empire has challenged the traditional view claiming that the empire had a much more flexible organization (Faroqhi et al. 1994 have a brief discussion on this division). Most historical evidence, however, points to a sufficiently rigid system with little social mobility, which is why we present the traditional views in this chapter.

The Ruling Institution was headed by the Sultan, followed by the Grand Vizier (Main Advisor to the Sultan) and the Porte (The Sultan's court). Below them were the *askeri*, consisting of military class (*sipahi*) and bureaucrats. The *askeri* worked for the state - collected taxes and served in the Sultan's military. They were predominantly Muslim subjects. "The *askeri* were not an aristocratic class with historically established rights ... membership of it was contingent upon the will of the Sultan" (Inalcik 1978, p. 112). At the bottom were the *reaya*, who were taxpayers and producers in the Empire. There were four distinct groups among the *reaya*: farmers, merchants, herdsmen and urban artisans. The non-Muslim *reaya* had certain tax obligations that were not imposed on the Muslim *reaya*. Overall, however, the *reaya* class had a horizontally-layered structure in terms of the rights and responsibilities of its members (Sugar 1977, p. 31).

In terms of taxation, the population was divided in three groups. The *askeri* provided public service for the Sultan and were, therefore, exempt from taxation. The *reaya* were taxed on any productive activity they were involved in. The third in-between group, *muaf ve musellem*, provided certain types of services for the Sultan, such as guarding mountain passes or supplying the Sultan palace with special goods, and, hence, was exempt from wartime taxes but had to pay regular taxes.

The *reaya* were grouped formally into communities, called *millets*. These *millets* were formed on the basis of religious affiliation – Muslim, Orthodox, Jewish, Armenian – as well as common language, culture and ethnicity. The system was a consequence of the Ottoman recognition of Christians and Jews as 'people of the book' (Pavlowitch 1999), as well as an attempt to incorporate many different ethnic and religious groups into one Empire. The *millets* had some autonomy of decision-making. However, this autonomy was dissociated from political power and hence was allowed only when the *millets* acted in an obedient and non-challenging-to-the-authority way (Rustow 1996).

The Religious Institution of the Ottoman Empire comprised of the *ulema* (Islamic clergy). The *ulema* interpreted and executed the sacred law of Islam, *seriat* (Stavrianos 2000,

p. 88), which was supposed to regulate all aspects of life, both secular and religious. The *ulema* originally had a well-diversified education including math, medicine and philosophy along with the religious books (Lord Kinross 1977, p. 211). However toward the end of the 16th century, the *ulema* became more inflexible in its education standards, ruling out the utilization of any innovative ideas. In addition, the *ulema* became more religiously fanatical and hostile toward the adoption of any western technology (Sugar 1977, p. 34), which led to a closing off of the Empire and to a significant lag behind Europe in terms of new practices and ideas.

The Religious Institution, in a sense, defined the domain, within which the Ruling Institution could operate. “The political authority, founded on physical strength, was in practice the dominant element of the state, but according to Muslim theory political authority was merely a means for the application of the *seriat*” (Inalcik 1973, p. 171). The subordination of the state to religion in the Ottoman Empire was in contrast to the trend toward separation of church and state in Christian states, represented by the famous passage: ‘Render unto Caesar the things which are Caesar’s; and unto God the things that are God’s’ (Lewis 2002, p. 97). Even though, the lack of separation of church and state in the Ottoman Empire did eventually lead to economic stagnation, it is not clear whether it was inevitable that the subordination of the state to religion would lead to such outcome. Clark (1951) points out that religion in itself is not the source of economic backwardness. In the case of pre-17th century Ottoman Empire, it is quite obvious that the combination of strong Sultans and adherence to the sacred law achieved a compromise that allowed for religion to be a dominant aspect of political and economic life as well as for economic growth to be achieved.

In practice, strong Sultans followed the *seriat*, but if necessary had the capabilities to dominate over it. With regards to secular matters, there was a second law, called *kanun*, which was written by the Sultans and was often used as a supplement in matters that were not clearly specified in the *seriat* (Findley 1996, p. 160). The *kanun*, unlike the *seriat*, was not ensured

continuity. It was only valid for the lifetime of the Sultan's rule. A detailed discussion of the religious and secular laws follows in Section VI.

Starting in the 17th century, the Ottoman Sultans became weaker and less competent in governing. This was partly due to the change in the system of succession and education of the Sultans. In terms of succession, initially all male children of the Sultan, irrespective of their mother's status in the Sultan's palace and irrespective of their seniority, were legitimate candidates to the throne. Hence, they were in direct competition with each other. To deal with this direct competition, fratricide - the killing of other male relatives who could potentially have aspirations to the throne – became widely practiced (Imber 2002, pp. 98-100). Subsequently, since the indivisibility of the Ottoman lands was an important principle, the princes fought each other to death and the rule was seized by the one capable of eliminating his competitors (Imber 2002, p. 98). The succession principle changed in the 16th century. In an effort to shift to more humane practices, succession by seniority became predominant. This practice ensured that the oldest living male of the family would become Sultan (Sugar 1977, pp. 188-189). This eliminated to some extent civil wars between the princes, but simultaneously ensured that without competition, incapable rulers could stay in power, which, has been argued, attributed to the downfall of the Empire.

In terms of education, as fratricide ceased to exist, so did the extensive education and practical training of the princes. The new system, *kafes*, also known as the 'Golden cage system', kept the princes in a protected, isolated and luxurious existence within the walls of the inner palace, away from the real world. When the time came for them to become Sultans, they had no appropriate training for the task as well as no real knowledge about politics or military tactics (Sugar 1977, p. 188). The significance of the change in practices concerning the education on governing and the process of succession has not been established with certainty (Faroqhi et al. 1994), but seems to have played some role since there is clear evidence that after Suleiman the Magnificent, there were fewer capable Sultans.

The weakening of the Sultans was accompanied with an increase in power of the Sultan's court and a rise in corruption amongst palace officials (Faroqi et al. 1994, p. 544). There was an increase in factional feuds within the Palace as well as rebellions within the military corps. The rise in corruption of palace officials was partly due to the fact that tenure of most positions within the Sultan's administration became less secure (Sugar 1977, p. 189). To compensate for this increased insecurity, palace officials tried to accumulate as much wealth as possible as quickly as possible in order to have insurance for the future especially in case they became disfavored by the Sultan.

III. Seeds of Decline

The Ottoman Empire experienced significant problems from the end of the 16th century onwards. This is not, however, the beginning of irreversible and absolute decline, since there were times of recovery and prosperity in the 17th and early 18th century. Several external and internal factors collectively and over time contributed to the relative decline of the Ottoman Empire, in particular when compared to Europe, after the 16th century.

First, the increasing economic power of Europe as well as the change in European warfare techniques, such as the use of cannons and professional armies, put increasing pressures on the Ottoman Empire (Cameron & Neal 2003). Moreover, the discovery of a sea route to Asia in the 17th century diverted some trade away from the Ottoman Empire and led to a decrease in revenue from the taxation of trade. Both of these were external factors, which might not have had a profound effect if the Ottoman Empire had not largely ignored the achievements of the West and isolated itself from the changes in economic and political practices in its contemporaneous neighbor states.

Second, the Price Revolution of the 16th century, caused by the influx of gold and silver from the New World and the discovery of silver mines in Europe, affected the Ottoman Empire along with most of Europe. The Ottoman currency depreciated as a result. According to Charles

Issawi (1996, p. 238), there is no evidence to suggest that the Ottoman government put any effort to stabilize the currency. Hence, from the 16th century onwards, the currency depreciated continuously and caused discontent and rebellions by the military corps, who did not want their pay to be in the form of debased coins (Faroqhi et al. 1994, pp. 433-434).

Third, during the 17th century, the Ottoman Empire experienced an increase in the central bureaucracy, increase in military expenditure, in addition to a shift away from the *timar* arrangement (tax income from estates) and toward cash salaries for military officers (Inalcik 1994, p. 22-24). All these trends put an enormous strain on the finance department to come up with ways to get more revenue. Despite attempts for reform, the Empire could not overcome its fiscal problems and the process of chaotic decentralization.

By the early 19th century, the Empire was falling apart due to internal and external pressures. Most of the Balkan provinces gained independence during the 19th century, but were left with an Ottoman legacy that provided a significant challenge to their post-Ottoman development.

Having provided a brief outline of the structure and history of the Empire, we proceed with discussion of Ottoman legacies and their historical origins.

IV. Property rights and Taxation

The first few centuries of Ottoman dominance were characterized by a relatively just and secure system, which gave hereditary rights, although no private ownership, to peasants (Stavrianos 2000, p. 144). Extraordinary levies were rare and taxation was roughly determined by the capabilities of the peasant families.

The Ottoman Empire was primarily agrarian; hence the majority of its population was engaged in agriculture or had its income derived from taxing agricultural production. The main

economic organization in the rural areas was the so-called *timar*⁴ system. Under the *timar* system, the *sipahi* lived in villages and controlled taxation during peace times, and joined the Sultan's army in wartimes (Sugar 1977, Brown 1996). The *timar* system served several purposes – first, to provide troops for the Sultan; second, to ensure order in the Empire, and third, to circumvent the Empire's shortage of silver and gold coins (Inalcik 1994, p. 73). It achieved the latter by giving the *sipahi* the right to collect taxes from an estate as payment for their military services. The tax income from estates replaced the cash payment from the Sultan's treasury.

The *timar* system's fundamental difference from western feudalism was that all relations between the *sipahi* and the *reaya* were controlled by the Sultan's laws under the supervision of the state bureaucracy (Inalcik 1994, Lord Kinross 1977, p. 33), as opposed to general decentralization in the feudal system. Local *kadi*⁵ courts were established to enforce the regulations of the Sultan and mediate conflict between the *sipahi* and the *reaya*. All land belonged to the Sultan and was granted as conditional tenure. The peasants could work the land and pass it to their heirs as long as they fulfilled certain obligations such as paying taxes and working consistently on the land. The *sipahi* had rights to collect taxes from the peasants as long as they fulfilled their main obligations as members of the Sultan's military corps and did not violate the *kanun*. Hence, the *timar* system “was one of fragmented possession where the state, the *sipahi* and the peasant had simultaneous rights of control over the land” (Inalcik 1973, p. 110).

On the positive side, the Ottoman *timar* system gave significant freedom to its peasants when compared to Western serfdom, which according to Brenner (1989, p. 45) should have become the driving force for growth in the Ottoman Empire. However, along with this dynamic aspect of the rural economy, the Ottoman state restricted the possibility for accumulation of land,

⁴ *timar*—(1) any kind of care; (2) a prebend acquired through a sultanic diploma, consisting as a rule of state taxes in return for regular military service (equivalent of *timar* under the Byzantine Empire was the so called *pronoia*).

⁵ *kadi* – judge administering both *seriat*(sacred Islamic code) and *kanun* (secular laws issued by the sultan)

labor or capital and imposed strict supervision on production by the central bureaucracy (Brenner 1989, p. 45) and hence, presented a barrier to growth.

On the negative side, the lack of clearly assigned property rights in the *timar* system created inefficiency in the Ottoman economy, which eventually led to the decline of the Empire. The peasants did not want to increase their productivity and wealth for the fear of expropriation in the form of taxation or predation. The military did not feel any responsibility to provide favorable conditions for increased productivity since they had no hereditary rights and hence little vested interest in the land. Moreover, the lack of well defined property rights presupposed a lack of a mechanism that would constrain the action of the Empire's subjects and subsequently a lack of a threshold level of security necessary for people to engage in economic activity. The frequent coercive extraction of rents from the peasants by individual military officers (prevalent in post 17th century Ottoman Empire) is a clear indication of the above. Ultimately, the fragmented nature of land-holding along with the chance of arbitrary confiscation (by the Sultan) added an element of uncertainty and inconsistency, which generated poor incentive for technological improvements or for increase of agricultural productivity.

The peasants were allowed to work on a piece of land large enough to feed their family. All excess production was subject to taxation. Peasants were taxed a family tax, *cift-resmi*, which was based on a combination of labor capacity and land possession. "In principle, though not always in practice, taxpayers were taxed according to their ability to pay, and therefore officially recorded as 'wealthy,' 'middling' or poor'" (Faroqhi et al. 1994, p. 533).⁶

⁶ In addition to peasant taxation (the *timar* system), there were a poll tax and tax on mines, mints and salt works. The poll-tax (*cizye*) was imposed on the non-muslim subjects. The poll tax was collected by the sultan's *kuls*, members of the cavalry division of the *sipahi*. The *kuls* had individual incentives to retain the right to collect taxes because they charged a collections fee, which was retained solely for their own use (Inalcik 1994). The tax-collection fees were about 1/25 of the poll tax; often the tax collectors imposed some additional exactions, which made the burden to the peasants unbearable. The poll tax provided 48% of the total budget (Inalcik 1994, pp. 66-69).

The initial tax structure rarely imposed extra-ordinary levies on the peasants. However, as the Empire experienced stagnation in its military technology and the bureaucratic order, it became harder to expand or in some cases to keep its territories. The increased Ottoman spending on warfare put heavy demands on the rural economy to support the unsuccessful military endeavors of the Empire (Pamuk 2004, p. 240). The regular tax rates increased, but more importantly the extraordinary levies became frequent occurrences. The element of unpredictability of the arbitrary levies made them even more distortionary than increase in regular taxation. Furthermore, arbitrary levies by the state were a display of time-inconsistent behavior, which destroyed the trust of the peasants in the state and pushed them to decrease production and engage in tax-evasive behavior. Along with the increase in the state taxes, there was an increase in service requirements by the local military lords, confiscation of land and exploitation of the peasants.

Taxation is a crucial element of a pre-modern society in terms of providing economic incentives. The post-16th century Ottoman Empire had a poor-incentive system, which not only decreased production through burdensome taxation, but also did not provide much in terms of public goods. Apart from expenditure on the military, the Ottomans did not put the tax revenues to any other uses such as education improvement or infrastructure development. Hence, literacy rates in the Empire were extremely low and whatever infrastructure did exist was falling apart due to the lack of proper maintenance. The lack of human capital further inhibited economic growth and technological progress. The lack of good physical infrastructure made transportation difficult and subsequently discouraged manufacturing production and trade.

It was common practice for a village to commit to a predetermined lump-sum payment, which was collected by the local priest and delivered to the officials. The downside of this practice for the Ottomans was that taxes on newcomers were lost. Moreover, the tax-paying peasants had to collectively pay the poll-tax of the fugitives and dead. The excess tax burden, subsequently, led to depopulation of villages. The Ottoman officials realized the uselessness of this rule and made changes to recount the population every three years and adjust the poll-tax payments accordingly (Inalcik 1994).

Tax-farming on mines, mints and salt works (*mukataas*) constituted 28% of total revenue. "In order to collect the unpaid tax and the arrears owed by tax-farmers or others, a special organization with extensive powers was created. With his 60 men, the chief of the organization, *basbakikulu*, had the power to pursue those who failed to pay the tax, and if necessary, to put them in prison" (Inalcik 1994, p. 64)

The precariousness of existence in the post-17th century Empire was felt both in the towns and the villages. “The insecurity of life and property take away the stimulus to establish factories. Even the boyars in the Danubian Principalities consider this dangerous...Not long ago a wealthy lord...started a woolen factory, but for safety’s sake he built it in his village and not in the town” (Stavrianos 2000, p. 145).

One establishment that helped avert the insecurity of private property rights was the so-called *waqf* – a pious foundation. The government granted ‘dead’ land (usually from wastelands – either unused or abandoned) to the ruling elite, which could use its finances to improve the land and then donate it for charitable purposes in the form of a *waqf* (Inalcik 1994, pp. 123-125). A *waqf* was a non-incorporated trust established in order to provide or support certain social services such as schools, mosques, or public works (Brown 1996, pp. 233, 289). According to Kuran (2005, pp. 13-15), the *waqf* system represented an implicit contract between rulers and *waqf* owners whereby the rulers committed to provide secure property rights on the grounds of the *waqf*, and in return, the *waqfs* provided privately public goods and services (usually following governments preferences). In an attempt to eliminate incomplete information problems, the *waqf* contracts were “fixed in perpetuity” (Kuran 2004, p. 15). Hence, the original contracts described what type of services could be provided, how they would be provided, what types of labor and capital would be utilized. In the short-run, the fixed contract reduced transactions costs; however, in the long-run, given that heirs of *waqf* owners had to abide by the original contract without any options for modification, the inflexible *waqf* structure became a significant hindrance to economic growth. It could not adjust to market signals and hence operated inefficiently. Moreover, since the *waqf* system controlled vast resources and provided the majority of public services, it had an even more profound effect on economic stagnation in the Ottoman Empire (Kuran 2001).

The dominance of the bureaucracy and its interests over merchants and landowners also shaped significantly the Ottoman property rights legacy (Issawi 1996, p. 237). The Empire was

structured so that to ensure that a person with economic power could not gain political power. In order to participate in the higher bureaucracy, a person had to be Muslim. Most Muslims, however, considered it unworthy to engage in trade or manufacturing (Inalcik 1994, p. 44). Hence, it was primarily non-Muslims who engaged in manufacturing or trade. Gaining wealth through economic activity, however, could not bring political power to manufacturers or merchants because they were non-Muslim (Faroqhi et al. 1994, p. 476). This resulted in limited influence of merchants and landowners in the Empire. The lack of political influence of these two classes led to the establishment of very few institutions that promoted or protected land ownership or any other kind of private property during the Ottoman rule (Ozbudun 1996, pp. 135-137).

On the positive side, the Ottoman Empire passed a Land Law of 1858 in an attempt to transform land ownership from state to private property. The Law was implemented partially as an attempt to re-establish central control over rural producers and consequently to reduce the influence of the local nobles. According to Faroqhi et al. (1994, p. 867), however, the role of the code in establishing private property has been over-stated. Moreover, the Land Law was passed in the second half of the 19th century, when most Ottoman provinces were gaining independence. Hence, it was not effective long enough to alter the general Ottoman legacy on property rights.

Hence, the property rights legacy of the Empire is one of basic unfamiliarity with private ownership and any legal framework to support private property, as well as general distrust for structures that claim to ensure secure property rights. The burdensome taxation and inconsistent policies of the government in the post-17th century Ottoman Empire instilled a sentiment of insecurity of property rights and created few incentives for production above subsistence.

V. Fiscalism, Provisioning and Corruption

The Ottoman Empire was a highly centralized and autonomous state. According to Ozbudun (1996, p. 134), the autonomy of the state was derived from the lack of strong economic

interests that could pressure the government. Therefore, unlike western states, the Ottoman state was not obliged to comply with any social class interests. Instead, it followed its own agenda and adjusted the system as necessary without consideration for interest groups. Furthermore, the Ottoman Empire had a weak civil society structure, partly because of the prohibition of corporate entities by Islamic Law (Kuran 2005, pp. 9-12). There were some craft guilds, mutual aid groups, non-Muslim religious organizations, but most of them were not very active and had very little influence. A more detailed discussion of corporate entities and civil society follow in Section VII.

As mentioned earlier, the interests of the Empire were mainly focused on the needs of the bureaucracy. Political power in the Ottoman Empire defined monetary power, i.e. having higher rank meant having more wealth (Ozbudun 1996, p. 135). This was contrary to Western European contemporary systems, which witnessed the rise to power of the merchants and manufacturers classes. While economic incentives influenced the actions of the Western bourgeoisie, it was a totally different set of objectives that the Ottomans considered.

The Ottomans had an overall lack of interest in economic affairs, which was partly due to the fact that the Ottoman administration was one and the same as the Ottoman military (Issawi 1996, p. 237). Thus, there was a merging of administrative and military roles with more emphasis on military interests (Inalcik 1994, Stavrianos 2000). The two areas of interest in the sphere of economics that the Ottomans displayed were taxation and provisioning (Issawi 1996, pp. 237-239).

The emphasis on taxation has also been referred to in Ottoman history literature as *fiscalism*: “the endeavor to maximize the public revenues at all times for other than economic purposes” (Inalcik 1994, p. 44). The Ottomans relied on taxation of newly conquered areas as a means to increase their fiscal revenues. Once the Empire stopped expanding, its fiscal system faced a crisis on several fronts. First, there was an increased demand for tax revenue to finance

warfare on one hand and a decrease in the tax base of the Ottoman Empire due to the loss of territories from unsuccessful battles on the other hand.⁷

Second, there was a lack of an incentive-based tax system. The Ottoman taxation system imposed the entire tax burden on its producer class. Despite attempts to revise the tax system and shift the tax burden toward the consumer classes, all attempts for reform were thwarted by the upper classes. Moreover, the tax burden on the peasants was increasing so that after a certain point the peasants opted to produce only for subsistence and to evade taxation by migrating to the mountainous areas (Pavlowitch 1999). This, in turn, led to a lack of agricultural surplus, which was further aggravated by the diversion of all available resources toward provisions for the military. Without agricultural surplus, the Ottoman Empire did not have the necessary foundation to support non-agricultural sectors such as trade and manufacturing and faced a significant hindrance to economic growth.

Third, despite continuous attempts for reform, the government was unsuccessful at increasing the efficiency of tax collection. Initially, the government replaced the timar system with tax-farming – where people could bid in Istanbul for the right to tax farm for the term of one to five years. Then, tax farming was replaced by *malikane*, tax farming with a lifetime term and hereditary rights (Faroqhi et al. 1994, p. 538). Even though the *malikane* provided ownership rights and improved the incentives for efficient tax collection by lengthening the time horizon of decision-making, it became problematic because the government lost control of revenue sources after the death of the individuals who purchased the rights. Ultimately, the inability of the central bureaucracy to keep track of a decentralized and haphazard tax-collection led to less tax-revenue flowing into the Sultan's Treasury.

The second area of interest to the Ottomans was provisioning (Pamuk 2004, p. 235; Issawi 1996). The Ottomans wanted to ensure a stable supply of goods at all times, in order to

⁷ The Battle of Vienna in 1683 was the first major military failure of the Ottomans. The Ottomans were defeated by the Habsburgs and consequently lost control over Hungary and Transylvania. After that the Ottomans engaged in a number of wars with the Russian Empire, the Habsburgs, Persia and Poland.

prevent shortages and discontent among urban residents. Hence, they cared more for cheap prices and abundance, which was achieved by promoting imports rather than exports. The Ottomans “advocated state intervention only in the trade of necessities” (Inalcik 1994, p. 50). They never developed a doctrine, similar to Western mercantilism, which was concerned with balance of payments, promotion of exports and support of domestic industries. This discouraged domestic producers, who, on one hand, faced competition of cheap foreign consumption goods due to the government policy of import promotion, and on the other hand, could not participate on international markets due to government restrictions on exports of certain goods. Although import promotion was abandoned in the 17th century, it was only due to the increased conservatism of the *ulema* and was not at all driven by economic interests.

The Ottoman state gave priority to agriculture. It did not encourage the rise of big cities; rather it pushed for the development of small towns with highly regulated and consequently relatively static markets (Inalcik 1994, p. 52). The strict regulations of the state suppressed demand-driven changes and new technology. The Ottomans recognized the importance of trade and the necessity to maintain trade routes; however, their main interest was the taxation of trade (through tolls, customs duties, etc.) rather than the promotion of trade in the domestic markets. Consequently, dynamic markets as well as a strong manufacturing and service sectors never developed in the Ottoman Empire. As the Empire declined, the state also lost its ability to maintain the existing physical infrastructure, which further set back its successor states (Stavrianos 2000).

The last two centuries of Ottoman existence were characterized by somewhat chaotic decentralization of the government and an increase in corruption. A key factor that contributed to increased corruption was the shift in practices away from meritocracy toward buying of office or privilege. This shift was driven in part by the shortage of money that the Sultan’s treasury experienced after the 17th century (Stavrianos 2000). “From the seventeenth century onward the typical Ottoman official holding a position of any importance regarded it as a private investment

from which he was justified in deriving as large a return as possible” (Stavrianos 2000, p. 120). Corruption in the bureaucracy necessitated similar behavior in private citizens. Black market activity, which could have been a direct result of government intervention such as heavy taxation or prohibition, increased as well (Sugar 1977, pp. 65, 180-190). It is worth noting at this point, that corruption was prevalent not only in the Ottoman Empire but in most of the Western world at this point. The key difference, however, which had profound consequences for economic performance, was the type of corruption that existed and persisted. Lewis (2002, p. 63) describes Ottoman corruption as seizing power to make money, and, in contrast, Western corruption as making money to buy power. The latter, although harmful, was accompanied with economic growth, while the former led to economic stagnation.

Consequently, we identify several legacies that resulted from the government structure, evolution and priorities. First, the practice of favor exchanges and evasive behavior became a significant legacy of the Ottoman Empire. Second, as a result of the government lack of interest in economic affairs, there was little exposure to a market system. Rather, people relied on their own agricultural production in the villages or on the provisionist policy of the government in the towns. The government created a structure of incentives through its policies of provisionism and fiscalism, which the peasants reacted to rationally - they rarely engaged in or were interested in economic activity and individual initiative. Third, the increased oppression and arbitrary behavior of the state and the military in the last two centuries, created a distrust or lack of confidence in the government, especially when dealing with enforcement of order and rights of citizens.

VI. Divine and Secular Law

The Ottoman Empire had a relatively stagnant legal and judicial system. Factors that contributed to the stagnation of the legal system were isolation from Western Europe, strict adherence to the sacred religious law, chaotic decentralization of authority after the 16th century and the lack of interest of the Ottomans in economic matters.

The Islamic sacred law, *seriat*, served as the constitution of the Ottoman Empire (Stavrianos 2000). The *seriat* was based on the Koran, and since the Koran “became a closed book as of 632” (Kuran 2005, p. 9), the *seriat* was not subject to change and, hence, had little relevance for precedents and disputes that arose from everyday interactions. The static structure of *seriat* was overcome partially by the ability of the Sultan to establish new secular laws, called *kanun* (Imber 2002, Findley 1996). The *kanun*, however, had to receive the approval of the *ulema* and ceased to exist after a new Sultan came to power (Sugar 1977). The lack of continuity and the arbitrary nature of legislation posed a significant obstacle for the development of an efficient legal system. Moreover, the lack of a uniform legal code, pertinent to everyday activities, created an insecurity and unpredictability, which discouraged economic activity.

The Sultan had the power to make decisions about any matter concerning the Empire. It was customary, however, that less crucial political decisions were delegated to the Imperial Council, the *Divan* (Imber 2002). The *Divan* brought together the Ruling and the Religious Institutions (Stavrianos 2000). It oversaw all activity in the Empire. It was the decision-making council of the Empire and the advisory board to the Sultan. It was headed by the *Grand Viziers*, who in essence served as a supreme court of justice. Even though in principle the *Divan* had authority to make decisions, those decisions could always be overthrown by the Sultan, who could choose to be present at the meetings of the *Divan* or could resort to other means to access information concerning those meetings (Imber 2002). Hence, the existence of the *Divan* did not provide the separation of powers necessary in achieving a balance between the legislative and executive branches. When the influence of the Sultans weakened, some Grand Viziers took the power seat and made decisions almost single-handedly through the institution of the *Divan*.

The lower branches of the bureaucracy, in particular the judges in the local courts “were the exponents and guardians of the sacred law. And since this inflexible body of doctrine was essentially hostile to change and progress, the Moslem Institution became the instrument for the blighting bondage upon the empire and its people” (Stavrianos 2000, p. 87). The *kadi* courts

performed the judicial role at the local level. The judges, *kadi*, were appointed by the Sultan (Inalcik 1994). Their decisions were based on the interpretation of the *kanun* and *seriat*. As the Empire started to decentralize in the 17th century and the power of the Sultan eroded, the court system became less efficient in solving disputes and enforcing the law. The level of accountability of the military and the courts drastically declined. People could not rely on courts to enforce the law and protect them from an increase in corruption and arbitrary policies by the local military. Due to the time-inconsistent policies of the government as well as the burdensome and skewed taxation, people were forced to evade the law in order to survive. Their confidence in the system declined and many left their villages and towns and moved to the highlands.

Hence, the Ottoman legacy was one of deficiency in the legal system and lack of accountability and efficiency (including predictability of changes, judicial quality and expertise of the judges as well as effectiveness) in the judicial system.

VII. Representation and Organizations

Ozbudun (1996) identifies the lack of representative institutions as a feature of Ottoman state tradition that has carried over to the present. Civil society – defined as self-organizing communities that have a shared interest⁸ - is one example of a representative institution. The Ottoman Empire lacked for the most part autonomous and corporate entities, which functioned separate from the government and served as a check on the state (Ozbudun 1996).⁹

⁸ We recognize the fact that there are many facets of civil society. We use the term civil society to encompass organizations that are independent from the government and are formed on the premise that members of the organization have some common identity or common goal. This view of civil society would include corporations in addition to non-profit organizations.

⁹ It should be mentioned that the post-1830 Ottoman Empire witnessed the rise of councils (e.g. Council for Public Works in 1838), which attempted to establish and promote civil society functions. Although important as initial steps toward representative institutions, they were still in their fledgling stage when the Empire fell apart. The rise of local centers, e.g. *chitalishta* in Bulgaria, was also important. These centers were mostly organized by people educated abroad. Hence, although indisputably very important aspects of civil society development, these organizations did not alter the general attitude instilled by the Ottoman legacy of few representative institutions. The impetus driving these organizations was somewhat exogenous.

The weak civil society of the Ottoman Empire partially resulted from the lack of recognition of corporate entities in Muslim law. According to Kuran (2005, p. 9), “Islam’s most authoritative source of guidance harbors nothing obvious... that might have inspired or supported the corporate form of organization.” In addition, the egalitarian hereditary structure,¹⁰ adopted by the Empire, led to a lack of demand for the establishment of civil society or corporations (Kuran 2005, p. 28).

Although in principle no corporations were recognized, several forms of partnerships arose and were officially recognized. The *mudaraba* was one such partnership (Issawi 1996, p. 33), where people could pool capital together and use it for commercial purposes. However, the *mudaraba* were usually small-scaled and had a short duration. Under the law, they became void if one of the partners died before the commercial goal was accomplished (Kuran 2005, p. 28). Assets of the deceased partner were divided among heirs, who then could renegotiate the terms of the partnership. The increased number of negotiation parties made the process very costly and often led to the complete dissolution of the partnership.

The city guild was another example of a local organization with a common interest, which was allowed to exist in the Ottoman Empire. Unlike its equivalent in Western Europe, however, it did not play an important role in political life, because it did not have an autonomous status in the Ottoman Empire and was strictly supervised by the state (Ozbudun 1996).

The Ottoman legacy in this respect was one of a lack of a historical tradition for the formation of autonomous organizations that would exert political or social pressure on the government and question its decisions. Put differently, Ottoman successor states lack to a great extent the tradition of interest group rhetoric and assembly.

¹⁰ The egalitarian inheritance structure was specified by the Koran. It ensured that wealth would not remain concentrated in the hands of individuals, but would rather be divided among a long list of extended relatives (both male and female).

VIII. Cultural legacy

We argue that the main legacy that has persisted to the present day is the legacy of culture, visible through the lens of attitudes – toward industry, toward government, toward the West. This legacy is a consequence of the developments, discussed above, with respect to government, judicial and legal system and property rights.

The two cultural legacies that we believe have had a substantial effects on the Ottoman successor states are “the profound distrust of spontaneous economic activity and of market forces,” identified by Charles Issawi (1996, p. 240) and the “submissive attitude toward political authority,” pointed out by Ozbudun (1996, p. 138). These attitudes suggest first, an inclination of people in the successor states to seek government intervention in the economy on a regular basis and second, a passive approach to change and improvement. The former could have contributed to the readiness of South-East Europe to adopt socialism in the 1940s. The latter could explain the relative skepticism about the meaningfulness of individual actions and hence, the lack of individual initiative.

Other attitudes, in the category of Ottoman legacy, are anti-industrial sentiment and resistance to new technology, especially in agriculture. To explain the origins of these attitudes, we need to point out two features of the Ottoman Empire. First, the Empire had an effectively free class of peasants, who operated at subsistence rather than for a market (Todorova 1996, p. 60). The Ottoman peasantry, unlike the Western European peasantry, was never enserfed. However, most peasants had access to very small plots of land and very little capital. This presupposed an attitude of self-reliance in foodstuffs, and the belief that having a small plot of land was an insurance and assurance of self-sustainability. Second, the peasantry had a central role as the main producers in the predominantly agrarian Ottoman Empire. Combined with the lack of strong local aristocracy in the Ottoman territories, this could have lead to a possible pro-agrarian and anti industrial attitude in the post-Ottoman period (Todorova 1996). The anti-

industrial attitude would be partially reflected in the resistance of the peasantry to the use of new technology.

Another, somewhat trivial, legacy is the path-dependence set forth by the Ottoman failure to respond to the West. “The failure of the Ottoman Empire was, in the broadest terms, a failure in adjustment, a failure to respond to the challenges of the dynamic West” (Stavrianos 2000, p. 840). The Ottoman Empire put inadvertently its successor states onto a path of development, which so far has posed significant challenges with respect to catching up with the West. This is not to say that there is inevitability to the future outcomes, but rather that when considering factors for successful development, pre-existing conditions should be kept in mind. Consequently, policies should be driven by culture-specific factors and initial conditions and should be unique to the demands of the particular region.

In summary, the cultural Ottoman legacies were general distrust for market activity and consequently reliance on government intervention, submissive attitude toward authority, and resistance to new technology.

IX. Conclusion

There are three facts that help justify the type of study attempted in this chapter.

- (1) Cultural beliefs and norms, shaped by past experiences¹¹, are a component of institutional structure (Greif 1994, 1998, 2002).
- (2) Institutions structure incentives (North 1990).
- (3) Incentives induce economic behavior.

The above three facts suggest that if we aim to develop policies for economic development, we should study carefully the determinants of the incentive structure of the society, in which we want to implement the policies. Different cultural beliefs suggest different

¹¹ Cultural beliefs are shaped both by inter-generational transmittal of information as well as by direct observations of the past.

institutional structures, which define different incentive schemes. This, in turn, necessitates an in-depth evaluation of initial conditions and policies, geared specifically toward those initial conditions.

Second, there is a chain of events in history that contribute to the development of a certain institutional structure. Each event builds upon the previous through continuity and change. Culture, unlike certain formal institutions, seems to be to a great extent self-enforcing through time and therefore, subject to very slow and gradual change (Roland 2004).

We believe the Balkans have been significantly shaped by their Ottoman legacy. The Ottoman Empire dominated the region for five centuries. It imposed an external system to the region, which we could interpret as an exogenous shock that over many centuries shaped cultural beliefs. We identify key legacies of the Ottoman Empire, which have played an important role in structuring the economic behavior of people from the region. We highlight lack of trust in the government and in market systems, relatively submissive attitude toward authority, lack of representative organizations, and relative leniency toward evasive behavior, as key institutional legacies that have played a significant role for the economic development of the Ottoman successor states.

Historical Chapter, Table 1: Summary of Ottoman Legacies and Historical Origins

Ottoman Legacy	Historical Origins
<p>Property rights legacy:</p> <ul style="list-style-type: none"> • Basic unfamiliarity with private ownership • Unfamiliarity with any legal framework to support and protect property rights • General distrust for structures that claim to ensure secure property rights • Sentiment of insecurity of property rights • Few incentives for production above subsistence. 	<ul style="list-style-type: none"> • All land belonged to the Sultan • Fragmented structure of rights on land – <i>timar</i> system • Poor incentives due to burdensome taxation • Lack of political influence of merchants and manufacturers • Rigid structure of <i>waqfs</i> • Strict supervision of production by the government
<p>Government-related legacy:</p> <ul style="list-style-type: none"> • The practice of favor exchanges and evasive behavior • Little exposure to a market system. • Lack of interest on the part of individuals to engage in economic activity and individual initiative. • A distrust or lack of confidence in the government, especially when dealing with enforcement of order and rights of citizens. 	<ul style="list-style-type: none"> • Fiscalism • Provisionism • Increase in corruption due to <ul style="list-style-type: none"> - weakening of the Sultans & chaotic decentralization - increased insecurity of bureaucratic jobs - shift from meritocracy to buying office (driven by shortage of money of the Treasury) • Political power used to gain economic power
<p>Judicial and Legal Systems:</p> <ul style="list-style-type: none"> • Deficiency in the legal system • Lack of accountability and efficiency in the judicial system 	<ul style="list-style-type: none"> • Static structure of the sacred religious law • Lack of consistent and cumulative secular legal code • Decentralization and lax supervision of courts in the latter half of Ottoman existence
<p>Representation and Organization</p> <ul style="list-style-type: none"> • Lack of a historical tradition for the formation of autonomous organizations that would exert political or social pressure on the government and question its decisions. 	<ul style="list-style-type: none"> • Prohibition of corporate entities by Islamic law • Egalitarian hereditary structure • Strict state supervision • High transactions costs associated with negotiation and re-negotiation of contracts – example: <i>mudaraba</i>
<p>Cultural Legacy</p> <ul style="list-style-type: none"> • Profound distrust for markets • Submissive attitude toward authority • Reliance on state to provide or intervene • Anti-industrial sentiments and resistance to technology 	<ul style="list-style-type: none"> • Provisionism and Suppression of Market Factors by state • Peasants operated at subsistence • Peasants had access to small plots of land and little capital

Chapter 2

Unveiling the Checkered Fortunes of the Ottoman Empire: A Theoretical Model

I. Introduction

The Ottoman Empire survived for six centuries and prospered to become one of the largest and strongest Empires in history. It is its decline rather than its rise, however, which has shaped the predominant view on Ottoman history. The phrase ‘The Sick Man of Europe,’ used by Nicholas I of Russia in the 19th century, has been largely adopted as a description of the Ottoman Empire - a static, irrational, authoritarian entity, which solely focused on military expansionism.¹² The emphasis on warfare, the highly centralized political structure of the Empire and consequently the relatively static markets and the policy of provisionism¹³, seem to justify the predominant view of the Ottoman Empire, at least on the surface. The issue, however, arises how irrationality can be reconciled with the Ottoman Empire’s long existence and its prosperity until the middle of the 16th century.

Recently, historians (e.g. L. Carl Brown 1996, Halil Inalcik 1994) have questioned the traditional view of irrationality of the Ottoman Empire. A new view has emerged, which suggests that the Ottoman system adapted effectively and rationally to contemporary needs and circumstances (Brown 1996).

This chapter builds on the view expressed by L. Carl Brown (1996) and explores what historical conditions and circumstances could have steered the development of the Ottoman system. The chapter develops a theoretical framework for the interaction between the different social classes in the Empire. It characterizes equilibria of taxation and military activity (within the

¹² Warfare was central to the existence of the Ottoman Empire. During the period 1450-1700, the Ottomans were at war on average 85 years per century; overall, between 1450 and 1900, the Ottoman Empire was engaged in warfare about 61% of the time (Rustow 1996, p. 246).

¹³ Provisionism is a policy of the Ottoman state to ensure surplus of consumer goods on its domestic markets. Hence, it necessitated a policy of imports more than exports, which served as a dis-incentive for domestic producers.

Empire), which could explain both the period of success and the period of decline in the Ottoman Empire. We claim that strong Sultans and strict adherence to the sacred Islamic law can explain the success of the Ottoman Empire up to and including the 16th century. In contrast, weaker Sultans, increased power of the military class and a chaotic decentralization, as was the case after the 16th century, can explain the gradual decline of the Empire.

It should be emphasized that first, the chapter does not attempt to explain the origins of the Ottoman state. Rather, it characterizes equilibria of military action and taxation that lead to different paths of development. Second, the chapter focuses on one aspect of a highly diversified process. Hence, it does not aim to develop an all-enveloping theory of rise and decline. We acknowledge the fact that issues such as Islamic prohibition of interest, inheritance structure and lack of recognition for corporate entities, as well as demographic changes and international dynamics such as the discovery of new trade routes, contributed significantly to the rise and decline of the Ottoman system.¹⁴

The particular system adopted by the Ottomans led to the rise of institutions, which persisted over the centuries. Identifying the origins of these institutions allows us to assess more accurately their effect on the current institutional performance of the Ottoman successor states. In chapter 1, we examine specifically the channels through which the Ottoman Empire has affected its successor states and the significance and direction of the relationship between the current institutional development and the Ottoman Empire.

This chapter is related to several strands of literature in economics. Economic historians have long discussed the persistence of systems that were inefficient (in the modern sense) but corresponded to particular circumstances and thus, fulfilled a certain role. The medieval manor, the feudal political structure and American slavery are some examples of such systems. This chapter attempts to explain how the Ottoman seemingly “irrational and static structure” could have been an optimal response to certain conditions.

¹⁴ See Kuran 2001, 2004, Faroqhi et al. 1994 for discussion of these factors.

The chapter draws significantly on the methodology employed in literature on organized violence as the foundation for the theoretical framework. The role of organized violence and its welfare implications are examined by Bates, et al. (2002) and Grossman (2002), to name two.¹⁵ The main premise of the literature on organized violence is that violence is prevalent in everyday interaction. There is private and organized violence, where organized violence is most often associated with the state. The literature has shown that organized violence (in a society with a state) can lead to welfare improvement relative to a stateless society. In addition, the literature has discussed how level of effectiveness of the technology of predation can affect the social interactions and choices of all economic agents.

Most relevant to this chapter is the research on the Ottoman Empire. Ottoman-related research has been done primarily by historians (e.g. Inalcik, Brown, Lewis, Lord Kinross, Todorova). Hence, we rely heavily on this literature to establish the historical foundation for this chapter. The economic literature on the Empire is quite scant. A recent economic history paper by Sevket Pamuk (2004) has particular relevance to our chapter. Pamuk presents a detailed discussion of institution building and institutional change in the Empire and claims that Ottomans had flexibility in their rule, which allowed them to survive for so long. The limitations in their flexibility, among which the predominant role of the bureaucracy, led to the Ottoman decline. Our chapter does not dispute Pamuk's view. Rather, it provides a more specific mechanism within the Ottoman system, which caused the rise and the decline of the Empire.¹⁶

The rest of the chapter is organized as follows. In Section II, we present a brief historical background that sets the foundation for the theoretical model. In Section III, we develop a game theory model of military action and taxation. Section IV presents analysis of the one-period game.

¹⁵ The literature on organized violence is quite extensive - Moselle & Polak (2001), Muthoo (2002), Bates (2004), Hirshleifer (1991) are some examples of work in this field that we have drawn upon.

¹⁶ In the field of Ottoman history, we should mention several other prominent works by economic historians – Lampe & Jackson (1982), Cosgel (2004, 2005), Pamuk (2002, 2003), Issawi (1995), Palairot (1997). However, since these works focus on different aspects of Ottoman economic history, we do not explicitly utilize the ideas expressed in these works.

Section V analyzes the infinitely-repeated version of the one-period game. Section VI looks at comparative statics and predictions of the model. Section VII concludes.

II. Historical background

Objectives of the Ottoman Empire

The Ottoman Empire, following Middle Eastern tradition, viewed the economy exclusively as the means to strengthen the state's finances (practice referred to as *fiscalism*) and the Sultan's power (Inalcik 1994). The Ottomans used military imperialism to establish, expand and maintain the empire. They expected to build up wealth by taxing newly conquered areas rather than by increasing existing revenue in agriculture or industry through new technology (Inalcik 1973, Issawi 1996). Despite its focus on military expansionism on its borders, within its territory, the Empire strove to provide a stable and secure existence for its subjects (Rustow 1996).

A key aspect of the Ottoman military expansionism was the driving force behind it. The most important Ottoman duty was deemed to be the expansion of the domain of true faith, Islam, as well as the expansion of the house of Osman (Sugar 1977). Hence, the priorities of the Ottoman state were significantly shaped by this religious duty. Lost battles and territories were considered a failure to fulfill the Ottoman most sacred responsibility.

The balance of aggressive military expansionism and stable existence within the Empire could only be achieved in the presence of powerful and capable Sultans, who adhered to the sacred religious code, *seriat*. Relative changes in the social order and the power of the Sultan, therefore, could have had a significant contribution both to the success and the decline of the Ottoman Empire. Obvious pitfalls of military expansionism, which eventually became hindrances for the Ottoman Empire, were the loss of control over more distant territories as well as the increased burden on the economy from supporting such an enormous military apparatus.

Socio-Economic Structure of the Empire

The Ottoman Empire strove to maintain a highly centralized bureaucratic state and a just order (Sugar 1997). The ultimate power of the Sultan and the centralized order were crucial to the functioning of the Empire. The omnipresent bureaucratic administration, both central and provincial, as well as the detailed Ottoman survey registers (accounts of finances of all provinces, including tax revenues, booty, gifts, etc.) played a key role in the preservation of centralization and the maintenance of strict control.

The Empire had two bureaucratic orders: The Religious and the Ruling Orders (Stavrianos 2000). The Religious Order of the Ottoman Empire comprised of the Islamic clergy, *ulema*, who interpreted and enforced the Islamic law (Stavrianos 2000). According to Muslim theory, the state was subordinate to religion, i.e. the Sultan was simply an instrument of the sacred law.¹⁷ In reality, however, Sultans often had more power than originally given to them by the religious law (Inalcik 1994).¹⁸

At the top of the Ruling Order was the Sultan, followed by the Grand Vizier (Main Advisor to the Sultan) and the Porte (Sultan's court). Below them were the military class (*sipahi*) and bureaucrats. They collected taxes and served the Sultan directly. The military class, primarily Muslim, received land tenure and tax rights for services in the Sultan's army and was exempt from paying direct taxes. The military served as an intermediary between the Sultan and the peasants, *reaya*, who were the main taxpayers and producers of the empire. There was a religion-based division of labor in the Ottoman Empire (Faroqhi et al. 1994). Only Muslims could hold government or military posts. Christians and Jews specialized in commerce and crafts. Hence, the link between economic and political posts was severed. A rich merchant, for example, could not become a political figure due to his non-Muslim affiliation (Ozbudun 1996). This prevented the

¹⁷*seriat* – the sacred law of Islam (also written as *sharia*); *mufti* – interpreters of the Islamic law (Inalcik, p.171)

¹⁸ Sultans could issue secular laws, which could either supplement the sacred law on matters not explicitly discussed in the sacred law or relax the rules set up by the sacred law (Findley 1996).

emergence of a strong merchant class as a political factor that could pressure the government or provide a check on its decisions.

The Ottoman Empire was predominantly rural. The economic organization in the rural areas that embodied the interaction between the Sultan, the military and the peasants was the so-called *timar* system. Under the *timar* system, the military officers lived in villages in peaceful times and controlled taxation (Sugar 1977). Their main obligation at all times, however, was to serve in the Sultan's army. The *timar* system provided troops for the Sultan and ensured order in the empire. In addition, it circumvented the Empire's shortage of silver and gold coins by decentralizing payments to the military, i.e. giving the military a direct source of income from taxation rather than payments in cash from the Sultan's treasury (Inalcik 1994).

The *timar* system had two fundamental differences from western feudalism. First, all relations between the military, *sipahi*, and the peasants, *reaya*, were controlled by the Sultan's laws under the supervision of the state bureaucracy (Lord Kinross 1977); local *kadi*¹⁹ courts were established to enforce the regulations of the Sultan and to mediate conflicts. In contrast, Western feudalism gave significant autonomy to the lords as long as they fulfilled their commitment to the King. Western Feudalism was more decentralized and hence did not utilize the services of an omni-present bureaucracy.

Second, the "*timar* system was one of fragmented possession where the state, the *sipahi* and the peasant had simultaneous rights of control over the land" (Inalcik 1973, p. 110); in contrast, the feudal system provided less fragmentation with respect to decision making. In feudalism, the lord had a conditional grant of land from the King (the King in principle owned all land); however, the lord could make decisions on what to do with the land, who to employ and how to manage the land and the peasants bound to that land. Moreover, the lord had the right to pass the land to his heirs. In the Ottoman *timar* system, the Sultan owned all land. The *sipahi* had a conditional grant of rights to collect taxes on land. The peasants had a conditional ownership

¹⁹ *kadi* – judge administering both *seriat* (sacred Islamic code) and *kanun* (secular laws issued by the Sultan)

and hereditary rights on a small plot of land, big enough to provide living for a family but not to yield a profit. The peasants had the right to cultivate the land as long as they paid their taxes and took care of the land; otherwise, the state confiscated the land (as well as other peasant property in some cases).

The *timar* system provided one main source of tax revenue. Other sources of tax revenue were tax farming and the poll tax, which went directly into the Sultan's treasury and were collected by a group within the military class and the bureaucracy (Inalcik 1994).

To summarize, the main economic agents in the Ottoman Empire (of interest for our purposes) were the Sultan, the military and bureaucracy (which for simplicity we group together as military class) and the peasants. The Sultan gave orders and monitored the other agents closely. The peasants paid taxes to the military and indirectly to the Sultan. A consequence of the absolute power of the Sultan and the autonomous nature of the Ottoman state was the temporary nature of the status of the military class. When members of the military class became too powerful, they were released from duty by the Sultan (Sugar 1977). If the Sultan did not keep a check on the relative power of his bureaucracy, he faced failure. The absolute power of the Sultan, thus, necessitated centralization and close supervision, especially of the interaction between the military and the peasants.

Seeds of Decline

Pressures from Europe as well as an internal weakening of the Empire's leadership, led to a gradual disintegration of the Ottoman Empire. After the 16th century, the Ottoman Sultans became weaker, partially as a result of a shift away from extensive education and practical training of princes toward the *kafes* system - bringing up of the princes in a very sheltered, isolated and lavish existence within the Imperial palace, without any interaction with the outside world (Sugar 1977). Moreover, there was a change in the practice of succession of the throne. Initially, all male children of the Sultan were eligible candidates to the throne, which meant that the competition between princes inevitably lead to the succession of the most capable candidate

(Imber 2002). However, since this practice was particularly inhumane, there was a shift toward seniority-based succession - the oldest living male relative of the Sultan was the one to succeed the throne (Sugar 1977).

The change in succession practices and education of the princes contributed to the weakening of the Sultans, which was accompanied by the increase in power of the Sultan's court and subsequently with a loss of direct control of the Sultan over the military and the bureaucracy. The weakening of the Sultans was accompanied with a rise in corruption first, amongst palace officials and second, amongst the military and the bureaucracy (Faroqhi et al. 1994). The first was due to the fact that tenure of most positions within the Sultan's court became less secure (Sugar 1977) and hence, people tried to accumulate as much wealth as possible as quickly as possible in order to have insurance for the future in case they became disfavored by the Sultan. The second was partly attributed to the shift from meritocracy toward the buying of office in the bureaucracy and the military (Stavrianos 2000), which was driven by the chronic shortage of money in the Sultan's treasury after the 17th century. Consequently, there was a chaotic decentralization in the Empire (Lewis 2002), which combined with an increase in religious fanaticism of the *ulema* (Inalcik 1994) and closing off of the Empire from the rest of the world, led to stagnation and decline.

Moreover, the Ottoman Empire lagged behind Europe in technology, most importantly in the field of military equipment and techniques (such as the telescope and the practice of military conscription), which caused significant military defeats of the Ottoman army and an increased economic burden on the taxed subjects of the Empire (Cameron & Neal 2003). Consequently, in an effort to increase revenues, the *timar* system was replaced by tax-farming (Faroqhi et al. 1994). Tax farming, contrary to expectations, not only failed to increase revenues significantly but led to decentralization and lax enforcement of the Sultan's decrees and objectives as well as arbitrary tax levies and increased power and corruption of the military class. Ultimately, the

technological superiority of Europe along with the increased tax burden and corruption within the Empire contributed to the relative decline of the Empire.

By the middle of the 19th century the Ottoman Empire had lost its central control and ability to collect taxes. Bribes and guild concessions among tax collectors held back the modernization of the Balkans (Inalcik 1994). The increasing oppressiveness and heavy taxation drove the population out of urban and rural areas into higher mountainous regions where people relied on subsistence agriculture (Pavlowitch 1999). The combination of shrinking borders, increasing corruption and decline motivated the Ottomans to reform the Empire between 1839 and 1876. The so-called *Tanzimat* reforms were implemented and were geared toward elimination of corruption and educational reform. Indisputably in the long run the *Tanzimat* reforms contributed to the transition to a westernized New Turkey, however their immediate effect was a discontent among the peasants (both Muslim and Christian) stemming from the increased taxes, the greater central control and the confusion caused by the new rules (Faroqhi et al. 1994, pp. 882-883). The unrest evolved into full-fledged national movements of the Balkan provinces, which eventually led to their separation from the Ottoman Empire.

Given the above brief summary, we proceed by setting up a theoretical model that incorporates the historical features described in this section.

III. A Stylized Model of the Ottoman Empire

Timing of the Game

Consider a model of interaction between three agents: Sultan (S), peasants (P) and military (M). Each agent is predetermined as a producer or a warrior²⁰. Peasants are the only agents in this economy involved in productive activity. The military receives tax payments from

²⁰ H. Grossman (2002) develops a model where people can choose whether to be predators or producers. The goal of his model is to show that having a king can be beneficial for everyone if the technology of predation is effective. Since we do not focus on the emergence of the Sultan but rather on the interaction between the social classes, we do not allow for the choice of production vs. predation.

the peasants, and then transfers a predetermined share of the tax payment to the Sultan. The other main function of the military is to serve in the Sultan's army, in addition to collecting taxes from the peasants.²¹ The share of taxes retained by the military is indirect payment for their work. The tax payments by the private agents are in exchange for protection. The Sultan is a specialist in violence. He does not engage in productive activity. Rather he gains income either from tax payments or from coercion.

The analysis begins by considering a one-period game. We first state the specifics of the game and then back them up by a historical discussion.

- Each period consists of two sub-periods.
- In sub-period 1, P produces output Y , which equals P's income before taxation and predation. P decides whether to pay taxes to M. t_p is a binary variable denoting the choice of P to pay taxes to M or not: t_p equals 1 if P pays taxes to M and 0 otherwise. If P chooses to pay taxes, he gives a share of his income, τ , to M. τ is the predetermined tax rate imposed by S.
- Simultaneously, in sub-period 1, M decides whether to transfer taxes to S and whether to prey on P. M does not participate in productive activity. t_M is a binary variable denoting the choice of M to transfer tax revenue to S or not: t_M equals 1 if M decided to pay his share of tax revenue to S and 0 otherwise. If he chooses to transfer taxes to S, he gives up a share, $a \in [0, 1]$, from the tax revenue he collects from P. M also decides whether to prey on P. This decision is represented by the binary variable r : r equals 1 if M preys on P and 0 otherwise. If M preys, he expropriates a share, m , from P's income and incurs a cost of predation, $C_M(r)$. The cost of predation is a function of r : $C_M(r) = 0$ if $r = 0$;

²¹ When we refer to the military officers in this model, we primarily focus on the *sipahi* and later on the tax-farmers, rather than on the *janissary* corps (infantry unit of the Sultan). Hence, the military in the model are the local lords rather than the professional military corps, which only served in the Sultan's army and did not participate in taxation. This definition of military officers, therefore, includes the *ayans*, who were in effect local officials who had accumulated a lot of wealth and established control over a particular area in the latter part of the 18th century or early 19th century.

$C_M(r) = C_M > 0$ if $r = 1$. M preys only if his cost of predation is less than his expected revenues from taxes and predation.²²

- In sub-period 2, S observes the actions from sub-period 1 and decides whether to coerce and if so, who to coerce. S does not undertake any productive activity. S maximizes net-of-costs revenues from taxation and coercion. If S engages in coercion, S incurs cost of predation, C_S . The choice of S to coerce is represented by two binary variables – p_M or p_P . p_M equals 1 if S coerces M and 0 otherwise. If S coerces M, he expropriates a share $q_M \in [0,1]$. p_P equals 1 if S coerces P and 0 otherwise. If S coerces P, he expropriates a share $q_P \in [0,1]$. S coerces only if the cost of predation is less than his revenues from coercion and taxation. The cost of predation is a function of p_M and p_P : $C_S(p_M, p_P) = 0$ if $p_M = p_P = 0$; $C_S(p_M, p_P) = C_S > 0$ if $p_M = 1$ or $p_P = 1$.²³

The structure of the game is summarized in Figure 1. We provide a list of definitions of all variables of the model in Appendix 1.

We proceed with a discussion of the model in the particular historical setting. First, the interactions between the agents of this model pose constraints on the agents' behavior. The ability of peasants and military to choose whether to pay taxes poses a constraint on the Sultan: if the Sultan imposes high taxes, peasants and military choose not to pay and transfer taxes. On the other hand, the ability of the Sultan to coerce (expropriate from the private agents) serves as a punishment for peasants and military when they refuse to pay taxes.

Second, the decision-making process in the game is based on the following historical features. The Sultan was omnipresent in the Ottoman Empire. He controlled a very elaborate bureaucracy, which monitored all actions of the military officers and the peasants. Therefore, the

²² The tax rate (τ) and the transfer rate (a) are exogenous to the model. The key feature of the Sultan in this model is his power to prey over the private agents rather than the ability to set the tax rate. We consider changes in the exogenous tax rate later. This is consistent with the literature on predation. Moselle and Polak (1999) consider the role of the state for welfare and output when private agents do not have military power. The authors focus on military technology as part of the benefit of being a bandit vs. producer as well as the benefit from having a gang of bandits or an organized state.

²³ The Sultan cannot coerce both agents in the same period. See assumption (G4).

Sultan made decisions based on information about the actions of the private agents. Hence, the Sultan's decisions are delayed to the second sub-period of our model. The military officers could not monitor the actions of the peasants as thoroughly (partly because of their duties in the Sultan's army) and had to make decisions without necessarily knowing the peasants' actions or choices. Taxes were collected usually once per year or after harvest times. Prior to the appointed times for tax collection and in-between collection times, the military decided whether to impose any additional levies on the peasants. Since these levies were not enforced by decrees of the Sultan, we consider them a form of predation. Hence, the decisions of the peasants to pay taxes and the military to prey on the peasants are grouped together in one sub-period and happen simultaneously.

Third, the cost of predation of the Sultan reflects the effectiveness of the technology of predation. The cost takes into consideration the fact that the state, especially a very centralized state, has more information than the private agents because of its ubiquitous bureaucracy (see Hume 1994, Olson 1993). This interpretation of the cost of predation is consistent with the literature (e.g. H. Grossman 2002; Moselle & Polak 2001). The pre-17th century Ottoman Empire was a state with very effective technology of predation and a comprehensive bureaucratic system. "The empire's soldier-administrators were inducted into the Sultan's army through wide recruitment, intense professional training, and merit promotions –a system far more effective than that of any its European rivals at the time [late 15th century]" (Rustow 1996, p. 245). This suggests that the Ottoman state had a lower cost of predation than a Western European feudal state. We will expand on the effect of the cost of predation on the equilibrium outcome in the comparative statics section of the chapter.

Fourth, we model the Sultan's costs of predation on the military and the peasants to be the same, but the benefit-cost ratios (in terms of the share of expropriation) to be different. This does not dictate the results and is simply used for convenience and tractability.

Assumptions of the Model

To focus on the role of the effectiveness of military technology and the relationship between the agents for the rise and decline of the Ottoman Empire, we make several assumptions about the interaction between S, P and M. These assumptions eliminate equilibria that do not pertain to the specific historical setting.

The first two assumptions are innocuous given the institutional structure of the Ottoman Empire up to the 19th century: centralized state with an empowered, but still subservient to the Sultan and the Imperial Council, military class.²⁴

First, S is unable to expropriate all income from M and P.²⁵ S also gets a bigger share if he expropriates from P than from M. This results partially from the facts that the Sultan has a strong interest in keeping the loyalty of the military class. Hence:

$$(G1) 1 > q_P > q_M$$

The expropriation rate on the peasants in the context of the Ottoman Empire represents extraordinary levies of taxation imposed by the Sultan on occasions such as emergencies (warfare-related usually) or celebrations (for example the enthronement of the Sultan) as well as punishment in cases when the peasants would not pay their regular taxes or would not work on the land (Sugar 1977). In contrast, the expropriation rate on the military officers reflects punishment for abuses of their power. Given that the military class was Muslim as well as that it provided the backbone of the Sultan's power, it seems appropriate to assume that punishment or expropriation of the military was less severe (and less frequent) than that of peasants.

²⁴ In chapter 1, we discuss extensively the social order, the relative changes within that order and the dynamics within the Empire.

²⁵ The assumption applies to our framework, because the state has a long-term horizon and hence faces consequences from expropriating all income. Moreover, a state in decline is less likely to be able to collect revenues or coerce as effectively, which further reinforces this assumption. This is a standard assumption in literature on organized violence (e.g. Grossman (1997), Usher (1989), Konrad and Skaperdas (1999)). Bates, et al. (2002), assume that the probability of success of predation (which can alternatively be interpreted in our model as the share expropriated) is less than 1. They claim that limiting the power of the ruler allows them to explore conditions under which the state would emerge. Our model focuses on the decline of the Ottoman Empire, rather than the emergence.

Second, S faces a smaller cost of predation than M since the former has a comparative advantage in military power.

$$(G2) C_M > C_S$$

The third assumption effectively bounds the tax rate levied by the Sultan from above. We would like to stress that this assumption is primarily adopted for the sake of tractability of the results. We prove in Appendix 4 that even if this assumption does not hold, our main results still hold.

$$(G3) \tau < q_P / (q_P + q_M) - m$$

This assumption²⁶ implicitly states that:

- (a) S gets a higher share from expropriation if S coerces P than if S coerces M in the case when
 (i) P pays taxes and (ii) M does not transfer taxes but preys on P.

This implies that if S chooses to coerce, S preys on P and not on M even if P's income has been reduced to its minimum level. Admittedly, this is a strong assumption since it eliminates the possibility that S coerces M even in the case when M has violated all his duties to the Sultan. We impose this assumption for the purpose of tractability of the final results. However, this assumption does not affect the choice of the Sultan to coerce (vs. not coerce) and hence, does not affect the equilibrium outcome.

- (b) If M were to prey, M cannot expropriate more than the post-tax income of P (i.e. $m < 1 - \tau$).

²⁶ The inequality in G3 is derived from a comparison of the Sultan's payoffs from preying on the peasants and from preying on the military in the case when it is least likely that the Sultan would prey on the peasants – peasants pay taxes, military do not transfer taxes and prey on the peasants. The Sultan faces three payoffs in this case:

do not prey (payoff = 0),

prey on the peasants (payoff = $q_P[Y(1 - \tau) - Y_m] - C_S$) and

prey on the military (payoff = $q_M[\tau Y + Y_m - C_M] - C_S$).

In order to prey on the peasants, his payoff from that action needs to be bigger than the other two payoffs. Since the case of no predation is trivial, we do not include it here. Hence:

$$q_P[Y(1 - \tau) - Y_m] - C_S > q_M[\tau Y + Y_m - C_M] - C_S \text{ ensures predation on the peasants}$$

Simplifying the above inequality leads to the following:

$$q_P Y(1 - \tau - m) > q_M Y(\tau + m) - C_M q_M$$

Assuming that the cost of predation of the military is zero (this makes the condition in G3 much stronger than it needs to be in reality), the inequality becomes:

$$q_P Y(1 - \tau - m) > q_M Y(\tau + m)$$

Further simplification leads to the inequality in G3: $\tau + m < q_P / (q_P + q_M)$

This is derived from inequality $\tau < q_p/(q_p + q_M) - m$. Since $q_p/(q_p + q_M)$ is smaller than 1, G3 necessarily implies that $m < 1 - \tau$. The model assumes that P and M make decisions simultaneously, which necessitates this assumption. In other words, it is not possible for taxation and predation to amount to more than the total income of the peasants.

Fourth, for simplicity, we assume that S can prey on P or M but not on both simultaneously.

$$(G4) p_P p_M = 0$$

Fifth, since S has a comparative advantage in predation, S's cost of predation is relatively small: S's benefit from preying on P is greater than the cost of preying even when P's income has been reduced to its minimal level.

$$(G5) q_P Y (1 - \tau - m) > C_S$$

This assumption is dictated by the structure of the Ottoman Empire. As discussed in detail earlier, the Empire had a very effective technology of military action. Hence, it faced a very low cost of predation. Note that a state that faces a much higher cost of predation might not engage in coercion as easily, in which case this assumption would not hold. We discuss this possibility further in section VI.

Payoffs and Social Welfare

At the end of the one-period game, players' payoffs (incomes) are as follows:

P's income, I_P , is the revenue from productive activity minus: (i) taxes if P chooses to pay, (ii) expected reduction in income from predation by M, and (iii) expected reduction in income from predation by S:²⁷

$$I_P = [Y(1 - t_P \tau) - r Y m](1 - p_P q_P)$$

M's income, I_M , is the net of transfer tax revenue received from P and revenue from predation minus (i) cost of predation, and (ii) expected reduction in income from being preyed upon by S:

²⁷ Note that the probability of successful predating by the Sultan in the above expression is derived from the following: Probability (Successful predation) = Prob (Successful Predation given predation) x Prob (predation) + Prob (Successful Predation given no predation) x Prob (no predation) = $p_P q_P + 0 = p_P q_P$

$$I_M = [t_P \tau (1 - t_M a) Y + r Y m - C_M(r)](1 - p_M q_M)$$

S's income, I_S , is the revenue from expropriation and taxation minus cost of predation:

$$I_S = p_P q_P [Y(1 - t_P \tau)] - r Y m + p_M q_M [t_P \tau (1 - t_M a) Y + r Y m - C_M(r)] + t_P t_M a \tau Y - C_S(p_P, p_M)$$

Social welfare is defined as the sum of the players' incomes.

$$\text{Social Welfare} = Y - C_M(r) - C_S(p_P, p_M)$$

Social Welfare can take on four different values depending on the actions of the players. Social welfare equals

Y	if there is no military action,
$Y - C_M$	if only M preys,
$Y - C_S$	if only S preys,
$Y - C_M - C_S$	if both S and M prey.

Military action necessarily reduces social welfare due to the cost of predation. Hence, social welfare is maximized when there is no predation or coercion. Observe also that we implicitly assume there is no deadweight loss from taxation.²⁸

IV. Solving the One-period Game

There are twenty four different outcomes of the one period game, which are formally presented in Appendix 2. In sub period 2, S decides whether to coerce and who to coerce given S's observation of the actions of P and M in sub period 1.

Lemma 1: In sub-period 2, S chooses to coerce regardless of P's and M's actions in sub period 1.

More specifically, S chooses to expropriate from P and not to expropriate from M.

Proofs of all lemmas are in Appendix 3. Lemma 1 hinges upon assumptions (G3), (G4), and (G5). It states that it is always optimal for the Sultan in the one-period game to coerce the

²⁸ This provides justification for treating the tax rate as exogenous in this model; taxation per se does not reduce social welfare. However, the tax rate shapes incentives of P, M, and S and therefore determines the welfare properties of the equilibrium of the infinitely-repeated game.

peasants in the one-period game. The peasants and military expect the Sultan to use coercion on the peasants in sub-period 2 and make decisions in sub period 1 accordingly.

Lemma 2: P does not pay taxes in sub period 1 because P knows that it is optimal for S to prey on him in sub period 2.

In sub period 1, the peasants choose not to pay taxes because the payoff if they pay taxes, $Y(1-\tau)(1-q_P)$ is smaller than the payoff if they do not pay taxes, $Y(1-q_P)$.

Lemma 3: M preys on P and does not transfer taxes knowing that P would not pay taxes given the expectation about S's behavior in sub period 2.

The military expect the Sultan to coerce the peasants. They know that the peasants will choose not to pay taxes; therefore the military choose to prey on the peasants and not transfer taxes. Since the military do not receive any tax income, their choice of transferring taxes is automatically eliminated. Their payoff from not preying, 0, is smaller than the payoff from preying on the peasants, $(Y_M - C_M)$.

Given the above, the equilibrium of the game can be summarized in the following proposition:

Result 1: The only (sub-game perfect) equilibrium outcome of the one-period game is: (i) P does not pay taxes, (ii) M preys and does not transfer taxes, and (iii) S coerces P.

The outcome is rather grim for social welfare. It is clearly not socially optimal because of the cost of predation incurred by the military and the Sultan: Social Welfare equals $(Y - C_M - C_S)$. We call this an *All-Defect (AD) Equilibrium Outcome*.²⁹ We call the outcome that maximizes social

²⁹ We mentioned in the discussion of assumption (G3) that eliminating the possibility of coercion on the military does not drive the final result, which in this case is the All-Defect outcome. The logic is as follows. If we relax assumption (G3) but still assume a very low cost of predation by the Sultan, in some cases, the Sultan will choose to coerce the peasants; in others, he will choose to coerce the military. We already discussed how the peasants would act if they expect to be coerced. Now, we discuss the behavior of the military if they expect the Sultan to coerce them. The military will choose not to transfer taxes because their payoff from transferring taxes is smaller than not transferring taxes (the reduction in the payoff is $(\tau Y(1 - q_M))$). Secondly, the military will choose to prey on the peasants (as long as their cost of predation is not too high) because their payoff from predation is $(mY - C_M)(1 - q_M)$ larger than their payoff without predation. Third, if the peasants expect the Sultan to coerce (regardless of who the Sultan would coerce),

welfare in the one-period game the *First-Best (FB) Equilibrium Outcome*. In the latter: (i) P pays taxes, (ii) M transfers taxes to S and does not prey on P, and (iii) S does not coerce anyone. Social Welfare equals Y . Given the low cost of predation of the Sultan, however, the socially optimal outcome cannot be supported as equilibrium in the one-period game.³⁰

We may interpret the First-Best (Socially Optimal) and the All-Defect (Socially-Inferior) outcomes of the one-period game in terms of the payoffs to the peasants, military and Sultan.

	<i>First best Payoff</i>	<i>All-Defect Payoff</i>
Peasants	$(1-\tau)Y$	$(1-m)(1-q_P)Y$
Military	$\tau(1-a)Y$	$mY - C_M$
Sultan	$a\tau Y$	$(1-m)q_P Y - C_S$

The Sultan and the military are better off, while the peasants are worse off, from the *AD* outcome, if the tax rate is low. On the other hand, the peasants get a higher payoff from the *AD* outcome, while the military and the Sultans are better off in the *FB* outcome, if the tax rate is much higher than the expropriation rates. The latter is due to the fact that there are no incentive effects of higher taxation on production in this model.

The military and the Sultan get higher payoffs from the *AD* outcome when the costs of predation are low and the expropriation rates are high. Intuitively, this statement implies that a military state, with very effective technology of predation and ability to expropriate big shares from its private agents is more likely to coerce its private citizens. In the one-period game, there is nothing to constrain the state from doing so, if its payoff from coercion is bigger than its payoff from taxation. It is worth noting that even if the state has a mechanism that prevents it from expropriating a lot from the private agents, a very low cost of predation will still make it possible

they will choose not to pay taxes to the military because their payoff from paying taxes is smaller than the payoff from not paying taxes (the reduction in payoff is (τY)). Ultimately, all agents will defect and the final outcome will again be an All-Defect Outcome. For the purpose of preciseness, we should clarify that the actual sub-game perfect equilibrium strategies will be different if we allow for the Sultan to coerce the military. We provide a detailed discussion of assumption G3 in Appendix 4.

³⁰ For convenience, we do not distinguish between the outcome and the equilibrium of the game, although formally they are not equivalent: outcome is a narrower concept than equilibrium.

for the Sultan to get a higher payoff from the *All-Defect* Outcome. In other words, even if there is strict adherence to the religious code (or in the western equivalent – an efficient rule of law) that constrains the actions of the government, in the one-period game if the state has a very effective technology of predation (whether due to centralization or emphasis of military imperialism), it will still prey on its citizens.³¹

V. Infinitely-Repeated Version of the One-Period Game

The socially optimal outcome cannot be supported as (Sub-game Perfect) Equilibrium in the one-period game. However, it can be sustained in the long run due to the threat of punishment in the case when any player unilaterally deviates from the socially optimal outcome. This result is supported by the Folk Theorem of repeated games. In a repeated-game setting, people play trigger strategies, i.e. adjust their current behavior on past information about the actions of others. Hence, defecting from the social optimum, can lead to punishment in future periods due to the publicly available information about all agents' previous actions. This, in turn, suggests that unilateral deviation leads to a one-time gain and a stream of future losses from punishments caused by the trigger strategies (Fudenberg and Maskin 1986, Bates 2002).

It is standard practice in the literature on repeated games to assume that agents discount the future (with a discount factor, denoted by δ). The Folk Theorem states that if the discount factor is close to 1, the first best outcome can be obtained as equilibrium of the repeated game. In other words, socially optimal behavior can be obtained in a repeated setting. Some economists have expressed pessimism that the socially optimal outcome can be sustained in the repeated setting (e.g. North 1990, Bates 2002). We acknowledge this doubt and show in the next section

³¹ This is captured somewhat by the behavior of a roving bandit (discussed by Mancur Olson in *Power and Prosperity*, 2000), who does not face any punishment in the future for his current behavior and hence, optimizing his own welfare, necessarily preys and takes all he can.

that a reversal to the socially inferior All-Defect outcome (or in fact un-attainability of the Socially Optimal outcome) is in fact quite probable.

In the infinitely repeated version of the one-period game, described in detail in section IV, the socially optimal outcome arises as part of the equilibrium strategy while the welfare-inferior sub-game perfect outcome of the one-period game becomes part of the punishment phase.

We specify the following “trigger” strategies for P, M and S:

- In period 1, P pays taxes. In subsequent periods, P pays taxes if S has not coerced and M has not preyed, and does not pay taxes otherwise.
- In period 1, M transfers taxes to S and does not prey on P. In subsequent periods, M transfers taxes and does not prey only if S has not coerced and P has paid taxes, but does not transfer taxes and preys otherwise.
- In period 1, S does not coerce if P pays taxes and M transfers tax payments and does not prey on P. In subsequent periods, S does not coerce if the P has been paying taxes and M has been transferring taxes and not preying on P, but coerces otherwise.

We derive three conditions based on each player’s strategy that support the socially optimal outcome in the long run. The conditions are summarized in Result 2:

Result 2: The socially optimal outcome (i) P pays taxes, (ii) M transfers taxes and does not prey on P, (iii) S does not prey, can be sustained as equilibrium of the infinitely-repeated game as long as the following conditions hold simultaneously.

$$(E1) C_S > Y \{ q_P [(1-\tau) + \delta(\tau-m)] - \delta\tau a \}$$

$$(E2) \tau < q_P + (1-q_P) \delta m$$

$$(E3) C_M > Y [m(1-\tau + \delta\tau) - \delta\tau + a\tau]$$

If any of the three conditions do not hold, the equilibrium outcome of the infinitely repeated game is identical to the welfare-inferior outcome of the one period game. Hence, conditions (E1), (E2)

and (E3) taken together present a necessary and sufficient condition for the socially optimal outcome to be sustained. This result is formally proven in Appendix 5.

VI. Discussion of Results

Conditions (E1), (E2) and (E3) describe the relationship between parameters of the model that yields the socially optimal outcome in the infinitely-repeated game. Different values of the cost of predation, share of expropriation, tax rate and discount factor can either make the equilibrium conditions stronger or can reverse the result to show that the socially-inferior outcome of predation, coercion and no tax-paying would prevail.

The Laffer Curve Constraint

The first conclusion, derived from condition (E1), is that large tax revenue (i.e. a high tax rate - τ) can ensure no predation by the Sultan. This result is partly due to our assumption that the tax rate does not have any incentive effects on production. Given the historical setting of a pre-modern society, it is likely that labor supply was relatively inelastic and hence was not very sensitive to changes in the tax rate. People had to produce in an attempt to provide subsistence for their families. Hence, they had no choice but to produce, and subsequently found other ways to react to the high tax rate. This brings us to our second conclusion, which is derived from condition (E2). (E2) puts an upper bound on the tax rate: if the peasants are faced with an excessively high tax rate, they choose not to pay taxes and risk being preyed upon. This argument embodies the standard constraint of taxation on a Ruler. Hence, in order to achieve the socially optimal equilibrium of no predation and tax paying, the tax rate has to be relatively large but not too large so that the peasant would be willing to pay taxes and the Sultan would get enough revenue to forgo predation.

The Ottoman Empire in the end of the 17th and the beginning of the 18th century engaged in a number of unsuccessful military endeavors, which led to a loss in territories (and hence a loss in the tax base) and an increase in military spending (Inalcik 1994). This, in turn, put heavy

demands on the rural economy to provide the necessary resources to support the Ottoman military and bureaucracy. There was an unprecedented increase in taxation. The Empire, therefore, faced a situation of heavy taxation and subsequent attempts by the peasantry to avoid paying taxes by simply moving into areas of little or no state presence, such as the highlands (Pavlowitch 1999).

Maintaining the Balance of Power: The Role of the Religious Law

A key parameter of the model is the cost of predation of the Sultan, C_S (i.e. effectiveness of military technology and the central bureaucracy). Condition (E1) states that if the cost of predation of the Sultan decreases, the socially-optimal equilibrium is abandoned and the Sultan chooses to coerce the peasants. This result, in itself, suggests that the Ottoman Sultan, who had very effective military technology, both due to the emphasis on warfare and the highly centralized political structure of the Empire (Rustow 1996), always found it beneficial to coerce. However, subject to the strict religious code, which obliged the Sultan to abide by the code and to provide just rule, low cost of predation by the Sultan does not necessarily yield a welfare inferior equilibrium. We can interpret q_P (the share that the Sultan can expropriate from the peasants) as an indicator of the adherence to the religious code: higher values of q_P suggest lower adherence to the religious law. Condition (E1) suggests a balance between q_P and C_S . Adherence to the religious code, i.e. relatively low values of q_P , combined with low cost of predation, C_S , can lead to the socially optimal outcome of no predation.

The historical evidence shows that up to and including most of the 16th century the level of coercion by the Sultan was relatively small. There was a consistent and strong rule by the Ottoman Sultans, which was focused on justice and fair treatment of all citizens in the Empire (Stavrianos 2000). Originally, the view that prevailed was that the political authority was subordinate to the sacred law (Inalcik 1973), and since one of the key principles of the sacred law was the concern for justice, it was self-enforcing that the Sultans strove to provide a secure living to all its citizens as well as a just order (Rustow 1996). When the power of the Sultans began to weaken, adherence to the religious code decreased (not necessarily as a consequence of the

Sultan's weakened position, but simultaneously) and coercion, in the form of extraordinary levies, increased (Pamuk 2004).

Powerful Military Class

The military cost of predation, C_M , can be interpreted as a combined measure of the military technology available to the military class and the government effectiveness in preventing private agents from preying on other private agents. A low military cost of predation can be interpreted as an indicator of a powerful military class that is both well-equipped for military action and is little supervised by the Sultan. Condition (E3) suggests that, ceteris paribus, if C_M falls (i.e. the military gain power relative to the Sultan), the military chooses to prey on the peasants and subsequently, there is a reversal to the socially-inferior equilibrium. Hence, when the government faces a powerful group of military officers, both the government and the military have an incentive to coerce.

Starting in the 17th century, there was an increase in corruption in the bureaucracy and the military corps for several reasons. First, there was an increasing insecurity of job posts in service of the Sultan (Sugar 1977). Second, there was a shift away from meritocracy toward buying of office (Stavrianos 2000). Third, the debasement of the Ottoman currency led to discontent among the military and the bureaucracy and chaotic decentralization in the government and increase in oppression and arbitrary behavior by the military toward the peasants (Faroqhi et al. 1994). Hence, the increase in the inefficiency of the bureaucracy led to inefficient supervision by the bureaucracy over the military and therefore to a decrease in the military cost of predation. Moreover, there was a shift of power away from the Sultan toward the military corps in the last two centuries of Ottoman rule. Both the poor supervision by the bureaucracy and the increased power of the military led to an increase in predation by the military over the peasants.

Ottoman Decline

High values of m , the share that the military can expropriate from the peasants, when combined with low cost of predation by the military, C_M indicate a weak Sultan and a strong

military class. Condition (E3) suggests that a low cost of predation by the military, C_M , is likely to lead to reversal to the All-Defect equilibrium. In particular when it is combined with a high value of military share of expropriation, m , the chance of reversal is much higher. The Ottoman Sultans became weaker and less competent in governing after the 17th century (Sugar 1977). This was partly due to change in the practices of succession and education of the princes and partly due to chance. The weakening of the Sultans allowed for an increase in power of the Sultan's court and subsequently of the military. The Ottoman military gained autonomy from the bureaucracy and power to resist the Sultan in the 18th century. Hence, their cost of predation decreased and the share they could expropriate increased. By the 18th century, there were numerous accounts where the military "simply took what they needed by pillaging of the countryside, with disastrous consequences for agricultural production" (Chirot 1989, p.46).

Military power: Implications for the transfer rate

Another indicator of the relationship between the Sultan and the military is the transfer rate, a . Given a low cost of predation of the military, C_M , a high transfer rate suggests that the equilibrium path will be abandoned by the military. This follows from condition (E3). On the other hand, condition (E1) states that a higher transfer rate will ensure that the Sultan follows the equilibrium path. Note, however, that the effect of the transfer rate in condition (E1), i.e. on the behavior of the Sultan, is reduced by the discount factor if compared to the effect of the transfer rate in condition (E3), i.e. on the behavior of the military. Hence, we can conclude that a smaller transfer rate is preferred by the Sultan in the case when he faces a strong military because it gives an incentive for the military not to prey on the peasants.

Western Feudalism vs. Ottoman Centralism

The interaction between the magnitudes of q_P , C_S , C_M and m presents an interesting comparison between the Ottoman and Western European feudal structures. We can apply the model of this chapter to Western feudalism so that Sultan and military can simply be substituted

with King and feudal lords. The historical evolution of feudalism and the Ottoman system, however, dictate different relative values of the parameters, utilized in the model.

Feudalism developed during the Carolingian times as a response to multiple external invasions (Duby 1978). The feudal system was designed to secure loyalty and military service by the lords to the King in return for income from estates. Hence, the lords, similar to the kings, had the necessary training and equipment for military action, which made their cost of predation very low. Unlike the Ottoman system, the feudal system was decentralized, which created political competition among kings and among lords (Cameron & Neal 2003). The competition and the proximity of neighboring feudal units (towns or manors), made it possible for peasants to leave one lord for another in the case when the lord's demands were too excessive. Combining these features of feudalism suggests that both the lords and the kings had relatively small costs of predation but due to competition faced a bigger constraint on how much they could expropriate from the peasants than did the military and the Sultan in the Ottoman Empire, i.e. m and q_p were relatively small.

The pre-17th century Ottoman Empire, on the other hand, had a very centralized structure that was focused on powerful Sultans. The military's ability to prey on the peasants was more restricted than in feudalism due to the strictness of the religious code and the close supervision of the military by the Sultan. Despite their omnipotence, Ottoman Sultans adhered closely to the religious and civil codes (Stavrianos 2000), which suggests that the share of expropriation by the Sultan, q_p , was relative small. Therefore, compared to the feudal case, the pre 17th century Ottoman Sultans' cost of predation, C_s , was smaller, the Ottoman military's cost of predation, C_M , was higher, and the military's share of expropriation from the peasants, m , was smaller. In contrast, the post 17th century Ottoman value of q_p increased significantly due to the disregard for the religious code by the Sultans and the pressing monetary needs of a state in decline. Compared to the feudal case, after the 17th century, the Ottoman Sultans had a higher cost of predation, C_s , due to the dynamic improvements of military technology in the West and the stagnant nature of

the Ottoman technology; the Ottoman military still faced a higher cost of predation (although smaller than the pre-17th century value), C_M , but the share they could expropriate from the peasants, m , had increased due to the lack of effective central supervision and the growing political influence of the military.

Based on these relative values, we make the following conclusions about the Ottoman Empire compared to the Western feudal system:

- (1) It would be less likely that the military in pre-17th century Ottoman Empire, compared to the feudal lords, would deviate from the equilibrium path;
- (2) It would be more likely that both the Ruler and the military would deviate from the equilibrium path in post-17th century Ottoman Empire, compared to the feudal case, because the expropriation shares became higher.
- (3) It is not clear whether the pre-17th century Ottoman Sultans would be more or less likely to coerce their citizens when compared to the feudal kings. The reason for this ambiguity is the fact that if there was very close adherence to the religious code and concern for justice, then the expropriation rate of the Ottoman Sultans could have been lower than the expropriation rate of the feudal kings, who had little concern for the serfs and although in competition with each other, did not face immediate repercussions from predation. However, the cost of predation that the Ottoman Sultan faced was lower than the cost of predation of the feudal king due to the autonomy of the Ottoman state, the highly centralized political system of the Ottoman Empire and the considerable focus on military expansion of the Ottoman Empire.

VII. Conclusion

The checkered fortunes of the Ottoman Empire can be in part explained by its social structure and the relative powers of the different social classes. The combination of a strong Sultan, who kept the military and the bureaucracy in check and adhered closely to the religious law, and a relatively weak military class, ensured taxation and little predation. This, in turn,

yielded higher social welfare and led to prosperity in the Empire. A weak Sultan, a strong military class and disregard for the religious law, on the other hand, caused predation and decline.

We show that it is feasible to achieve a socially optimal outcome both in a highly centralized state with a good rule-of-law equivalent and a decentralized state with direct competition between the local lords. Hence, contrary to common perception, it is not necessarily the case that the Ottoman Empire, with its military expansionism and fiscalism, would follow a socially inferior path of development.

Different combinations of technology of predation, rule of law, discount factor and tax/transfer rates yield different outcomes. Post-17th century Ottoman Empire is characterized by a high tax rate, high expropriation rates and relatively low cost of predation of the military class. This, in turn, leads to poor incentives of the peasants to produce, general distrust in authority due to the time-inconsistent behavior of the state and the arbitrary expropriation of peasant property by the military class. We consider these features to be the root of the Ottoman legacy, in particular with respect to mental models that have persisted to the present.

Appendix 1: Definition of Variables

Y – peasants' income from productive activity

τ – tax rate (share of peasants' income that is collected by the military in the case when peasants chooses to pay taxes)

a – transfer rate (share of the military's tax income that is collected by the Sultan in the case when the military chooses to transfer taxes)

C_M – military's cost of predation: $C_M(r) = 0$ if $r = 0$; $C_M(r) = C_M > 0$ if $r = 1$

C_S – Sultan's cost of predation: $C_S(p_M, p_P) = 0$ if $p_M = p_P = 0$; $C_S(p_M, p_P) = C_S > 0$ if $p_M = 1$ or $p_P = 1$

p_M - probability that the Sultan preys on the military; **$p_M = 1$ if Sultan preys, 0 otherwise**

q_M – share that the Sultan expropriates from the military if he chooses to prey on the military (ranges between 0 and 1)

p_P – probability that the Sultan preys on the peasants; **$p_P = 1$ if Sultan preys, 0 otherwise**

q_P – share that the Sultan expropriates from the peasants if he chooses to prey on the peasants (ranges between 0 and 1)

r – probability that the military preys on the peasants; $r = 1$ if M prey on P and 0 otherwise

m – share that the military expropriates from the peasants if the military chooses to prey on the peasants (ranges between 0 and 1)

t_P – probability that peasants choose to pay taxes, $t_P = 1$ if P pays taxes to M and 0 otherwise

t_M – probability that the military chooses to transfer taxes; $t_M = 1$ if M decided to pay his share of tax revenue to S and 0 otherwise

Appendix 2: Explanation of the model

There are twenty four possible outcomes of the game. The outcomes are grouped in sets of three; each set representing a particular combination of choices of the peasants and the military in sub-period 1 and the three possible responses of the Sultan to the corresponding combination of choices of the private agents. The purpose of organizing the model in this way is to make it easier to solve this game using backward induction (i.e. given that the Sultan is facing a particular situation, what action is he going to take – not prey, prey on *peasants* or prey on *military*).

Case 1: $t_P = t_M = 0$, $r = 0$ $p_P = p_M = 0$ (peasants and *military* do not pay taxes; the Sultan and *military* do not prey)

Payoff of peasants = Y

Payoff of military = 0

Payoff of Sultan = 0

Case 2 $t_P = t_M = 0$, $r = 0$ $p_P = 1$, $p_M = 0$ (peasants and *military* do not pay taxes; the Sultan preys on the peasants; *military* do not prey)

Payoff of peasants = $Y(1 - q_P)$

Payoff of military = 0

Payoff of Sultan = $q_P Y - C_S$

Case 3: $t_P = t_M = 0$, $r = 0$ $p_P = 0$, $p_M = 1$ (peasants and *military* do not pay taxes; the Sultan preys on the *military*; *military* do not prey)

Payoff of peasants = Y

Payoff of military = 0

Payoff of Sultan = $0 - C_S$

Case 4: $t_P = t_M = 1, r = 0, p_P = p_M = 0$ (peasants and *military* pay taxes; Sultan and *military* do not prey)

$$\text{Payoff of peasants} = Y(1-\tau)$$

$$\text{Payoff of military} = \tau(1-a)Y$$

$$\text{Payoff of Sultan} = \tau a Y$$

Case 5: $t_P = t_M = 1, r = 0, p_P = 1, p_M = 0$ (peasants and *military* pay taxes; Sultan preys on *peasants*; *military* do not prey)

$$\text{Payoff of peasants} = Y(1-\tau)(1-q_P)$$

$$\text{Payoff of military} = \tau(1-a) Y$$

$$\text{Payoff of Sultan} = \tau a Y + q_P Y(1-\tau) - C_S$$

Case 6: $t_P = t_M = 1, r = 0, p_P = 0, p_M = 1$ (peasants and *military* pay taxes; Sultan preys on *military*; *military* do not prey on the peasant)

$$\text{Payoff of peasants} = Y(1-\tau)$$

$$\text{Payoff of military} = \tau(1-a)Y (1-q_M)$$

$$\text{Payoff of Sultan} = \tau a Y + q_M \tau(1-a) Y - C_S$$

Case 7: $t_P = 1, t_M = 0, r = 0, p_P = p_M = 0$ (peasants pay taxes, *military* do not pay taxes; Sultan and *military* do not prey)

$$\text{Payoff of peasants} = Y(1-\tau)$$

$$\text{Payoff of military} = \tau Y$$

$$\text{Payoff of Sultan} = 0$$

Case 8: $t_P = 1, t_M = 0, r = 0, p_P = 1, p_M = 0$ (peasants pay taxes, *military* do not pay taxes; the Sultan preys on the peasants; *military* do not prey)

$$\text{Payoff of peasants} = Y(1-\tau)(1-q_P)$$

$$\text{Payoff of military} = \tau Y$$

$$\text{Payoff of Sultan} = q_P(1-\tau)Y - C_S$$

Case 9: $t_P = 1, t_M = 0, r = 0, p_P = 0, p_M = 1$ (peasants pay taxes, *military* do not pay taxes; the Sultan preys on the *military*; *military* do not prey)

$$\text{Payoff of peasants} = Y(1-\tau)$$

$$\text{Payoff of military} = \tau Y (1-q_M)$$

$$\text{Payoff of Sultan} = q_M \tau Y - C_S$$

Case 10: $t_P = 0, t_M = 1, r = 0, p_P = p_M = 0$ (peasants do not pay taxes, *military* pay taxes; Sultan and *military* do not prey)

$$\text{Payoff of peasants} = Y$$

$$\text{Payoff of military} = 0$$

$$\text{Payoff of Sultan} = 0$$

Case 11: $t_P = 0, t_M = 1, r = 0, p_P = 1, p_M = 0$ (peasants do not pay taxes, *military* pay taxes; the Sultan preys on the peasants; *military* do not prey)

$$\text{Payoff of peasants} = Y(1-q_P)$$

$$\text{Payoff of military} = 0$$

$$\text{Payoff of Sultan} = q_P Y - C_S$$

Case 12: $t_P = 0, t_M = 1, r = 0, p_P = 0, p_M = 1$ (peasants do not pay taxes, *military* pay taxes; the Sultan preys on the *military*; *military* do not prey)

$$\text{Payoff of peasants} = Y$$

$$\text{Payoff of military} = 0$$

$$\text{Payoff of Sultan} = 0 - C_S$$

Case 13: $t_P = 0, t_M = 0, r = 1, p_P = p_M = 0$ (peasants and *military* do not pay taxes; the Sultan does not prey; *military* prey)

$$\text{Payoff of peasants} = Y - Y_m$$

$$\text{Payoff of military} = Y_m - C_M$$

$$\text{Payoff of Sultan} = 0$$

Case 14: $t_P = 0, t_M = 0, r = 1, p_P = 1, p_M = 0$ (peasants and *military* do not pay taxes; the Sultan preys on the peasants; *military* prey)

$$\text{Payoff of peasants} = (Y - Y_m)(1 - q_P)$$

$$\text{Payoff of military} = Y_m - C_M$$

$$\text{Payoff of Sultan} = q_P(Y - Y_m) - C_S$$

Case 15: $t_P = 0, t_M = 0, r = 1, p_P = 0, p_M = 1$ (peasants and *military* do not pay taxes; the Sultan preys on the *military*; *military* prey)

$$\text{Payoff of peasants} = Y - Y_m$$

$$\text{Payoff of military} = (Y_m - C_M)(1 - q_M)$$

$$\text{Payoff of Sultan} = q_M(Y_m - C_M) - C_S$$

Case 16: $t_P = 1, t_M = 1, r = 1, p_P = p_M = 0$ (peasants and *military* pay taxes; Sultan does not prey; *military* prey on the peasant)

$$\text{Payoff of peasants} = Y(1 - \tau) - Y_m$$

$$\text{Payoff of military} = \tau(1 - a)Y + Y_m - C_M$$

$$\text{Payoff of Sultan} = \tau a Y$$

Case 17: $t_P = 1, t_M = 1, r = 1, p_P = 1, p_M = 0$ (peasants and *military* pay taxes; the Sultan preys on the peasants; *military* prey)

$$\text{Payoff of peasants} = [Y(1 - \tau) - Y_m](1 - q_P)$$

$$\text{Payoff of military} = [\tau(1 - a)Y + Y_m] - C_M$$

$$\text{Payoff of Sultan} = \tau a Y + q_P [Y(1 - \tau) - Y_m] - C_S$$

Case 18: $t_P = 1, t_M = 1, r = 1, p_P = 0, p_M = 1$ (peasants and *military* pay taxes; the Sultan preys on the *military*; *military* prey)

$$\text{Payoff of peasants} = Y(1 - \tau) - Y_m$$

$$\text{Payoff of military} = [\tau(1 - a)Y + Y_m - C_M](1 - q_M)$$

$$\text{Payoff of Sultan} = \tau a Y + q_M [\tau(1 - a)Y + Y_m - C_M] - C_S$$

Case 19: $t_P = 1, t_M = 0, r = 1, p_P = p_M = 0$ (peasants pay taxes, *military* do not pay taxes; Sultan does not prey; *military* prey)

$$\text{Payoff of peasants} = Y(1-\tau) - Y_m$$

$$\text{Payoff of military} = \tau Y + Y_m - C_M$$

$$\text{Payoff of Sultan} = 0$$

Case 20: $t_P = 1, t_M = 0, r = 1, p_P = 1, p_M = 0$ (peasants pay taxes, *military* do not pay taxes; the Sultan preys on the peasants; *military* prey)

$$\text{Payoff of peasants} = Y(1-\tau - m)(1-q_P)$$

$$\text{Payoff of military} = (\tau Y + Y_m) - C_M$$

$$\text{Payoff of Sultan} = q_P Y(1-\tau - m) - C_S$$

Case 21: $t_P = 1, t_M = 0, r = 1, p_P = 0, p_M = 1$ (peasants pay taxes, *military* do not pay taxes; the Sultan preys on the *military*; *military* prey)

$$\text{Payoff of peasants} = Y(1-\tau) - Y_m$$

$$\text{Payoff of military} = (\tau Y + Y_m - C_M)(1-q_M)$$

$$\text{Payoff of Sultan} = q_M (\tau Y + Y_m - C_M) - C_S$$

Case 22: $t_P = 0, t_M = 1, r = 1, p_P = p_M = 0$ (peasants do not pay taxes, *military* pay taxes; Sultan does not prey; *military* prey)

$$\text{Payoff of peasants} = Y - Y_m$$

$$\text{Payoff of military} = Y_m - C_M$$

$$\text{Payoff of Sultan} = 0$$

Case 23: $t_P = 0, t_M = 1, r = 1, p_P = 1, p_M = 0$ (peasants do not pay taxes, *military* pay taxes; the Sultan preys on the peasants; *military* prey)

$$\text{Payoff of peasants} = (Y - Y_m)(1-q_P)$$

$$\text{Payoff of military} = Y_m - C_M$$

$$\text{Payoff of Sultan} = q_P (Y - Y_m) - C_S$$

Case 24: $t_P = 0$, $t_M = 1$, $r = 1$ $p_P = 0$, $p_M = 1$ (peasants do not pay taxes, *military* pay taxes; the Sultan preys on the *military*; *military* prey)

Payoff of peasants = $Y - Y_m$

Payoff of military = $(Y_m - C_M)(1 - q_M)$

Payoff of Sultan = $q_M(Y_m - C_M) - C_S$

Appendix 3: Proof of Lemmas for the One-period Game

Utilizing the payoffs of all players from all possible strategy combinations in the one-period game specified in Appendix 2, we apply backward induction to find the Sub-game Perfect Equilibrium. Since the Sultan observes the actions of the peasants and the military before making his decision, we start with an analysis of his actions and payoffs first. Once, we have established the Sultan's best responses in all possible situations, we move on to an analysis of the best responses of the peasants and the military.

(1) Given that peasants and military do not pay taxes and the military does not prey, the Sultan has three options (not to prey, to prey on the peasants or to prey on the military – Cases 1, 2, and 3 respectively). In order to find the best response of the Sultan, we compare his payoffs in the three cases.

Payoff in case 1 = 0

Payoff in case 2 = $q_P Y - C_S$

Payoff in case 3 = $0 - C_S$

It is evident that the payoff in case 3 is the worst payoff; hence it is eliminated. As long as the cost of predation is relatively low, the payoff in case 2 will be positive, and therefore yield the highest payoff for the Sultan, which suggests that given the particular actions of the peasants and the military, the Sultan's best response is to prey on the peasants (given the assumption that the cost of predation is relatively low – see assumption G5 in the main text).

(2) Given that peasants and military pay taxes and military does not prey, the Sultan faces three options and three payoffs – do not prey (payoff = $\tau a Y$), prey on the peasants (payoff = $\tau a Y + q_P [Y(1-\tau)] - C_S$) or prey on the military (payoff = $\tau a Y + q_M [\tau(1-a) Y] - C_S$)³² – represented by Cases 4, 5, and 6 in Appendix 2. Assumption G5 allows us to eliminate ‘do not prey’ since it yields the lowest payoff. The action that yields a higher payoff for the Sultan from the remaining set is *‘prey on the peasants.’* Note that this is ensured by assumption G3. However, even without assumption G3, it is a best response for the Sultan to prey on one of the two private agents, which is sufficient to induce a non-cooperative behavior and all-defect equilibrium. This is the case because in the first sub-period of the game, the peasants and the military are making decisions simultaneously and if they expect the Sultan to prey on either of them, they know it is not a credible strategy for the person expecting predation by the Sultan to stick to the socially optimal strategy of paying taxes and/or no preying. Assumption G3 ensures tractability of the algebra and fits the overall historical setting that we have attempted to represent in this model.

(3) Given that the peasants pay taxes, the military does not pay taxes and does not prey on the peasants, the payoffs that the Sultan is facing from his set of actions are as follows: do not prey (0), prey on the peasants ($q_P(1-\tau)Y - C_S$) and prey on the military ($q_M \tau Y - C_S$) – represented by cases 7, 8, and 9. Much alike the previous set of cases, the Sultan’s best response is to prey and driven by assumption (G3) to *prey on the peasants.*

(4) Given that the peasants do not pay taxes and the military pays taxes and does not prey on the peasants, the actions and the payoffs of the Sultan are: do not prey (0), prey on the peasants ($q_P Y - C_S$), prey on the military ($0 - C_S$) – represented by cases 10, 11, and 12. The Sultan’s best response is to *prey on the peasants*, since it yields the highest payoff.

³² From this point on, we will use the format of specifying the action and in parentheses the payoff from that action without explicit indication that the expression in parentheses is the payoff.

(5) Given that the peasants do not pay taxes, the military does not pay taxes and preys on the peasants, the Sultan faces the following actions and payoffs: do not prey (0), prey on the peasants ($q_P(Y - Y_m) - C_S$) and prey on the military ($q_M(Y_m - C_M) - C_S$) – represented by cases 13, 14, and 15. The Sultan's best response is to prey on the peasants (this result is driven by assumption G3 as well). Intuitively, this is the case for the following reasons: (a) the military incurs a cost of predation, which decreases the profitability of preying on the military; (b) moreover, the share that the Sultan can extract from the peasants is higher (q_P) than the share from the military (q_M) and the share that the military can extract from the peasants (m) is likely to be lower than 50% (this is implied in assumption G3).

(6) Given that the peasants pay taxes, the military pays taxes and preys on the peasants, the Sultan's options are: do not prey (τY), prey on the peasants ($\tau Y + q_P[Y(1-\tau) - Y_m] - C_S$) and prey on the military ($\tau Y + q_M[\tau(1-a)Y + Y_m - C_M] - C_S$) – represented by cases 16, 17 and 18. It is the Sultan's best response to prey. Who he preys on is determined by the interaction of the different parameters. It can be shown, that following G3, the Sultan gets a higher payoff from preying on the peasants. G3 presents a much stronger condition than is necessary for this choice.

(7) Given that the peasants pay taxes, the military does not pay taxes and preys on the peasants, the Sultan's options are: do not prey (0), prey on the peasants ($q_P[Y(1-\tau)] - Y_m] - C_S$) and prey on the military ($q_M[[\tau Y + Y_m - C_M] - C_S$) – represented by cases 19, 20 and 21.

The Sultan chooses to prey on the peasants if and only if

$$q_P[Y(1-\tau) - Y_m] - C_S > q_M(\tau Y + Y_m - C_M) - C_S$$

We can simplify the above inequality and get the following:

$$\tau + m < q_P / (q_P + q_M) + q_M C_M / Y(q_P + q_M)$$

This inequality is very similar to the inequality in assumption G3. If G3 holds, then it is necessarily the case that this inequality holds since the left-hand sides are the same and the right-

hand side of G_3 is smaller than the right-hand side of this inequality. Therefore, the Sultan's best response is to prey on the peasants.

(8) Given that the peasants do not pay taxes, the military pays taxes and preys on the peasants, the Sultan's options are: do not prey (0), prey on the peasants ($q_p[Y - Y_m] - C_s$) and prey on the military ($q_m[Y_m - C_m] - C_s$) – represented by cases 22, 23 and 24. The logic here is identical to the logic in part (5) above. Therefore, the Sultan's best response is to prey on the peasants.

Having determined that in all cases, the Sultan's best response is to prey on the peasants, we move onto the first sub-period of the game when the peasants and the military make their decision knowing that the Sultan will prey in the second sub-period.

The peasants choose their best response by comparing the payoffs from paying taxes vs. not paying taxes in the cases when the Sultan preys on the peasants. Table 1 below summarizes the payoffs of the peasants.

Theoretical Model, Table 1: Best responses of Peasants

	And the Military does the following:	Payoff to peasants from paying taxes	Payoff to peasants from not paying taxes	Best response of peasants
Given that the Sultan preys on the peasants	Does not pay taxes and does not prey on peasants	$Y(1-\tau)(1-q_p)$ (case 8)	$Y(1-q_p)$ (case 2)	Do not pay taxes
	Pays taxes and does not prey on the peasants	$Y(1-\tau)(1-q_p)$ (case 5)	$Y(1-q_p)$ (case 11)	Do not pay taxes
	Does not pay taxes and preys on the peasants	$Y(1-\tau-m)(1-q_p)$ (case 20)	$Y(1-m)(1-q_p)$ (case 14)	Do not pay taxes
	Pays taxes and preys on the peasants	$Y(1-\tau-m)(1-q_p)$ (case 17)	$Y(1-m)(1-q_p)$ (case 23)	Do not pay taxes

Hence, the peasants' best response is to not pay taxes regardless of what the military does.

We use the same method to find the military's best response. Table 2 summarizes the payoffs of the military.

Theoretical Model, Table 2: Best responses of Military

	And the peasants do the following	Payoff to military from paying taxes and not preying	Payoff to military from paying taxes and preying	Payoff to military from not paying taxes and not preying	Payoff to military from not paying taxes and preying	Best response of the military
Given that the Sultan preys on the peasants	Pay taxes	$\tau(1-a)Y$ (Case 5)	$[\tau(1-a)Y + Y_m] - C_M$ (Case 17)	τY (Case 7)	$[\tau Y + mY] - C_M$ (Case 20)	Do not pay taxes and prey on the peasants
	Do not Pay taxes	0 (Case 11)	$Y_m - C_M$ (Case 23)	0 (Case 2)	$Y_m - C_M$ (Case 14)	Prey on the peasants

Hence, the best response of the military is to prey on the peasants and not pay taxes.

In summary, the Sub-game Perfect Equilibrium outcome of the one-period game is:

Peasants do not pay taxes, Military does not pay taxes and preys on the peasants, and the Sultan preys on the peasants.

Appendix 4: Regarding Assumption (G3)

This appendix offers a proof that it is not essential who the Sultan chooses to prey on for an All-Defect Outcome to be supported as a Nash Equilibrium of the one-period game. The key difference is that in this case the All-Defect Outcome includes predation on the military rather than on the peasants. Even though this is possible, it is an unlikely outcome. We discuss the reasons for that at the end of this appendix.

Having used Backward Induction in the Second Period (see Appendix 3), we have determined the following best responses of the Sultan in the 8 possible outcomes represented by each payoff cell in the matrix below.

- (a) For the two cases when (1) the peasants do not pay taxes and the military pays taxes and does not prey and (2) when the peasants do not pay taxes, the military does not pay taxes and does not prey, it is optimal for the Sultan to *prey on the peasants* irrespective of the values of the parameters in the model (as long as G5 holds).

(b) For all other combinations of actions of the peasants and the military, it is optimal for the Sultan to prey on one of the two private agents. However, who he preys on depends on the relative values of all parameters in the model. In the main text and Appendix 4, we work out the most likely scenario that the parameters are such that the Sultan's best response is to prey on the peasants.

Our goal in this appendix is to show that even if the parameters of the model are such that preying on the military yields the higher payoff (i.e. that assumption G3 does not hold), it is still the case that the best responses of the military and the peasants are the All-Defect equilibrium strategies (do not pay taxes and prey on the peasants). Hence, suppose that assumption (G3) does not hold. Moreover, suppose that in all cases where there is doubt who to prey on, the set of parameters is such that it yields higher payoff to the Sultan from preying on the military than from preying on the peasants. This strategy seems counter-intuitive when we discuss the Ottoman Empire (or any other pre-modern society). Its purpose is to illustrate that assumption G3 does not drive the final result that an All-Defect Equilibrium social outcome will prevail in the one-period game.

Table 3 represents a game matrix of the simultaneous move game in sub-period 1, when the peasants and military make decisions, knowing that the Sultan will prey on the military. Note that since there is perfect information, the peasants and the military know what the Sultan's best responses are in the second sub-period and choose accordingly.

Theoretical Model, Table 3: Game Matrix for sub-period 1

		Military			
		Pay and Do not Prey (1)	Pay and Prey (2)	Do not Pay and Do not Prey (3)	Do not Pay and Prey (4)
peasants	Pay taxes (1)	$Y(1-\tau),$ $\tau(1-a)Y(1-q_M)$	$Y(1-\tau-m),$ $[\tau(1-a)Y + Y_m - C_M](1-q_M)$	$Y(1-\tau),$ $\tau Y(1-q_M)$	$Y(1-\tau-m),$ $[\tau Y + Y_m - C_M](1-q_M)$
	Do Not pay taxes (2)	$Y(1-q_P)$ 0	<u>$Y(1-m)$</u> <u>$(Y_m - C_M)(1-q_M)$</u>	$Y(1-q_P)$ 0	<u>$Y(-m)$</u> <u>$(Y_m - C_M)(1-q_M)$</u>

Since we have not made any assumptions about the relative values of the tax rate (τ) and the expropriation rate (q_P), we cannot select a best response for peasants in columns (1) and (3). However, we know for certain that none of the four cells in these columns contain a best response for the military, which suggests that they cannot be equilibrium strategies. In columns (2) and (4), holding the actions of the military and the Sultan constant, the peasants choose to not pay taxes. In row (1), the military chooses to prey and not pay taxes. In row (2), the military is indifferent between paying taxes and preying and not paying taxes and preying. The best responses of the two private agents are underlined. The matrix cells with two best responses show the two Nash Equilibria in this game: (Peasants do not pay taxes, Military does not pay taxes and preys on the peasants) and (Peasants do not pay taxes, Military pays taxes and preys on the peasants). Note that these are equivalent since the peasants' decision not to pay taxes is equivalent to the military paying zero taxes to the Sultan and hence has no practical relevance for the payoff functions. The All-Defect Equilibrium in this game is Peasants do not pay taxes, Military does not pay taxes and preys on the peasants and the Sultan preys on the military.

So far, we have shown that an all-defect equilibrium will prevail whether the Sultan preys on the military on the peasants. We, now, discuss when it is likely that the Sultan will choose to prey on the peasants vs. the military in by doing comparative statics on different combinations of parameters. In the case when the Sultan choose to prey on the military (given the choices of no

taxation and predation by the private agents), he get a payoff $q_M [Y_m - C_M] - C_S$. In the case when the Sultan choose to prey on the peasants, he gets a payoff $q_P(Y - Y_m) - C_S$. Comparing the two payoffs, we see that in order for the Sultan to prey on the military, we need a low cost of predation of the military (which in a centralized system is not the case), an expropriation rate of the military that is relatively high and a expropriation rates by the Sultan that take similar values (which is unlikely given the different social status and ability to influence the Sultan of the military and the peasants). Hence, it is more likely that the parameters of the model would support as a best response predation on the peasants rather than on the military.

Appendix 5: Solving the Infinitely-Repeated Game

In order to solve the infinitely-repeated game, we specify trigger strategies for each player. Each trigger strategy is based on past observations of other players' actions. The socially optimal outcome arises as part of the equilibrium strategy, while the socially inferior outcome becomes part of the punishment phase. Since this is a repeated game, any deviation from the socially optimal equilibrium in the present yields a one-time benefit and a string of future punishments to the player who deviated.

The equilibrium (socially optimal) path is sustained as long as the sum of discounted payoffs on the equilibrium path is greater than the sum of the payoff from deviation in the first time period and the discounted payoffs in subsequent periods after deviation.

(1) Payoff functions for the Sultan, π_S :

$$\begin{aligned} \pi_S^E &= \tau a Y && \text{per period payoff on the equilibrium path} \\ \pi_S^{D,E} &= \tau a Y + q_P Y (1 - \tau) - C_S && \text{per period payoff from deviation} \\ \pi_S^D &= q_P (Y - Y_m) - C_S && \text{per period payoff after deviation} \end{aligned}$$

In order for the Sultan to adhere to the equilibrium path, he needs to get a higher payoff from the socially optimal strategy than from a one-time unilateral deviation and a sequence of socially-inferior strategies. Hence:

$$\pi_S^E * (1+\delta+\delta^2+\dots) \geq \pi_S^{D,E} + \pi_S^D * (\delta+\delta^2+\dots)$$

$$\tau a Y \frac{1}{1-\delta} \geq \tau a Y + q_P Y(1-\tau) - C_S + (q_P(Y-Y_m) - C_S) \frac{\delta}{1-\delta}$$

Simplifying the above inequality yields our first condition, which determines the outcome of the game:

$$\Leftrightarrow C_S > Y \{ q_P [(1-\tau) + \delta(\tau-m)] - \delta \tau a \} \quad \text{(E1)}$$

Note that if the inequality in (E1) is reversed, it is better for the Sultan to deviate in the present and risk the punishment of no taxation and predation in the future.

We use the same logic in working out the conditions that would support a socially optimal equilibrium for the peasants and the military.

(2) Payoff functions for the Peasants, π_P :

$$\begin{aligned} \pi_P^E &= Y(1-\tau) && \text{per period payoff on the equilibrium path} \\ \pi_P^{D,E} &= Y(1-q_P) && \text{per period payoff from deviation} \\ \pi_P^D &= Y(1-m)(1-q_P) && \text{per period payoff after deviation} \end{aligned}$$

The equilibrium path will be sustained as long as

$$\pi_P^E * (1+\delta+\delta^2+\dots) \geq \pi_P^{D,E} + \pi_P^D * (\delta+\delta^2+\dots)$$

$$\Leftrightarrow \tau < q_P + (1-q_P) \delta m \quad \text{(E2)}$$

(3) Payoff functions for the Military, π_M :

$$\begin{aligned} \pi_M^E &= \tau(1-a)Y && \text{per period payoff on the equilibrium path} \\ \pi_M^{D,E} &= \tau Y + (1-\tau) Y m - C_M && \text{per period payoff from deviation} \\ \pi_M^D &= Y m - C_M && \text{per period payoff after deviation} \end{aligned}$$

The equilibrium path will be sustained as long as

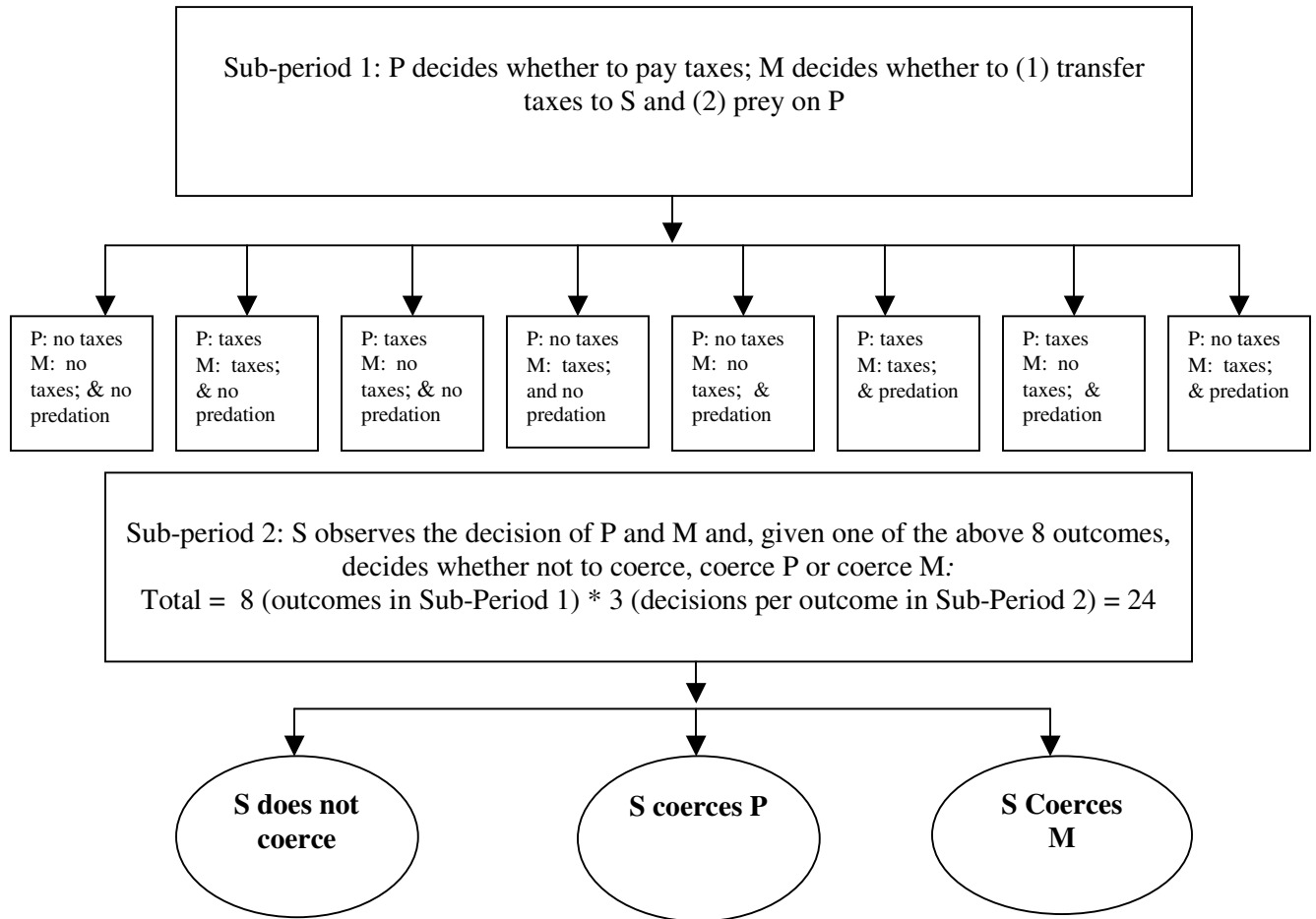
$$\pi_M^E * (1+\delta+\delta^2+\dots) \geq \pi_M^{D,E} + \pi_M^D * (\delta+\delta^2+\dots)$$

$$\Leftrightarrow C_M > Y [m(1-\tau + \delta\tau) - \delta\tau + a\tau] \quad \text{(E3)}$$

In sum, the combination of conditions (E1), (E2), and (E3) ensures that each player gets a higher payoff from the socially-optimal strategy than from deviation and subsequent punishment.

Therefore, (E1), (E2) and (E3) are necessary and sufficient conditions for the Socially Optimal Equilibrium to be supported in the repeated game.

Figure 1: Outline of the One-period Game



Chapter 3

The Great Divide Revisited: Ottoman and Habsburg Legacies on Transition

“Institutions evolve incrementally, connecting the past with the present and the future; history in consequence is largely a story of institutional evolution in which the historical performance of economies can only be understood as a part of a sequential story” (North 1991, p.97).

I. Introduction

A large body of literature in the last few decades has asserted that institutions matter (e.g. North 1991, Greif 1994, Murrell 1991). Good institutions, such as uncorrupt government, protection of property rights, reliable and independent judicial system, steer a country onto successful and lasting development (e.g. Shleifer & Glaeser 2001, Frye 2004, Hayek 1944, La Porta et al. 2004). On the other hand, bureaucratic delays, black markets and insecure property rights reduce trust in the economy and stymie growth (e.g. Panizza 2001, Van Rijckenghem & Weder 1997, Treisman 2000, Rauch and Evans 2000).

Moreover, the view that institutions evolve over long periods and have long-lasting effects on economic performance has been widely advocated in the recent years. North (1991) puts forth the idea of path dependency and institutional evolution or persistence. He links the histories of Spain and England with the economic performance of the New World and identifies the origins of long-term institutional patterns in the New World. The effects of European colonialism on the long-run economic development of the colonies have been researched further by Acemoglu et al. (2002), who find European colonial policies as the culprit for “institutional reversal” in the New World.³³

³³ An example of the above-mentioned historical institutional approach is the research on origin and effects of legal systems. Shleifer and Glaeser (2002) trace the origins of the civil and common law systems back to the Middle Ages, when, they claim, differences in relative powers and degree of peace led to the rise of different legal systems in France and England. Having established the origins and the reasons for divergence of the two systems, the literature has now focused on the long-term effects of legal origins on the current judicial quality, financial sector quality and overall institutional/economic performance (e.g. Beck & Demirguc-Kunt 2005, La Porta et al. 2004). Significant evidence has been found in support of the idea that common law allows for more flexibility in the economy.

Combining the above mentioned institutional literature with a contemporary natural experiment, the 1989 collapse of the Socialist bloc, has led to new venues for research. The fall of socialism has offered fertile ground for research on development and subsequently on the intricacies of institutional and economic development. The early literature on transition from socialism to capitalism largely discounted the role of institutions (e.g. Lipton & Sachs 1990, Fischer & Gelb 1991, Kornai 1990) and rather pushed for fast liberalization and privatization.³⁴ In contrast to this predominant view, Murrell (1991) argued that the "market-as-decentralization view overlooks the role of the many important institutions of control present in modern capitalist systems, each contributing at a microeconomic level to macroeconomic stability."(1991, p. 12) As the first transition decade drew to an end the crucial role of institutions became more evident and widely accepted in the transition circles (e.g. Stiglitz 2002, Burki & Perry 1998).

The focus has now shifted from establishing the importance of institutions for transition toward ascertaining the determinants of the level of institutional development. Fifteen years after the initial fall of the socialist regime, we see a distinct difference in the institutional performance of the transition countries. Why is there such a substantial difference in the performance and level of institutions in these two sets of countries?

The scant literature has proposed a few explanations for this variation. Beck and Laeven (2005) claim that this variation in performance can be explained by the difference in the behavior and incentives of the elite (which they refer to as initial political structure), which are directly affected by two factors - the countries' endowment of natural resources and the entrenchment of the ruling elite during socialism. We stipulate that while this argument might explain the variation in institutional performance between the former USSR republics and the rest of the former socialist countries, it does not explain the variation in performance within the countries of Central

³⁴ This view is also referred to as the Washington Consensus, a term first used by John Williamson (see Williamson 1990 and 2000).

and Southeastern Europe. We present a detailed analysis of why we find Beck and Laeven's argument insufficient in Section VI.

Berglof and Bolton (2003) argue that fiscal discipline at the beginning of transition explains the difference in performance. However, they do not explain the *origins* of the fiscal discipline. We claim that this difference in fiscal discipline could be attributed to the distant historical legacies and the path dependent behavior discussed later in the introduction.

While the above mentioned papers are important contributions toward finding the roots of the great divide, we argue that they are insufficient, specifically with respect to divergence between the countries of South East and Central Europe.³⁵ We narrow down our analysis to the transition countries of South East and Central Europe partly to eliminate heterogeneity in terms of time spent under socialism and therefore necessarily precludes the possibility of variation in performance due to time spent under socialism. This approach is beneficial because it allows us to search for deeper causes of divergence. However, admittedly, it provides a limited view of the complexity of the post-socialist world.

There is a clear divide in the institutional and economic performance of the Balkan (South East European) states and the Central European States. The Balkans have been consistently lagging in performance behind the Central East European states since the beginning of transition. Focusing on this sub-set of former socialist countries, we propose an alternative theory to the above-mentioned papers for the existence and persistence of the great divide.

In the heart of our theory is the hypothesis that the roots of the great divide between the Balkan and Central East European states lie in the distant past of the Ottoman and Habsburg

³⁵ We divide the Eastern European countries in two groups: Balkans (Bulgaria, Romania, Serbia & Montenegro, Bosnia, Albania) and Central Europe (Croatia, Slovenia, Hungary, Czech Republic and Slovakia).

Empires.³⁶ If institutions take a long time to evolve, then the main reason for the variation in institutional performance cannot be uncovered by focusing solely on the socialist decades as in Beck and Laeven (2005) and Berglof and Bolton (2003). Rather, one should investigate the legacy of the Empires that ruled the region for centuries to find factors that affected the direction and level of institutional development.³⁷

The chapter proceeds in the following way. Section II motivates with examples the hypothesis that the Ottoman/Habsburg legacy has affected significantly the direction and level of institutional performance in the current successor states. Moreover, it elaborates on the specification of the hypothesis and the main assumptions supporting it. Utilizing historical evidence and analysis, we derive a number of conjectures (sub-hypotheses) on the institutional development of the Ottoman and Habsburg successor states in Section III. We group the hypotheses according to broad institutional categories associated with legal system, government, property rights, and civil society. Section IV discusses the empirical specification and data of the model. Section V presents the empirical strategy and results. Based on data that corresponds to the institutional specifics addressed in the sub-hypotheses, we test empirically the significance

³⁶ We attribute this difference to this specific time period for several reasons. First, it would be an impossible task to trace differences back to the very beginning. To narrow down the topic, we had to focus on features that we believe to be most significant for the present. Second, prior to the 13th century, the division in the region was between Byzantium (East) and the Roman Empire (West). Since Byzantium was the continuation of the old Roman Empire (which fell in the 5th century), it necessarily adopted and subsequently adapted the institutions of the Roman Empire. Contemporaneously, the former Roman Empire had crumbled as a result of corruption, decentralization and invasions. Throughout the early middle ages (up to the 11th century), the West suffered from repeated invasions, little security and chaotic decentralization (with the exception of the brief period of prosperity under the Carolingians). Hence, we stipulate that even if a significant divergence in the two systems (in the direction that would explain the main issue raised in this chapter) occurred in the period before the Ottoman conquest, it would not have happened prior to the 12th century. Moreover, if such a change happened after the 12th century, it would not have become sufficiently embedded in Byzantine culture, in particular, that to withstand the imposition of the foreign Ottoman system. Third, the transition of the West from feudal to modern relations did not happen until the 16th century. The East had better economic and political performance than the West in the early part of the Late Middle Ages. The institutions that played a crucial role for the sustained development of the West were not established until the end of the Middle Ages. The East had a discontinuous shift in institutional settings due to the change in power from Byzantium to the Ottomans.

³⁷ Note that this view implicitly states that the dichotomy of performance was driven by religious differences between the Empires since Ottoman state necessarily means a Muslim state and Habsburg state necessarily means a Christian state. Although religion is crucial in the comparative analysis, we believe that it is not sufficient in explaining the divergence.

and direction of the relationship between institutional performance and historical specifics (Ottoman/Habsburg dominance). Section VI discussed the role of natural resources and socialism as determinants of institutional performance. Section VII presents a specific example of institutional persistence. The last section concludes.

II. Motivation of the Hypothesis

This section provides several examples that motivate our hypothesis. Let us, first, compare the economic performance of the Balkan countries, which we refer to as Ottoman successor states with that of Central European countries, which we refer to as Habsburg successor states. Table 1 shows data on performance of several Habsburg and Ottoman states over the span of 100 years.³⁸ The table shows a clear divergence in economic performance of the two groups of countries. The Habsburg successor states have had a consistent lead over the Ottoman successor states since their independence.

Second, contrast two sets of countries: Serbia and Slovenia versus Bulgaria and the Czech Republic. Serbia and Slovenia had workers' management socialism (in fact, they existed as republics of the Yugoslav Federation for 45 years) while Bulgaria and the Czech Republic implemented a more classical socialist economic model. If the determinants of current performance lie solely within the socialist period, Serbia and Slovenia should be closer in their development and institutional performance to each other than to Bulgaria or the Czech Republic. Similarly, Bulgaria and Czech Republic should be closer in their development and institutional performance to each other. However, at the present³⁹ Slovenia and the Czech Republic are much closer in their development both to each other and to Western European market economies than

³⁸ Although not a direct indicator of institutional performance, income per capita can indirectly convey relevant information regarding the level of institutions. Ideally we would present data concerning institutional performance. However, historical data, covering the span of the twentieth century, does not exist.

³⁹ Our measure of current performance is 2004 GDP per capita (in PPP): Slovenia- \$ 19,600; Czech Republic - \$ 16,800; Bulgaria - \$ 8,200; Serbia and Montenegro - \$ 2,400 (Source: *CIA World Factbook*).

to Serbia and Bulgaria. The 1990's wars in Serbia can partially explain its lag in performance but not the similar pattern of performance of Serbia to that of Bulgaria, who was not involved in the war. Table 2 reports data on two institutional measures, rule of law and corruption, in 1997 for the four countries. It is evident that both in terms of rule of law and corruption, Czech Republic and Slovenia fall in the category of transition countries with relatively good institutional performance while Bulgaria and Serbia are in the category of countries with significant institutional problems. What Serbia and Bulgaria have in common is their heritage of Ottoman institutions; the Czech Republic and Slovenia, on the other hand, are both Habsburg successor states. We claim that the common Ottoman heritage or common Habsburg heritage helps explain the variation in post-socialist performance of these countries.

Third, the former Yugoslav republics present an interesting example. Serbia, Bosnia, Montenegro, and Macedonia are Ottoman successor states while Slovenia and Croatia are Habsburg successor states. However, all of them existed as one country, Yugoslavia, during the socialist period. The disparities in income per capita of the republics during the socialist period⁴⁰, presented in Table 3, suggest that the pattern of development of the former Yugoslav republics was affected by pre-socialist events. The common denominator for the first five republics (with lower income per capita indicators) is the Ottoman legacy, for the last two – the Habsburg legacy.

Fourth, Romanian voting preferences in 1996 also indicate a division between formerly Habsburg and Ottoman dominated regions. The map of Romanian presidential elections in 1996 (Map 1) shows a clear distinction in political and economic preferences of the Romanian population. A comparison between Map 1 (on Presidential Elections 1996) and Map 2 (on historical provinces of Romania) indicates that the light region in Map 1, which roughly corresponds to Transylvania (Habsburg region) voted predominantly for the democratic candidate, while the dark region in Map 1, which corresponds to the former provinces of

⁴⁰ The significance of the year 1980 is that this marks the end of Tito's rule, which can be argued to have put the beginning of the decline of the socialist regime. Post-1980 political events lead to significant changes in the economic and social systems of the Yugoslav republics.

Moldavia and Wallachia (Ottoman vassal states), voted predominantly for the representative of the socialist party. Since the socialist system was common for the three regions, we conjecture that this clear partition of voting preferences may be due to pre-socialist differences entrenched in mental models. The idea of mental models was developed by Douglass North, who claims that in a situation of uncertainty, people do not necessarily make choices based on self interest. Rather, people rely on ideologies and myths. Consequently, the outcomes of their choices diverge from optimum. Furthermore, “individuals with common cultural backgrounds and experiences will share reasonably convergent mental models, ideologies and institutions” (North & Denzau 1993, p. 1). In the case of Romania, we stipulate that the mental models formed by the Habsburg and Ottoman legacies diverge and, hence, lead to different voting choices.

To summarize, our main hypothesis states first, that the institutional development of the countries of South-East and Central Europe has been significantly shaped by the institutions of the Habsburg or Ottoman Empire that ruled them up to the 19th century, and second, that as a result the Habsburg successor states have institutions that are more efficient in a market economy than the Ottoman successor states. i.e. the Habsburg successor states have better protection of property rights, less corruption, more efficient courts, etc. Our theory can be represented in the following way:

Ottoman/Habsburg legacies → early institutions of the independent successor states → post-socialist institutions → success of the transition process.

A key component of our reasoning is the view that 20th century developments did not significantly alter the direction of institutional development, and in fact, in some cases clearly reinforced it. More specifically, we stipulate that the informal institutions, formed during the Ottoman and Habsburg centuries, have remained the underlying framework for the following reasons. Even though it is generally true that a legacy of a more recent period has a stronger effect on the present, we argue that this is not the case with regards to mental models and culture, which take a long time to develop and equally long time to disappear (Brown 1996, North 1990,

Roland 2004). Moreover, in the case of twentieth century Europe, the lack of stability and the constant warfare in the region during the first half of the 20th century dictated a focus on survival and consequently an adherence to the old but familiar views rather than on cultural transformation. Following the turmoil of the first fifty years was a period of “socialist construction,” which built an unsustainable anti-market environment and only accelerated its own fall. We conjecture that to a large extent the legacies of socialism incorporate its own repudiation and a reversal to pre-1945 mental models. This conjecture warrants a clarification. In the cases of countries, which prior to 1945, had little exposure to a market economy, the concepts of private property and efficient rule of law, socialism reinforced the lack of these formal and informal institutions, and hence provided a continuation of pre-1945 norms and rules. In the case of countries that prior to socialism had been exposed to the above mentioned institutional elements, socialism was primarily imposed from above or from outside and was, therefore, unwillingly accepted by the society as a whole. Hence, the fall of socialism was accompanied with purposeful divergence from socialist ideology and hence a reversal to historical traditions, norms and rules. We test to some extent the validity of this conjecture in Section VI.

III. Historical Evidence - Studies

We provide a historical account of the development of institutions in the Ottoman and Habsburg Empires.⁴¹ Taking into consideration path dependency, we make a number of conjectures (sub-hypotheses) about the level and direction of development of these institutional features in the successor states of the Ottoman and Habsburg Empires.

The premise of the analysis in this section is that efficiency of institutions is linked to the length of existence and evolution of the particular institution. For example, a country, which has had a century long legacy of private ownership, is more likely to have an efficient system of protection and enforcement of property rights than a country, which has had only a decade of

⁴¹ In chapter 1, we discuss in more detail the Ottoman legacy and its historical origins.

private ownership. In other words, the longer a feature exists, the more established it is in people's behavior; consequently, transaction costs associated with this feature are more likely to be lower.

3.1 Legal & Judicial Systems

Legal effectiveness ("the extent to which laws are implemented and enforced") and extensiveness ("the extent to which laws reach international standards") as well as the quality and impartiality of the judicial system affect directly the protection of business and private property rights and the level of trust in the economy (World Bank, EBRD, Freedom House). Historical developments in the Habsburg and Ottoman Empires suggest a significant difference in the quality and effectiveness of the judicial and legal systems of the two empires.

The most dynamic development of the Habsburg legal system was observed during the rule of Maria Theresa and her son Joseph II. Their goal was to improve the quality of the judiciary and the legal code. Joseph II centralized the courts associated with each provincial Diet in order to establish a more uniform rule. He passed a Code of Civil Law in the late 18th century, which became "the crowning achievement of Austrian legislative efforts. With only one major revision some fifty years ago it has stood the test of time to this day and is still recognized as the greatest legislative work in the judicial sphere in the German language orbit" (Kann 1974, p. 239). Western Enlightenment, Cameralism, German Protestant movements, and the Prussian Enlightenment also contributed to the development of the Habsburg legal system. Uniform legal codes were passed, a supreme court was established and attempts were made to create and distribute detailed legislation.

The Ottoman Empire, on the other hand, had a relatively stagnant legal and judicial system. It proved unable to adapt to the changing needs of the Empire after the 16th century.⁴²

⁴² Admittedly, the Empire went through some significant changes during the period of the Tanzimat Reforms (started in 1838). However, the Reforms had a short-run destabilizing effect, which did not change

Factors that contributed to the stagnation of the legal system were isolation from Western Europe, strict adherence to the sacred religious law, chaotic decentralization of authority after the 16th century and the lack of interest of the Ottomans in economic matters.

The Islamic sacred law, *seriat*, served as the constitution of the Ottoman Empire (Stavrianos 2000). The sacred law, based on the Koran, was not subject to change and, hence, became quickly outdated and lost relevance to new developments or more complex human interactions. The static structure of *seriat* was overcome partially by the ability of the Sultan to establish new secular laws, called *kanun*. The *kanun*, however, was solely determined by the Sultan's interests and ceased to exist after a new Sultan came to power. The lack of continuity and the arbitrary nature of legislation posed a significant obstacle for the development of an efficient legal system.

The decision-making council of the Ottoman Empire, the *Divan*, oversaw all activity in the Empire. It was headed by the *Grand Viziers*, who in essence served as a supreme court of justice. The *Divan* had no legislative authority; it followed the *seriat*.

The lower branches of the bureaucracy, in particular the judges in the local courts “were the exponents and guardians of the sacred law. And since this inflexible body of doctrine was essentially hostile to change and progress, the Moslem Institution became the instrument for the blighting bondage upon the empire and its people” (Stavrianos 2000, p. 87).

The above suggests that as a result of the consistency and evolution of legal rules evident in the Habsburg Empire but not in the Ottoman Empire, the Habsburg successor states have more exposure to a functional legal system and hence might have a higher demand for an efficient legal system. This suggests that performance indicators on legal effectiveness and extensiveness are

the general perceptions of people (in the states discussed in this paper) concerning the judicial and legal systems. This claim would not be valid for the case of Turkey, which in the long run benefited from the Tanzimat due to increased openness, westernization and re-centralization.

higher in the Habsburg successors⁴³ (*Hypothesis 1*), that there are more predictable changes in the legal system of the Habsburg successors⁴⁴ (*Hypothesis 2*), and consequently that Habsburg successors have more confidence in the legal system (*Hypothesis 3*). We believe Hypothesis 1 to be a weak conjecture due to the possibility of discontinuous change resulting from a transplant or harmonization. In fact all Balkan states adopted throughout the 20th century foreign legal traditions, and hence diverged significantly from their Ottoman legacy.

An early measure of the Habsburgs introduced annual reports on the performance of the members of the bureaucracy by superior officials (Kann 1974). Later, Maria Theresa's judicial reform aimed at decreasing the quantity of courts and increasing the quality of the judges in those courts. The reform's main objective was the elimination of arbitrary decisions and corruption. It tried to put a check on the decisions of the judiciary, which was partially achieved during Maria Theresa's rule (Okey 2001, Kann 1974).

In contrast, the level of accountability in the Ottoman Empire drastically declined as a result of chaotic decentralization in the 17th century. There was an increase in corruption and arbitrary policies in the courts and the bureaucracy. Due to the time-inconsistent policies of the government as well as the burdensome and skewed taxation, people were forced to evade the law in order to survive. Their confidence in the system declined and many left their villages and towns and moved to the highlands. The inconsistency and lack of confidence in the judicial system steered people's behavior toward private settlement of conflict and little interaction with

⁴³ Note, however, that extensiveness by itself does not convey much information about the quality of the legal system. It can be influenced by external pressures to adopt laws fast or by little local opposition to new laws. It is plausible that some countries have very high extensiveness of the legal system, but score really low on effectiveness. This could be an indicator of abrupt discontinuity from previous developments, i.e. there is no foundation for the implementation of the new laws.

⁴⁴ Even Hayek acknowledged the importance of the predictability in the legal system: "The second chief attribute which must be required of true laws is that they be known and certain. The importance which the certainty of the law has for the smooth and efficient running of a free society can hardly be exaggerated... The essential point is that the decisions of the courts can be predicted, not that all the rules which determine them can be stated in words." (Friedrich Hayek, *The Constitution of Liberty*, p. 208)

the courts. Moreover, the poor incentives and the lack of demand for courts affected the quality of the judiciary.

Thus, we infer that Habsburg successor states have a higher level of accountability of the judiciary (*Hypothesis 4*), higher judicial quality (*Hypothesis 5*) as well as higher efficiency in the judicial process (*Hypothesis 6*).

3.2. Property rights

Secure property rights provide guarantee against expropriation, encourage production, saving and investment, and subsequently promote economic growth (Frye 2004).

Private ownership in the Habsburg Empire emerged much earlier than in the Ottoman Empire. In 1630 a formal Habsburg Statute made *zadruga*⁴⁵ a legal entity (Okey 2001). Attempts to abolish serfdom were made in the Habsburg Empire in the late 18th century. Joseph's reforms of 1780s allowed peasants to leave the lord's estate. The Serfdom Patent of 1781 allowed peasants to marry and to start their own business. During subsequent reforms of 1785-1789, peasant labor dues were converted into fixed cash payments and uniform taxation on land was established (Cameron & Neal 2003, Good 1984). Joseph II ensured that freeing peasants from serfdom implied security of peasants land tenure, which ultimately preserved the peasantry (Taylor 1990, p. 21). An imperial patent in 1859 established freedom of enterprise, which by this point was deemed a necessary condition for successful development and competition (Landes 1999, p. 245).

In contrast, in the Ottoman Empire, private ownership did not emerge until mid-19th century. All land belonged to the Sultan and was granted as conditional tenure to peasants. Although the first few centuries of Ottoman dominance were characterized by an attempt to provide justice and security as well as a grant of hereditary use of land, the legacy of the Ottoman

⁴⁵ *Zadruga* is "a patriarchal complex of property and working relations" (Lampe, *Yugoslavia As History: Twice There was a Country*, 2000, pp.31)

Empire was shaped by the post 16th century breakdown of the system (Stavrianos 2000). The consequences of this breakdown were arbitrary levies and service requirements by the local military lords, confiscation of land and exploitation of the peasants. “The insecurity of life and property [in the late 18th and early 19th century] take away the stimulus to establish factories. Even the boyars in the Danubian Principalities consider this dangerous...Not long ago a wealthy lord...started a woolen factory, but for safety’s sake he built it in his village and not in the town” (Stavrianos 2000, p. 145).

Palairret (1997, p. 37) describes the period of the late 18th and early 19th century as time of “warlordism and banditry,” which led to significant depopulation of villages and a disastrous effect on agriculture. In contrast, the post-1830s period was one of reform and transition of the Ottoman system. There is evidence that Bulgaria in particular benefited from these reforms, while the Western Balkans continued to lag behind. Even in Bulgaria, however, the change was subtle and mostly concentrated around the capital. The rest of the country still suffered from extortion and oppression (Palairret 1997, p. 48)

The Ottoman system was dominated by the bureaucracy and its interests over merchants and landowners. The limited influence of merchants and landowners suggests that very few institutions were established to promote or protect land ownership or any other kind of private property during Ottoman rule (Ozbudun 1996).

Hence, the property rights memory in the Habsburg successors allowed for a smoother transition from planned to market economy and higher indicators of performance. In particular, we stipulate that property rights in the Habsburg successor states are more secure than in the Ottoman ones (*Hypothesis 7*); there is higher risk of expropriation of private investors by the government in Ottoman successor states than in Habsburg successor states (*Hypothesis 8*).

3.3. Government

Government can promote human capital development, initiate reforms to reduce the risk of transactions and enforce laws. On the other hand, it can engage in corruption, which can have distortionary effects on the economy (Shleifer & Vishny 1993, Broadman & Recanatini 2000).

Corruption became prevalent with the decline of the Ottoman Empire. “From the seventeenth century onward the typical Ottoman official holding a position of any importance regarded it as a private investment from which he was justified in deriving as large a return as possible” (Stavrianos 2000, p. 120). Corruption in the bureaucracy necessitated similar behavior in private citizens. Favor exchanges as well as evasive behavior became a political and a social legacy of the Ottoman Empire. Black market activity, which could have been a direct result of government intervention such as heavy taxation or prohibition, increased as well (Sugar 1977, Lewis 2002).

The Habsburg political system, like most contemporary systems, bordered despotism, experimented with more and less centralized structures, frequently lacked direction during the 19th century (Taylor 1990, p. 41). However, the combination of some internal balance between the social classes and the presence of leaders such as Joseph II, allowed the Empire to get some degree of adherence to the rule of law. There was an attempt to establish trust in the people by providing a consistent rule. Unexpected and radical shifts in the system were discouraged (Kann 1974).

Thus, the Ottoman successor states have higher levels of corruption (*Hypothesis 9*), lower trust/confidence in the government (*Hypothesis 10*) and more black market activity (*Hypothesis 11*).

Economists usually consider government involvement in the economy to be inimical to development. In pre-modern states, however, where markets are still fledgling and there exist many barriers to exchange (such as lack of infrastructure, meeting places, legal system to support commercial exchanges and to provide security of transactions), it seems that government

involvement, through its centralized nature and access to finance, can provide an initial push, necessary to establish the foundation on which a market can develop. In other words, below a certain threshold value, government involvement can be highly beneficial. There is clear evidence that the Habsburgs benefited from the active government participation in the economy in the 18th and 19th centuries (Good 1984). Through the provision of public goods and finance for industry, the government facilitated a shift away from rural agrarian-based economy toward urban industrial economy and thus provided incentives for technological improvement. Some examples of such government policies were encouragement of migration of foreign workers to the Habsburg Empire, granting subsidies to machine builders, relaxing guild restrictions, improving transportation networks and support of regional specialization as a means to strengthen the Empire (Cameron & Neal 2003).

The movement of cameralism⁴⁶ in the Habsburg Empire also contributed to the emergence of a more efficient state organization through state-sponsored economic development and separation of judicial and administrative roles of the government.

The Ottoman government, on the other hand, with a few notable exceptions (e.g. Midhat Pasha),⁴⁷ did not take an active interest in the economy. In fact, after the 17th century, it lost control of its bureaucracy and of its ability to maintain the Empire's infrastructure. While Western European governments tried to strengthen their economies and promote industrial production, the Ottomans were simply concerned with ensuring, through imports, a surplus of goods in the domestic markets. The Ottoman lack of interest in economic affairs was partly due to the fact that the Ottoman administration was one and the same as the Ottoman military. Thus,

⁴⁶ The proponents of cameralism believed in strengthening the state, reducing its dependence on other states and making it more self-sufficient. The means to their goal were protectionist policies concerning local industries, education of civil servants, employment reforms, centralization of the administration and frugal expenditures.

⁴⁷ Midhat Pasha was a governor of Bulgaria between 1864 and 1869. He tried to build schools and roads with local tax money. Moreover, he secured the promulgation of the Turkish constitution while a Grand Vizier in 1876 (Columbia Encyclopedia, Sixth Edition).

there was a merging of administrative and military roles with more emphasis on military interests (Inalcik 1994, Stavrianos 2000).

Good government means efficient taxation, provision of public goods, high-quality bureaucracy and rule of law (La Porta et al. 1999). The historical evidence suggests that the Habsburg government was more successful in the provision of public goods (infrastructure building) and the establishment of a more efficient administrative structure in the government (cameralism) than the Ottoman government. The lack of ability of the Ottoman government to control extortions and double taxation suggest inefficient tax collection as well as higher levels of tax evasion due to the arbitrary nature of the tax system.

Thus, we stipulate that the Habsburg successor states have fewer bureaucratic delays (*Hypothesis 12*), higher level of tax compliance (*Hypothesis 13*), higher government effectiveness (*Hypothesis 14*) as well as more stability ensured by consistent government policies (*Hypothesis 15*).

3.4. Civil Society

Civil society – such as nongovernmental organizations, business associations, trade unions, think tanks, media - can affect economic development through the pressure of public opinion (Ignatieff 1995). Civil society can lead to better governance due to its ability to constrain corruption and raise public awareness (World Bank).

The Habsburgs promoted the rise of royal free cities, which became centers for cultural, intellectual and political exchange. Moreover, the Habsburg Empire was directly influenced by the movement of Enlightenment in the 18th century, which inevitably led to questioning of the power of the church and the state. An additional institutional development, which could have affected the culture of organization, was the Habsburg Kremsier⁴⁸ Constitution, which “served as

⁴⁸ The Kremsier Constitution was promulgated in 1849. It was “unique among Austrian constitutional experiments in springing from free discussion among political leaders” (Encyclopedia Britannica).

the basis for precedent-creating judgments broadening individual freedom...in fact advancing the legal position of non-dominant groups” (Okey 2001, pp. 199-200). It should be mentioned that the rise of the Bach regime in 1850 stifled all previous developments and established an absolutist state with a strict unified system, which lasted for ten years. Hence, the benefits of the 1849 constitution could have been compromised by the decade of absolutism.

The Ottoman Empire lacked representative institutions up to the 19th century (Ozbudun 1996). This partially resulted from the lack of recognition of corporate entities in Muslim law, the egalitarian hereditary structure of the Empire, and the highly centralized nature of the state, which prevented the formation of truly autonomous communities that shared a common interest. The Ottoman legacy was one of a lack of historical tradition for the formation of autonomous organizations, for assembly and interest group rhetoric.

Hence, we stipulate that Habsburg successor states have stronger civil society with more established traditions than the Ottoman successor states (*Hypothesis 16*).

3.5. Miscellaneous Hypotheses

Both Empires, as is the nature of all pre-modern political entities, were primarily agricultural. Taking that as given, however, they diverged significantly in their policy toward the development of cities. That divergence indirectly shaped both the urban and the rural landscape. The Habsburg Empire allowed the development of royal free cities, which became centers of trade. These cities persisted as centers of economic, political and social exchange into the 20th century. In contrast, the Ottomans encouraged the formation of small towns with relatively static and regulated markets in the Balkans. As a result, after independence the new Balkan states focused most political and economic activity in the capital cities. Thus, we conjecture that the Ottoman successor states have dominant capital cities, while Habsburg successor states have decentralization of power among several cities (*Hypothesis 17*).

The above-mentioned policies or attitudes toward the formation of cities spilled over to the rural sectors as well. The regulations and the reservations of a centralist state steered the Ottoman rural economy to a standstill. The Ottoman successor states inherited a structure of small peasant holdings with few capital assets. Most people were indebted smallholders, who operated at subsistence rather than for a market (Todorova 1996). Despite the persistence of serfdom in the Habsburg Empire, there is no clear historical evidence that the Habsburg peasantry was in a similar situation at the beginning of the 20th century as was the Ottoman peasantry. In addition, the Habsburgs witnessed improvements in agricultural production as well as an increase in industrial production, both of which allowed for market-oriented production. Combining that with the general decentralization of decision making in the Habsburg Empire and the strict centralization in the Ottoman Empire, we make the following conjectures with regard to ownership structure. The rural holdings in the Ottoman successor states are smaller (taking population density into consideration) than in the Habsburg successor states (*Hypothesis 18*). The distribution of the size of private enterprises in Ottoman successor states is more skewed toward small private enterprises than that in the Habsburg successor states (*Hypothesis 19(a)*). The distribution of the size of public enterprises in Ottoman successor states is more skewed toward large public enterprises than that in the Habsburg successor states (*Hypothesis 19(b)*).

Finally, combining the historical evidence on different institutional elements, presented so far in section III, we infer that the extent of familiarity with market systems in the Habsburg Successor states is larger than that of the Ottoman successor states (*Hypothesis 20*).

A summary of all conjectures (sub hypotheses) is presented in the Table A1. Due to limitations in the availability of the data, we do not test all 20 conjectures. Our selection of which hypotheses to test is based on the existence and reliability of data.

IV. Empirical Specification and Data

4.1. Institutions

Each sub-hypothesis, outlined in the previous chapter, refers to a specific aspect of an institutional feature. The criteria for selecting measures for our dependent variables are (1) the appropriateness of the measure in illustrating our hypotheses, (2) the reliability of the data and (3) the availability of data for all countries in our sample. A detailed list of measures of all dependent variables and sources of data is presented in the Table A2. All data on institutional performance has been transformed so that to assign low values to good/efficient institutional performance and high values to bad/inefficient institutional performance.

4.2. Proxy for Ottoman/Habsburg Legacy

Our goal is to measure the effect of being an Ottoman or Habsburg successor state on current institutional performance. In order to do that, we first discuss how we determine which states are Habsburg successor states and which are Ottoman.

Table 4 presents the dates of Ottoman rule and the actual duration in years of Ottoman rule in the eleven countries. Note that in the case of Romania and Bosnia and Herzegovina, the duration of Ottoman rule is reported separately for each main region of the country. Between 1500 and 1829, all of the countries mentioned in Table 3 were either under Ottoman rule or under Habsburg rule. Therefore, if a country spent zero years under Ottoman rule, it necessarily was under Habsburg rule for the time period 1500-1829.⁴⁹ All states that spent 250 years or more under Ottoman rule are considered to be Ottoman successor states.⁵⁰ The rest are Habsburg successors.

⁴⁹ After 1830, the Ottomans did not acquire any new lands from the Habsburgs. Countries that were not under Ottoman rule post 1930, became independent states and hence are considered to be neither Ottoman nor Habsburg territories in this analysis.

⁵⁰ The Romanian provinces of Wallachia and Moldavia were not directly under Ottoman Rule. They were vassal states, which had to pay tribute to the Empire. Although they had significant independence in their

To proxy for the Ottoman/Habsburg legacy, we use two measures. The first measure is a dummy variable, which equals 1 if the state is an Ottoman successor and 0 if the state is a Habsburg successor. The second measure is a variable that reflects the number of years a country spent under Ottoman rule. We assign a one point weight for every 25 years before 1700 that a country spent under Ottoman rule and a two point weight for every 25 years after (and including) 1700. The weight distribution reflects the view of most historians (Lampe & Jackson 1982, Stavrianos 2000) that the main legacies of the Ottoman Empire came from the latter period rather than from the initial years when the Ottomans were establishing power in Europe. An argument in favor of using a weigh variable as a proxy for the Ottoman/Habsburg legacy is that the more time a successor state spent under the Empire's rule, the more deeply it has been affected by the institutional structure of that Empire. Table 5 presents the two proxies for Ottoman/Habsburg legacy.

Two issues, regarding the classification of states, warrant a clarification. First, the border between the Ottoman and Habsburg Empires changed frequently until the end of the 17th century. Hence, it is difficult to incorporate in our analysis the process of border changes with respect to particular parts within states as opposed to whole states. We discuss briefly one aspect of within country differences in the case of Romania in Section II, but do not present such discussion for Hungary and Croatia, which were both under Ottoman and Habsburg rule. To the best of our knowledge, contemporaneous rule by the Ottoman and Habsburg Empires over equivalently large enough regions within Hungary and Croatia did not occur. Therefore, our estimates should not be affected by the border changes concerning small regions within states.

internal affairs, they were directly affected by the Ottoman system due to the regular interference of the Ottomans in the principalities' political sphere. Officially, the Ottoman started appointing Romanian rulers during the Phanariot regime starting in the early 1700s, however they had influence prior to that. Furthermore, there was a transmittal of certain practices such as corruption (e.g. buying of office to gain access to monetary benefits) due to the influence of the Greek lords, who had an active presence in the Romanian principalities.

The case of Croatia brings about the second issue. Croatia and Bosnia & Herzegovina served as military borders between the two Empires. Hence, their role as borderland in the Empires' dynamics could have affected the type of institutions that arose in the territories of modern Croatia and modern Bosnia & Herzegovina. Admittedly, the military border could have affected the institutional set-up of the country and caused a unique set of legacies not captured by the Ottoman and Habsburg legacies discussed in Section III.

4.3. Basic Specification

In a cross country comparison of institutional development, following standard methodology in the institutional economics literature (e.g. Acemoglu & Johnson 2005, Beck & Laeven 2005, La Porta et al. 2001, De Melo et al. 1997), we estimate a model of the form:

$$y_{ij} = c_{ij} + \alpha_i O_j + \beta_i g_j + \gamma_i x_{ij} + \varepsilon_{ij} \quad (1)$$

where $i = 1, \dots, M$ indicates institutional specific, $j = 1, \dots, T$ indicates country, O_j is a proxy for Ottoman/Habsburg legacy (either a dummy variable, d_i , or a weight variable, w_i , as specified in sub-section 4.2), g_j is GDP per capita in 1991, and x_{ij} is a vector of other determinants of institutional development. We discuss the inclusion of GDP per capita (g_j) and other explanatory variables (x_{ij}) in sections 4.4 and 4.5. All dependent variables, y_{ij} , are defined so that a decrease in the value of the variable means an improvement of institutional performance, i.e. small values indicate good institutions, large values indicate inefficient institutions.

Our theory suggests that the variation in the institutional development of the transition countries of South-East and Central Europe can be explained by the Ottoman/Habsburg legacy. Furthermore, an Ottoman successor state is more likely to have lower level of institutional development than a Habsburg successor state. Thus, in terms of equation (1), our theory suggests that $\alpha_i > 0$ for all $i = 1 \dots M$.⁵¹

⁵¹ Recall that high values of w_j indicate longer presence of the Ottoman Empire in a particular country's history and high values of y_{ij} indicate inefficient institutions.

4.4. Economic Performance Measure

Economists have put forth the idea that economic development creates a demand for efficient institutions (e.g. La Porta et al. 1998, Kaufmann & Kraay 2002). Hence, a higher measure of economic performance would have a positive effect on the quality of institutions. To control for the effect of economic development on institutions, we include an income per capita variable much like La Porta et al. (2001, 2003). The variable, g_j , is GDP per capita of country j in 1991. There is a distinct problem with the inclusion of an economic performance measure. GDP per capita is endogenous and hence our results might capture reverse causality.

To ameliorate the problem of endogeneity, we choose 1991 figures of GDP per capita. This choice is driven both by convenience and necessity for the following three reasons. First, given that the time frame for our institutional variables is 1992-2003, it is more likely that our dependent variable (post-1992 institutions) would have a stronger effect on post-1992 GDP per capita than on pre-1992 GDP per capita.⁵² Thus, we need a consistent pre-1992 measure of GDP per capita in order to control for the level of development of each country. Second, pre-1990 measures are problematic due to issues of misreporting and due to the lack of consistent cross-country data (in terms of units and conversion techniques). Third, our choice is driven by the availability of consistent data for all countries in our sample. The United Nations Statistical Division provides a consistent measure of GDP per capita in 1991 for all countries in our sample, which is why we select it as our economic development measure. As a robustness check, we use a second measure of GDP per capita in 1991, provided by the World Bank *1998 Transition Report*.⁵³ The 1991 GDP per capita measures for our sample are summarized in Table 6.

⁵² Note that, in addition, figures in both income and institutions for the years 1992-1996 are problematic because of the war in Yugoslavia (i.e. the war could put a downward bias on the GDP numbers of the former Yugoslav republics).

⁵³ The drawback of the World Bank figures is the lack of data for Serbia & Montenegro and Macedonia. We use the UN figures for the two countries to complete the World Bank data. The one significant

Since the 1991 GDP per capita does not eliminate the problem of endogeneity, an alternative way to address this issue is to present regressions with and without an economic performance measure. This approach allows us to see the extent to which our results depend on the inclusion of GDP per capita. Note that a standard approach to the endogeneity problem, namely the use of instrumental variables, is not possible in practice because of the difficulty in identifying factors that are correlated with income but orthogonal to any omitted characteristics of institutions (Kaufmann & Kraay 2002).

4.5. Other Determinants of Institutional Development

Most of the institutions literature has focused on the effect of institutions on growth. Much less work has been done to examine the determinants of institutions. So far, the literature has discussed two broad groups of determinants of institutions – endogenous factors (such as other institutions) and completely exogenous factors (such as geography, legal origins, settler mortality in Middle Ages).

The Role of Institutions on Other Institutions

Regarding the effect of institutions on other institutions, the existing literature takes two general approaches. The first approach assumes no direct relationship between the different institutional indicators.⁵⁴ Hence, this approach focuses on the effect of exogenous factors and excludes any institutional features from the set of explanatory variables. This approach has been utilized in studies on the determinants of government quality (e.g. La Porta et al. 1999) and studies on property rights institutions (e.g. Acemoglu & Johnson 2005).

difference in the UN data and the World Bank data is the figures for Bosnia and Herzegovina. The UN data reports a much lower figure for Bosnia-Herzegovina. Data on all other countries in our sample is consistent across the two data sources.

⁵⁴ La Porta et. al (2003) run OLS regressions of several indicators of economic and political freedom on judicial independence. They do not assume any direct relationship between the dependent variables (property rights, number of procedures, government banks, democracy index), such as the effect of democracy index on property rights, for example.

The second approach assumes that some institutional variables affect directly other institutional variables, and hence should be included as explanatory variables in studies on institutional determinants.⁵⁵ The second approach has been utilized primarily in studies of corruption, where government effectiveness or government structure, democratic process and civil society have been hypothesized to have a significant effect on corruption (e.g. Shleifer & Vishny 1993, Treisman 2000, Alesina & Angeletos 2005).

We follow the first approach for the following reason. The goal of this chapter is to explore the *long-term* determinants of institutional development. While unlikely true in the short-run, we posit that in the *long run*, the determinants of any institutional variable are not other institutional variables but rather completely exogenous factors, with historical legacies being the most important one for our theory. In the long run, for example, we assume that the determinants of corruption are not other contemporary institutional variables, but completely exogenous factors (e.g. historical specifics).

Note, though, that our estimation strategy is appropriate even if the second approach is valid (i.e. some institutional variables should be used as determinants of other institutions). In that case we estimate reduced form equations of institutions on exogenous variables. Suppose we have two regression equations:

$$\text{Corruption} = a + b \text{ Ottoman} + c \text{ Legal System} + e \quad (\text{i})$$

$$\text{Legal System} = d + h \text{ Ottoman} + f \text{ Corruption} + u \quad (\text{ii})$$

We substitute for Legal System in equation (1) and get a reduced form equation:

$$\text{Corruption} = [(a+cd) / (1-cf)] + [(b+ch) / (1-cf)] \text{ Ottoman} + (e+cu) / (1-cf) \quad (\text{iii})$$

Recall that we specify our hypotheses for equations (i) and (ii) as:

Null Hypothesis: $b = 0$ vs. Alternative: $b > 0$

Null Hypothesis: $h = 0$ vs. Alternative: $h > 0$

⁵⁵ Frye (2004) explores the determinants of property rights. The author suggests that property rights are affected by courts/police/government, but does not assume any causal relationship between government, police and courts.

We find support for our theory if at least one of the null hypotheses can be rejected. The coefficient $(b+ch)/(1-cf)$ in equation (iii) reflects the effect of the Ottoman legacy on our institutional measure, corruption. If this coefficient is significantly different from zero, then we conclude that the Ottoman legacy has an effect on institutional performance. Furthermore, the value of this coefficient carries information on the individual coefficients, b and h , which convey information about the effect of the Ottoman legacy on corruption and on the legal system respectively. The reasoning is as follows.

- Since low values of legal system and corruption imply good institutions, we expect that coefficient c is positive - i.e. good legal system leads to lower levels of corruption (Shleifer & Vishny 1993).
- Thus, if $(b+ch)$ takes a zero value, one of two things must be true: either b and h are zero, or one coefficient is positive while the other is negative.
- Based on the historical analysis of the previous section, we have determined the direction of deviation from the null hypothesis (we expect a positive relationship between the Ottoman legacy and the institutional variables). The historical justification is strong enough to render it unlikely that there would be a negative relationship. This allows us to largely ignore the case when one of the coefficients is negative.

Admittedly, this test of the effect of Ottoman/Habsburg legacy on institutions is weaker when institutional features are used as determinants of other institutional features than otherwise.

Having excluded institutions as right-hand variables, we focus on several exogenous factors as right hand side variables.

Role of Geography

The view that geography can affect property rights has been widely discussed in the literature (Beck & Laeven 2005, Acemoglu et al. 2002, Rodrik et al. 2004, Easterly & Levine 2003). The natural resource endowment presents opportunities for the elite to extract rents and thus can influence the institutions set up by the elite to allow for more successful rent extraction. We use reserves of oil or natural gas as proxies for the availability of natural resources. A discussion of the effect of natural resources on institutions is presented in Section VI.

Government Wages

Some scholars have suggested that the relative public to private sector wage ratio belongs in the equation of the determinants of government quality and corruption (e.g. Panizza 2000). Given proper incentives, government employees could increase their efficiency. Higher benefits and wages could decrease corruption. While, there seems to be evidence in support of the theory that corruption can be reduced by increasing government wages (Van Rijckeghem & Weder 1997), the literature has not found a significant effect of public wages on the quality of the bureaucracy (Treisman 2000, Rauch & Evans 2000).

Due to the lack of a consistent cross-country measure of public to private wage differential, we use the ratio of government average wage to per capita GDP. One problem with our measure is the obvious disregard for non-wage related benefits, which could make government employment more attractive and better rewarded (higher benefits, more vacation, etc.). Another problem is unavailability of data for some countries in our sample.

The inclusion of the wage ratio in our analysis is problematic due to possible endogeneity. However, it is added in a separate robustness test in order to check whether its inclusion makes a difference.

Table 7 summarizes our data. The top panel reports the main dependent variables. All of them are transformed so that to assign high scores to less efficient outcomes. The bottom panel gives descriptive statistics for all independent variables – GDP per capita, Ottoman/Habsburg

weight, natural resources and public wage ratio. Column 1 reports mean values and standard deviations of all variables for the whole sample. Column 2 shows data for Ottoman successor states only. Column 3 shows data for Habsburg successor states only. There is a clear partition in the values of institutions in Column 2 (Ottoman successors) and Column 3 (Habsburg successors). In all cases, Habsburg successors have lower average values, which indicate higher efficiency of institutional performance.

V. Empirical Strategy and Results

We explore three estimation procedures that allow us to test our hypothesis to different extent – nonparametric statistics, OLS estimation, and Meta analysis.⁵⁶

5.1. Nonparametric Statistics

Nonparametric statistics provide a quick way to get general results. They are beneficial particularly when dealing with small samples since the assumption of normality is not critical in nonparametric tests (Hoel 1984).

Is it important to note that the model in the nonparametric test does not correspond to the one specified in Section 4.3. We do not estimate coefficients of regressors. Rather, we solely focus on nonparametric statistics describing our dependent variables. In this case, we base our conclusions on a test of the order in which the observations of each dependent variable fall. We utilize the Rank Sum Test.⁵⁷

⁵⁶ We also consider Bayesian analysis. Bayesian analysis can circumvent the problem of small number of observations per equation and use to our advantage the fact that we have a large number of equations. Unlike classical theory, it allows us to formulate the null and alternative hypotheses in a convenient way: Null: $\alpha = 0$ for most i ; Alternative: $\alpha > 0$ for most i . The key feature of Bayesian analysis is that it combines sample information with other relevant information such as prior information or knowledge of consequences of the decision. In a sense it allows us to borrow power from past relevant information. However, the lack of meaningful prior information on our data makes Bayesian analysis equivalent to the classical approach. Hence, we do not pursue this approach in the chapter.

⁵⁷ A detailed description of the Rank Sum test can be found in Seber and Wild's book *Chance Encounters: Introduction to Data Analysis and Inference*, or Paul Hoel's book *Introduction to Mathematical Statistics*. Hoel suggests the use of a standard normal variable. The use of standard normal test statistic is more

For each institutional variable, we divide all observations of a given dependent variable in two groups: Group A - Habsburg successors ($n_1 = 5$ observations) and Group B - Ottoman successors ($n_2 = 6$ observations). We want to test the hypothesis that the distribution of values in Group A is the same as that in B. More specifically, we write our hypothesis as:

H_0 : Distribution of Group A = Distribution of Group B; the distributions of the Ottoman and Habsburg groups are the same, i.e. there is no difference in the institutional performance of the two groups.

H_1 : Distribution of Group A < Distribution of Group B; the Habsburg group is situated to the left of the Ottoman group, i.e. the Habsburg successor states have higher institutional performance than the Habsburg successor states.

The Rank Sum Test is based on the ranking of all observations in the combined sample of Habsburg and Ottoman successor states. Hence, we combine the two groups into a single ordered set (from smallest to largest in magnitude) and calculate the sum of ranks, T , of the Habsburg group.

$$T = \text{sum of the ranks for observations from A}$$

For small samples, without any assumptions on probability distribution, we look at the small-sample p-values rather than at the standard t-test.⁵⁸

Table 8 presents the results from the Rank Sum Test for each institutional variable. Thirteen out of fourteen tests have p-values of 5% or lower, which suggests that we can reject the null hypothesis of no significant difference in the institutional performance of the Ottoman and Habsburg successor states. The one insignificant result is associated with Legal Extensiveness.

appropriate for large samples. Thus, we do not present the results based on the normal distribution assumption here.

⁵⁸ The p-values for the Rank Sum Test for small samples are provided in tables similar to the t-distribution tables. Wild and Seber (2000) provide the Rank Sum Test tables.

The disadvantage of the Rank Sum Test is that it does not use all available information. It preserves the ranking but not the values of the variables. Thus, it yields weaker results than a parametric test. Hence, we proceed with the discussion of parametric tests of our hypothesis.

5.2. OLS estimation

Estimation and Results

For each sub-hypothesis described in section III, we estimate the model in equation (1), specified in Section 4.3, using Ordinary Least Squares. This approach is common in literature on the determinants of institutions and growth (e.g. Acemoglu et. al 2002, 2005, Beck & Laeven 2005, Rodrik et al. 2004).

Our theory suggests that α (the coefficient of Ottoman/Habsburg legacy) is positive. In the case when we use the weight variable (w), this implies that the longer a country has spent under Ottoman Rule, the more inefficient its current institutions are. In the case when we use the dummy variable (d), a positive α implies that if a country was under Ottoman Rule for more than 250 years, it has lower levels of institutional performance in the present than if it had spent less than 250 years under Ottoman rule.

We accordingly specify our null and alternative hypotheses as follows:

H_0 : $\alpha = 0$; the Ottoman/Habsburg legacy does not have any effect on institutional performance

H_1 : $\alpha > 0$; the Ottoman legacy has a negative effect on institutional performance

Tables 9 - 12 present OLS results, grouped in categories of institutional specifics – Judicial & Legal Systems, Government, Property rights and Civil Society. The reported t-statistics are calculated with robust standard errors so that to control for possible heteroskedasticity. The tables report significance level for one-tailed tests. Panel A of each table presents results of regressions using the Ottoman weight variable as proxy for the Ottoman/Habsburg legacy. Panel B presents results of regressions that use the Ottoman dummy

variable as proxy. Panel A of each table presents results with and without GDP per capita. Overall, we find that the inclusion of GDP per capita does not lead to notable changes – the sign of the coefficients and their significance does not change - with the exception of the regressions on legal extensiveness, stock market integrity and NGO environment. In these three cases the inclusion of GDP per capita makes the Ottoman legacy coefficient insignificant. We discuss this issue further later in this section.

In short, there is strong evidence in favor of our theory. Unless otherwise indicated, the comments below are relevant for regressions with GDP per capita. Eleven out of fourteen coefficients are significant at the 5% level, when we use the dummy variable as proxy for Ottoman/Habsburg legacy; ten out of fourteen coefficients are significant at the 5% level, when we use the weight variable as a proxy. The Ottoman variable (both d and w) has a positive sign in all cases as expected. Countries that spent longer time under Ottoman rule have lower levels of institutional development. Panel B shows stronger results than Panel A in most tables. This could partially be attributed to the fact that the dummy variable captures primarily the effect of post-16th century Ottoman legacy, which we argue earlier in the chapter has had the most profound effect on institutional features that have persisted to the present. Had there been countries in the sample that spent more than 250 years under Ottoman Rule, but primarily in its success stage prior to the 17th century, the results using a dummy variable might have differed significantly.

GDP per capita in 1991 does not have a significant effect on institutional development.⁵⁹ This result, although surprising, is not novel in the economic literature. Kaufmann and Kraay (2002), for example, present empirical evidence that suggests a lack of positive feedback from income to governance and moreover, evidence that income does not help explain cross-country

⁵⁹ An exception is the significant (at 5%) effect of GDP per capita on legal effectiveness (Table 9, Panel B, (1)). On five occasions (in the regressions of property rights, procedural complexity, political stability and civil society environment and financial viability), GDP per capita enters positively in the regressions, which seems counterintuitive. A positive relationship between GDP per capita and institutions would suggest that a higher level of economic development leads to more inefficient institutional performance. This could be attributed to the fact that we have a small sample and the confidence intervals in all four cases are somewhat centered around zero.

variations in quality of governance. Higher income per capita might not convey information about income distribution. Hence, it might conceal the possibility of a high concentration of wealth in the hands of the elite, which had strong incentives to maintain the status-quo and the existing inefficient institutions, which would allow easier extraction of rents. This argument is partially embodied in Olson's (1982) view on interest groups.

To illustrate the power of our results on the Ottoman/Habsburg legacy, we give an example using the results in Table 11 (Panel A: Column 3)⁶⁰. If Slovenia spent 200 years before 1700 under Ottoman rule, its rule of law indicator would have increased by 0.56 (recall that an increase in the value of the variable means worsening of institutions). Furthermore, if Slovenia spent 200 years after 1700 under Ottoman rule, its rule of law indicator would have increased by 1.12. Slovenia's 2003 rule of law indicator is 1.88. To put this number in context, we provide the 2003 rule of law indicators for several other countries in our sample. Hungary and Slovakia, both Habsburg successor states, scored 2.25 and 2.62 respectively. Bulgaria, an Ottoman successor state, had an indicator of 3.87. According to our results, if Slovenia had spent 400 years under Ottoman Rule, its 2003 rule of law indicator would have been 3.56. The latter result shows a significant deterioration and converges to the 2003 rule of law indicator of Serbia (which was under Ottoman Rule for 440 years). Similarly, the dummy variable (Table 11, B:2) coefficient implies that had Slovenia spent at least 250 years under Ottoman Rule, its 2003 rule of law indicator would have been 3.69.

We proceed with a more detailed discussion of results in the tables. There are three insignificant Ottoman/Habsburg coefficients – in the regressions on legal effectiveness (Table 9, A:1 and B: 1), legal extensiveness (Table 9, A: 3 and B: 3), and stock market integrity (Table 11, A: 7, and B: 4)⁶¹. The low t-statistics and the low R-squared for all three regressions clearly

⁶⁰ From this point on, for the sake of brevity we use notation A: 3, for example, to indicate Panel A, Column 3.

⁶¹ This could be partially attributed to the definitions of the variables and the measurement strategy.

indicate that the Ottoman/Habsburg legacy does not explain much of the variation in these institutional specifics. We conjecture that these variables have been primarily determined by transition-related developments such as degree of involvement of international organization in the development of the legal systems and the stock market as well as the role of legal transplants.⁶²

Table 9 (A: 5 and B: 3), indicates that there is a positive relationship between procedural complexity and GDP per capita. We stipulate that the relationship between procedural complexity and economic performance can be represented by a quadratic function, i.e. very low and very high values of procedural complexity are associated with low performance, while the optimal level of procedural complexity, located around the middle of the distribution, is associated with the best performance. Hence, it is possible that our sample of countries falls mostly in the upward sloping region of the parabola.⁶³

Table 10 presents results of regressions relevant to government-related variables. In all cases, except for regulatory quality (Columns 9 and 10), we get an R-squared of 0.60 or higher. This indicates that our regressions explain well the variation in the institutional variables. There is strong evidence in support of our claim that the Ottoman/Habsburg legacy has a significant effect on government-related institutional performance of the countries in the region.

Table 11 reports the results of regressions related to property rights institutions. Variation in the rule of law measures is explained by the Ottoman/Habsburg legacy better than are property rights and stock market integrity, both in terms of R-squared and t-values. Table 11 (A: 1 and B: 1) reports a positive relationship between GDP per capita and the property rights indicator, which is contrary to expectations.

Table 12 summarizes the results of regressions on civil society determinants. Both columns of the table show a statistically significant effect of the Ottoman/Habsburg legacy.

⁶² Although there is no clear evidence in the literature on this issue, an argument that could explain these results is that it is possible to get a discontinuity in legal developments as a result of legal transplants.

⁶³ Alternatively, the negative sign could be a consequence of the insignificance of the parameter.

However, they yield unexpected positive results with respect to the effect of GDP per capita in 1991. It is possible that worse economic conditions may lead to the emergence of more NGOs as well as to a bigger volume of foreign aid for NGOs. USAID financial aid reports support our findings. In 2005, USAID financed a civil society strengthening program in Macedonia for approximately \$ 2,980,000 million, in Romania for \$ 2,750,000, in Albania for \$ 1,174,000 and in Kosovo for \$ 1,400,000 (in addition to a \$2,300,000 program for Media Freedom); former socialist countries, above a threshold income level – such as Hungary, Czech Republic and Slovenia – did not receive any support (USAID Democracy and Governance Data Sheets 2005). Moreover, the idea of ‘reverse imperialism’ through foreign investment in human capital could certainly cause indicators of NGO financial viability and environment in less developed countries to show higher efficiency.

Challenges

There is one distinct and pervasive problem with OLS estimation. The number of countries in the cross sectional analysis is fixed (11 countries). Consistent time-series data for institutional specifics of the countries of interest is available only since 1997. There is no significant variation across time in the post-1997 cross country data, which diminishes the value of panel data. Hence, OLS has low statistical power, resulting from the limited number of observations and consequently the higher variance of the estimates.

If all classical assumptions, with exception of normality, hold, then small sample estimators should be unbiased and efficient (Johnston & DiNardo 1997). The normality assumption of the error terms, in particular when dealing with small samples and cross-country data, is questionable (Dietz et al. 1987).⁶⁴ If this assumption is violated and there is reason to believe that asymptotic theory is an inadequate guide, then the standard hypothesis tests and the t-values are irrelevant (Schmidt 1976). Efron (1979) proposed the use of the bootstrap method to

⁶⁴ We plot residuals against the normal distribution and find no clear indication that the normality assumption is violated.

overcome the possible non-normality of the error terms. The method, similar to Monte Carlo methods, generates a random sample with replacement from the original sample, computes the regression coefficient estimates and repeats the process a large number of times so that to provide an estimate of the standard error of the parameter of interest (Efron 1979, Dietz et al. 1987). According to Johnston & DiNardo (1997, p. 369), the bootstrap method is robust to heteroskedasticity and hence, is preferred in cross-section regressions. Hence, we use the bootstrap procedure on all regressions (we do not include GDP per capita in this procedure). Table 13 presents the relevant t-statistics from bootstrap OLS with 100 iterations. The results show six significant coefficients at the 5% level and additional three significant coefficients at the 10% level.

Two other challenges, not related to sample size, which our analysis faces are omitted variable bias and attenuation bias. Attenuation bias arises when variables are measured with error or might not correspond well to the concept we are attempting to test. It can lead to biased and inconsistent OLS estimators (Johnston & DiNardo 1997, p. 154). This type of specification problem seems intrinsic to most empirical studies and hence we do not explicitly tackle it here. The second problem, of omitted variables, can also lead to biased estimators and hence might undermine our results. We perform a number of robustness checks where we include variables, based on alternative theories. One major limitation of our analysis is the lack of reliable and consistent data on the variables of interest in the robustness checks. Another challenge is to find valid proxies.

We report robustness test results in Tables 14, 18 and 21. The results in Table 14 suggest a significant positive effect of the Ottoman/Habsburg legacy and a significant positive effect of the public wage to average GDP ratio. The sign of the wage ratio is opposite to what economists have suggested. As mentioned earlier, the inclusion of the wage ratio leads to an endogeneity problem and hence makes our estimates unreliable, which could explain the unexpected sign on the wage ratio. The results of the robustness tests in Tables 18 and 21 are discussed in Section VI.

SUR estimation

It is entirely plausible that a common factor, not captured by the explanatory variables, can affect several institutional features in the same country. For example, an unanticipated event, such as the assassination of a prominent government official, who was involved in corruption, could affect both the level of corruption as well as the efficiency of the legal system in the same country. It would be less likely that this unanticipated event would have any effect on corruption or the legal system of another country. To be more precise, it is not likely that a random event that affects the legal system in Country X would have any effect on the legal system in Country Y. Secondly, it is not likely that a random event that affects the legal system in Country X can affect the level of corruption in Country Y. If this is the case, OLS might still produce unbiased estimators; however, the efficiency can be improved if the simultaneity between the dependent variables is taken into consideration (Godwin 1985, p. 13).

A model that takes into account this correlation of random shocks on the dependent variables is the Seemingly Unrelated Regression Model (SUR). Following the specification of equation (1) in section 4.3, the SUR model assumes the following. The error terms on average take the value zero ($E(\varepsilon_{ij}) = 0$) for all i and j and have variance $\text{var}(\varepsilon_{ij}) = \sigma_{ii}$ for all j . Random shocks in the same dependent variable in different countries are not related and random shocks in different dependent variables in different countries are not related: $\text{cov}((\varepsilon_{ij}\varepsilon_{kc}))=0$ for $j \neq c$.

Random shocks in dependent variables in the same country, however, can be related:

$\text{cov}((\varepsilon_{ij}\varepsilon_{kc}))=\sigma_{ik}$ for $i \neq k$ and $j = c$. The SUR technique is a two-stage procedure based on feasible GLS estimation (Johnston & DiNardo 1997, pp. 318-320). In the first stage, the covariance of error terms across equations is calculated utilizing OLS results. In the second stage, GLS is used to estimate the parameters of the whole system. Note that this procedure becomes equivalent to OLS if there is no variation in the set of explanatory variables across equations.

We provide SUR estimation results for one subset of equations in Table 15. With the exception of Stock Market Integrity, we get significant positive effect of the Ottoman weight variable on institutional performance (i.e. longer time spent under the Ottoman Empire leads to less efficient institutions). GDP per capita in 1991 has a significant negative effect on Stock Market Integrity and insignificant effect on the rest of the institutional variables.

SUR addresses the possible simultaneity bias but not the small sample problem. We argue that the problem of low power (if we assume normality of the error terms) can be mitigated with meta analysis, which we present in the next sub-section.

5.3. Meta Analysis

“The problems created by low statistical power in individual studies are central to the need for meta analysis” (Hunter & Schmidt 1995, p. 75). Meta analysis is a technique that combines results across different regressions to infer on the overall relationship between variables. Regressions may differ in the way they measure variables and the methodology they use but not in the underlying question they explore (Hunter & Schmidt 1995, Wolf 1986).

The meta analysis in this chapter takes a slightly different approach than the traditional meta analysis. Rather than combining regressions of different authors and different methodologies, we study the effect of the Ottoman/Habsburg legacy on different aspects of institutional development (e.g. judicial quality, property rights protection, corruption) and combine the results of the individual regressions to get an overall sense of the effect the Ottoman/Habsburg legacy on the level of institutional development.

Thus, we are concerned with the following questions. Is there a relationship between being an Ottoman/Habsburg successor state and the current level of institutional development of the countries in question? What is the magnitude of this relationship and is it statistically significant? If we find a positive and statistically significant relationship, we would have provided evidence that (1) the Ottoman and Habsburg Empires have had a long-lasting effect on the

institutional performance of their successor states, and (2) that the Ottoman Empire has placed its successor states on a lower path of institutional development.

We are interested in the size and statistical significance of the estimate of α in equation (1). Due to the different measures of institutional performance (y) across regressions, we cannot directly compare the estimated coefficients ($\hat{\alpha}$) of different regressions. Instead we use the unit-less t-statistics and p-values from the OLS estimation presented in section 4.2. We present two combined tests – Fisher Combined Test and Winer Combined Test, which are appropriate for small samples. The combined statistic of the Fisher test is:

$$P = -2 \sum \ln p_i \sim \chi^2_{(2M)} \quad (2)$$

where p_i is the one-tailed p-value associated with α_i in regression i , and M is the number of regressions combined. We obtain a value of $P = 88.14$, which at 28 degrees of freedom is associated with $p < 0.01$ (the χ^2 critical value is 48.278). This indicates that the null hypothesis of no significant effect of the Ottoman/Habsburg legacy on current institutional performance can be rejected.

The second combined statistic of the Winer Combined Test takes the form:

$$T = \frac{\sum t_i}{\sqrt{\sum \frac{df_i}{df_i - 2}}} \sim N(0,1) \quad (3)$$

Where t_i are the t-statistics obtained by OLS estimation of all regressions and df_i are the degrees of freedom in regression i . The procedure is based on $df/(df-2)$ being the variance of a t distribution. (Wolf 1986).⁶⁵ We get a combined statistic $T = 7.82$, which is statistically significant and allows us to reject the null hypothesis of no effect of the Ottoman/Habsburg legacy on current institutional performance.

⁶⁵ We use a one-tailed hypothesis test because we already know the direction of the results from the individual studies (Wolf 1986, p. 22). We acknowledge the fact that the degrees of freedom are less than 10. However, due to the fact that the question asked involves only a limited number of countries that participated in this natural experiment, we cannot increase the number of observations.

Two issues could arise from combining all regressions in one meta analysis. The first issue has to do with the homogeneity of the estimates. If the estimates that we combine are heterogeneous, then it is probable that we are not testing one hypothesis. Heterogeneity can be a signal that we should not synthesize all regressions in one meta-analysis. If we find evidence of heterogeneity, we need to conduct separate meta-analysis on sub-groups of regressions. We use the so-called Overall Diffuse Test, proposed by Rosenthal (1983), to test for heterogeneity. The Diffuse Test utilizes the effect size⁶⁶, which is a transformation of the t-statistics that eliminates the sample size effect. The effect size is defined so that to represent the “degree to which the null hypothesis is false” (Wolf 1986, p. 24). There are two prevalent choices of effect size. We define the one appropriate for the Diffuse test here and the other one later in this section. The first effect size, d , is transformed from the t-statistic for each study in the following way:

$$d_i = \frac{2t_i}{\sqrt{df_i}} \quad (4)$$

Accordingly, the test statistic for the Diffuse Test for heterogeneity is:

$$D = \sum w_i (d_i - \bar{d})^2 \sim \chi^2_{(M-1)} \quad (5)$$

where $w_i = 2T_i/(8 + d_i^2)$, T_i = total sample size of study i , $\bar{d} = (\sum w_i d_i)/(\sum w_i)$ and M is the number of d 's from independent regressions. The null and alternative hypotheses of the Diffuse Test are:

H_0 : There is no heterogeneity of effect sizes

H_1 : There is heterogeneity of effect sizes

If D has a small p-value associated with it, then we can reject the null hypothesis of homogeneity.

We calculate a diffuse test statistic, $D = 15.36$ with 13 degrees of freedom, which yields $p > 0.10$ (χ^2 statistic is 19.81). Since the probability value is high, we cannot reject the null hypotheses of homogeneity. Thus, we conclude that there is no significant heterogeneity among the regressions.

⁶⁶ The meta analysis literature has strongly encouraged the use of the effect size (Wolf 1986, Rosenthal 1984, 1991).

The second issue is the possibility that t-statistics (and the effect sizes) across different regression equations are correlated. If that is the case, the standard deviation of the combined t-statistic would not be equal to one (see expression (3) above) and a possible covariance between the t-statistics could lead to higher variance in the combined statistic. This, in turn, could lead to an erroneous rejection of the null hypothesis. In order to correct for possible correlation, we conduct a separate meta analysis on a sub-group of regressions. The rationale behind the selection of regressions is to find regressions that exhibit little correlation between residuals. Table 16 presents the matrix of correlation of residuals. The meta analysis results on the sub-group are summarized in Table 17. Both the Winer Test and the Fischer Test show a statistically significant relationship between the Ottoman legacy and institutional performance. The diffuse test indicates that there is no heterogeneity among the included studies.

So far, we have constructed an index summarizing the significance of the relationship. As mentioned earlier the meta analysis literature recommends complementing the combined test with an effect size test. Since we are interested in the relationship between two variables (institutions and the Ottoman/Habsburg legacy), we use the second effect size - partial correlation coefficients. To obtain the combined effect size indicator that synthesized the results from several regressions, we essentially take the average of the partial correlation coefficients:

$$E = \frac{\sum r_i}{M} \quad (6)$$

where r_i is the partial correlation coefficient associated with α_i and M is the number of regressions combined. The effect size indicator for the synthesis of the fourteen regressions is $E = 0.50$. It suggests a large-size effect⁶⁷ for the relationship between Ottoman/Habsburg legacy and institutional performance. In other words, this result suggests that the observed effect of the

⁶⁷ This is based on a guideline provided by Cohen (1977) on the interpretation of effect sizes. According to Cohen, $r = 0.10$ is a small effect size, $r = 0.30$ is a medium effect size, and $r = 0.50$ is a large effect size (Wolf 1986). There is an additional test of the average effect size, which utilizes standard hypothesis testing techniques. The test is based on Hunter & Schmidt 1987. We do not present it explicitly in the text of this chapter. The t-statistic that we obtain from the test is 2.294 which is significant at the 5% level.

Ottoman/Habsburg legacy on the average institutional quality of a country is substantial. Hence, this provides an additional confirmation of our hypothesis that the Ottoman/Habsburg legacy has strong influence on the current institutional performance.

In summary, we find sufficient evidence in all three estimation approaches that the Ottoman and Habsburg legacies have had a significant impact on the institutional performance of their successor states. We admit the limitations of the parametric tests and the remedial measures offered above. In the spirit of Green & Hall (1984, p. 52)⁶⁸, if “data analysis is an aid to thought, not a substitute,” the lack of quality data should not preclude us from putting forth a valid argument and asserting, to the degree possible, the significance of the argument.

VI. The Role of Socialism and the Natural Resource Endowment

Discussion of Results in Light of Beck & Laeven's theory

As mentioned in the introduction, to the best of our knowledge, the leading alternative theory for the great divide in institutional performance of the former socialist bloc has been presented by Beck & Laeven (2005). Beck and Laeven claim that the variation in institutional performance can be explained by the initial political structure, measured by ‘executive constraints’ and the ‘share of seats in Parliament of the former ruling communist party in the first election after transition began’. This initial political structure reflects the differences in behavior and incentives of the elite at the beginning of transition, which according to the authors is affected by the countries’ endowment of natural resources and the entrenchment of the ruling elite during socialism. In other words, an economy that has more natural resources presents more possibilities for the elite to extract rents and thus encourages policies that secure rights of the elite over these resources. Moreover, a country that spent more years under socialism is more likely to have a deeper entrenchment of the ruling elite. The entrenched elite is more inclined to adopt policies that ensure its preservation of political power to extract economic rents.

⁶⁸ The quote was used by Wolf (1986, p. 53).

We find several parts of Beck and Laeven's argument insufficient, in particular with regard to the variation in performance within the countries in Southeastern and Central Europe. First, the proxy for natural resources can be misleading. Beck & Laeven use exports of raw materials relative to GDP as the main measure of availability of natural resources. However, exports of raw materials could be directly related to the level of economic and institutional development. High exports of raw materials can be a consequence of lower level of development of a country. Grossman & Helpman (1990) find that initial conditions have a significant effect on trade patterns.⁶⁹ Their reasoning suggests that a more developed country would have a higher initial stock of knowledge, which would establish its comparative advantage in a diversified list of export products; simultaneously, the less developed country would continue to produce traditional products, and more specifically raw materials. Moreover, a developed country with a rich natural resource endowment is more likely to have the technology and the trading ties (reputation and quality) to process its raw materials and export higher value-added products (as is evident in Cameron & Neal's (2003) discussion of 19th century European development). This would decrease the share of exports of raw materials and increase the share of exports of processed industrial goods.⁷⁰

Second, we find the use of years under socialism as proxy for entrenchment of the elite problematic for several reasons. If we remove the former USSR republics from the sample, we get extremely little variation in the variable. Furthermore, the intensity of the socialist regimes

⁶⁹ Some other papers, which discuss trade patterns and have relevance to this claim are: Keesing (1968), Balassa (1969), Feenstra & Rose (1997). The first two papers discuss the size of countries and its effect on manufacturing exports. The last paper ranks country's exports and discusses the rankings with respect to GDP per capita.

⁷⁰ The authors use as a robustness check natural gas reserves, which admittedly is a better proxy for natural resources. Since the exact data on natural gas reserves (used by Beck and Laeven) is not available yet, we only stipulate about the assumptions the authors made regarding natural gas reserves given their original source of data, WRI. In the WRI dataset, the only country in Southeastern and Central Europe with natural gas proven reserves is Romania. Hence, the authors might have assumed zero endowment of natural resources for Albania, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Slovak Republic and Macedonia. According to EIA, however, most of these countries have natural gas reserves (the data is available only for most recent years, however).

varied a lot, which would suggest that the same number of years of socialism in different countries could have had a completely different effect on the political structure (De Melo et al. 1997, p. 20). In light of our theory, we also argue that the incentives of the elite were significantly affected by the Ottoman/Habsburg legacies.

Third, we argue that the entrenchment of the elite is only secondary to the overall political, social and geographic structure of the country. The motivation behind this claim is twofold. First, we stipulate that the rise of corruption and an informal economy (mafia-type groups) could, through physical threats, steer the political agenda of the elite, and hence render previous political affiliation of the political elite irrelevant. Second, a careful evaluation of the socialist elite shows a crucial divergence of the meaning of political power during the socialist and in post-socialist regimes. The socialist elite was primarily associated with bureaucratic power; bureaucratic power did not yield much higher incomes or other material luxuries but rather provided “preferential access to the use of public property” (Walder 2003, p. 10). Thus, as argued further by Walder (2003, pp. 14-15), entrenched socialist elite’s advantages and opportunities in rent-extraction vary greatly, partly due to the diverse concentration of public property. This, although not invalidating the claim that entrenched elite would not have an effect on institutional quality, makes the argument much weaker.

The lack of consistent all-encompassing natural resource data (including natural gas, oil reserves, coal deposits, timber and cropland per person) for 1990 combined with the lack for a good proxy for the entrenchment of the elite, prevent us from showing formally how the initial political structure is affected by natural resources, entrenchment of the elite and the Ottoman/Habsburg legacy. We present several tests, which to a limited extent test our theory against Beck and Laeven’s theory. It should be emphasized that our critique of Beck and Laeven’s arguments is only focused on the countries in our chapter and hence does not try to reproduce their results for their whole sample, which includes former USSR republics.

We test the effect of natural resources and the Ottoman legacy on several institutional variables – government effectiveness, rule of law, property rights and corruption. The results are presented in Table 18. We proxy for natural resources in two ways – natural gas proven reserves per capita, and oil proven reserves per capita.⁷¹ In all cases we find a significant effect of the Ottoman/Habsburg legacy on institutional performance. The natural resource endowment has a positive effect in all regressions, which is consistent with the literature. The natural gas reserves variable has a positive effect and is significant at the 5% level for government effectiveness and rule of law, and at the 10% level for corruption. It has an insignificant effect on property rights. The oil reserves variable does not seem to have a significant effect on institutional performance. Overall, we find weaker evidence in support of the natural resource theory, when compared to the historic legacy theory.

The Role of Socialism

The literature on post-1990 economic development has focused on the socialist legacy as the key historical determinant of institutional and economic performance. We view the socialist legacy primarily as a deterrent of market-oriented developments rather than the origin of the great divide and claim that it has two components to it. The first component is a transitory effect of the socialist legacy while the second component is the indirect effect of the Ottoman/Habsburg legacy.

Regarding the first component, it is worth noting that socialism benefited less developed countries and hence, allowed for some convergence in performance (especially with respect to industrialization, life expectancy, literacy rates and economic growth) of the socialist bloc countries (King & Szelenyi, 2005). However, with the breakup of the socialist system, there was an initial significant fall in performance in all countries, but a persistence of this fall only in

⁷¹ A more adequate measure of natural resource endowment would have been coal reserves per capita, which as argued in Acemoglu et al (2001) is the most common resource in the world. However, we did not find a source of data on coal reserves that was consistent and reliable.

some. If socialism allowed for convergence, then the divergence of institutional performance during the transition period cannot be attributed to socialism.

Regarding the second component, we believe that developments during the socialist period (reforms, role of elite, readiness of acceptance of the socialist doctrine) were affected by the culture formed by the Ottoman/Habsburg legacies. In Chapter 1, we identify submissive attitude toward authority and lack of trust in the market as two main cultural legacies of the Ottoman Empire. Both legacies can explain a resistance against individualism and support for collectivism, which political scientists have identified as key part of the political culture in the Balkans (Wildavsky 1986, Guess 2004) and which could explain the readiness of some countries to accept socialism and the resistance of others against it.

To measure the impact of socialism on institutional performance during the transition period, we create two variables. The first variable, *Socialism & Reform*, is a dummy variable that assigns value 1 to countries with relatively strict socialist regimes, and value 0 to countries that either had workers' management socialism (all republics of Yugoslavia) or had some major reforms geared toward competitiveness and openness to the West (as in the case of Hungary's NEM of 1968). The second variable, *Socialism*, is a weight variable that assigns two points for each year a country spent under a strict socialist regime (Soviet or other) and one point for each year a country spent under a system that allowed some individual freedom and openness to the West. This approach takes into consideration the different policies adopted during socialism and distinguishes between countries that spent 45 years under a system that tolerated private property and exposure to western ideas versus countries that spent 45 years in relative isolation in domestic affairs and of strict prohibition of private ownership. Table 19 presents the two proxies for the socialist legacy. A detailed presentation of historical facts that were utilized to create this variable is presented in Table A3.

To demonstrate the validity of our socialist proxies, we regress a proxy for initial conditions (at end of the socialist period) on each of the socialist legacy variables, presented

above. We use black market exchange rate premium in 1990 (reported by De Melo et al. 1997) as a measure of economic distortion from the socialist period and an initial condition for transition. The results in Table 20 indicate that our proxies for the socialist period explain the objective differences at the end of the socialist regimes. The socialist proxy coefficients are significant at the 1% level with standard OLS estimation. The bootstrap method yields a significant effect (at 5% level) of the dummy variable and an insignificant effect of the weight variable.

Table 21 reports results of the effect of the socialist legacy and the Ottoman/Habsburg legacy on institutional performance. In all cases the socialist legacy is insignificant. Moreover, it does not change the statistical significance of the Ottoman/Habsburg variable. This provides strong evidence in favor of our theory. We run but do not report tests regression institutions on the Ottoman legacy, the socialist legacy and natural gas reserves and find that our results do not change. Despite the challenges in estimation, the results in Tables 18, 20 and 21 give adequate support for the theory that distant historical legacies have a profound effect on institutions.

VII. An Example of Institutional Persistence: The Case of Bulgaria

We identify in Section 3.3 corruption (e.g. evasive behavior and viewing office as personal investment) and lack of trust in the government as key legacies of the Ottoman Empire. To illustrate the persistence of these legacies over the 20th century, we provide accounts from three time periods, which cover the main stages (excluding socialism) of development of one country in our sample – Bulgaria.

- (1) Time Period (1890-1915): “The evil of corruption was omnipresent; and the requisitioning agencies became increasingly unpopular as their personnel took commodities such as sugar and salt which they had no right to take but which they could sell at high prices on the black market.” (Crampton 1997, p. 145). Moreover, “turnout was generally low in Bulgarian elections and control could easily be established at the

polling station or in the processing of results. Elections by the turn of the century were seldom exercises to measure public opinion” (Crampton 1997, p. 124).

(2) Interwar period (1920-1920): “All sections of the nation suffered from the corruption which, though always a feature of Bulgarian life, reached enormous proportions under the agrarians, especially among the petty officials” (Crampton 1997, p. 155).

(3) Transition Period (post 1990): “Despite the good progress, greater attention must be paid to reforming the judiciary and to fighting corruption and organized crime. Better efforts are also needed to bring the public back to politics” (Nations in Transit 2004, Country Report: Bulgaria).

These reports clearly indicate the persistence of specific social norms, which have led to consistent institutional performance across all of the 20th century. Each of the three time periods has varied significantly from the rest in terms of level of development, exposure to the West and structure of the economy. Despite these differences, the underlying mental models have been changing very slowly and hence, have led to high levels of corruption and little trust in government and democratic institutions.⁷²

VIII. Conclusion

The chapter offers a framework for the long-run determinants of institutional performance of the countries of South East and Central Europe and provides empirical evidence in favor of the theory. In particular, we conjecture that one of the most significant historical determinants of institutional development in the countries in South East and Central Europe has been the presence and duration of Ottoman or Habsburg rule. Tracing the historical origins of particular institutional features to the 17th and 18th century, we claim that through path dependencies, the institutions of the Ottoman and Habsburg Empires persisted to the present and

⁷² Democratic institutions arise mostly from a shift to market economy. Hence the distrust for democratic institutions is in itself a distrust of markets.

have had a profound effect on the success of transition from socialism to market economy. Our findings confirm the significance of the Ottoman-Habsburg institutional differences for the divide of current institutional performance. Furthermore, our findings show that, contrary to alternative theories on the great divide, socialism does not have a significant effect on the institutional performance of the transition countries of Southeastern and Central Europe. The role of natural resources seems dubious. Natural gas endowment per capita appears to have significant effect. Oil per capita, on the other hand does not have an effect on institutional performance measures.

The chapter provides an initial step toward developing a comprehensive, historically justified, model on the determinants of institutions. In addition to formulating a theoretical model, possible ways to proceed include putting together a detailed dataset of panel data, that would circumvent the problem of low statistical power, as well as a thorough historical research on actual legal, judicial and political practices that have persisted from the Ottoman and/or Habsburg eras to the present.

Empirical Model, Table 1: GDP per capita index (USA = 100)

	Country	1870	1910	1950	1987	1992	2000
Habsburg successor state	Czechoslovakia	45.7	41.9	38.6	46	44.7 ^a 30.5 ^b	45.3 ^a 33.3 ^b
	Hungary	30.2	35.2	33.7	44.3	34.9	39.3
Ottoman successor state	Romania	21.7	23.2	13.3	28.8	19.5	17.5
	Bulgaria		20.5	16.3	32.9	19.0	17.6

Source: GDP per capita index for 1870, 1910, 1950 and 1987 were taken from David Good, *Economic Transformations in East and Central Europe*, 1994, p. 6; GDP per capita measures for 1992 and 2000 were constructed by author using WDI GDP per capita in PPP (constant 2000 international dollars); a – measure for Czech Republic, b – measure for Slovakia

Empirical Model, Table 2: Rule of Law and Corruption (1997)

	Rule of Law	Corruption
Czech Republic	1.50	B
Slovenia	1.50	A
Serbia & Montenegro	5.00	D
Bulgaria	3.75	C

Source: 1998 Nations in Transit Report (Freedom House). Scale for rule of law: 1 - the highest level of performance (efficiency), 7 - lowest level (inefficiency); scale for corruption: A - least corrupt, D-most corrupt.

Empirical Model, Table 3: Income per Capita in former Yugoslavia in 1980

	Region	GNP per capita (in US dollars, exchange rate conversion)
Ottoman successors	Bosnia-Herzegovina	1737
	Montenegro	2086
	Macedonia	1721
	Kosovo	812
	Serbia Proper	2534
Habsburg successors	Croatia	3,314
	Slovenia	5193

Source: *A World Bank Country Study*, 1983, p. 237

Empirical Model, Table A1: List of Hypothesis (Defined in Section III)

Legal & Judicial System	<p>Legal effectiveness and extensiveness in the Habsburg successor states are higher than in Ottoman successor states.*</p> <p>There is more confidence in the legal system in Habsburg successor states than in the Ottoman successor states.</p> <p>Changes in the legal system in the Habsburg successor states are more predictable.</p> <p>The level of accountability of the judiciary is higher in the Habsburg successor states.</p> <p>Habsburg successor states have higher judicial quality than Ottoman Successor states</p> <p>Habsburg successor states have higher efficiency in the judicial process than Ottoman successor states</p>
Property Rights	<p>Property rights in the Habsburg successor states are more secure than in the Ottoman ones. *</p> <p>There is higher risk of expropriation of private investors by the government in Ottoman successor states than in Habsburg successor states.*</p>
Government	<p>Corruption is higher in the Ottoman successor states.*</p> <p>Trust/confidence in the government is lower in the Ottoman successor states.</p> <p>The size of unofficial economy is bigger in the Ottoman successor states.*</p> <p>There are fewer bureaucratic delays in the Habsburg successor states. *</p> <p>The level of tax compliance in the Habsburg successor states is higher than in Ottoman successor states.</p> <p>There is higher government effectiveness in the Habsburg successor states.*</p> <p>Habsburg successor states have more stability ensured by consistent government policies.*</p>
Miscellaneous	<p>Dominant capital city in the Ottoman successor states vs. several powerful cities in the Habsburg successor states</p> <p>Extent of familiarity with market systems is larger in the Habsburg Successor states.</p> <p>Rural holdings in the Ottoman successor states are smaller than in the Habsburg successor states.</p> <p>The distribution of the size of private enterprises in Ottoman successor states is more skewed toward small private enterprises than that in the Habsburg successor states.</p> <p>The distribution of the size of public enterprises in Ottoman successor states is more skewed toward large public enterprises than that in the Habsburg successor states.</p>
Civil Society	<p>The Habsburg successor states developed a stronger civil society with more established traditions than the Ottoman successor states.*</p>

The hypotheses marked by an asterisk (*) are the ones tested in the empirical section. The lack of data for some countries or the lack of appropriate proxies did not allow us to test the rest of the hypotheses.

Empirical Model, Table 4: Dates and Duration of Ottoman Rule

Country	Dates under Ottoman Rule	Duration of Ottoman Rule
Albania	1468-1912	444
Bosnia	1463-1878	314
Bulgaria	1396-1878	483
Croatia	1526-1699	173
Herzegovina	1482-1878	396
Hungary	1526-1699	173
Macedonia	1371-1913	542
Romania-Walachia	1476-1829	353
Romania-Moldavia	1504-1829	325
Romania-Transylvania	1541-1690	149
Serbia	1389-1829	440
Czech Republic	None	0
Slovakia	None	0
Slovenia	None	0

Source: L. Carl Brown, *Imperial Legacy: The Ottoman Imprint on the Balkans and the Middle East*, 1996 and author's calculations based on dates provided in the *Atlas of World History*, pp. 142, 152

Empirical Model, Table 5: Weight Variable (w) and Dummy Variable (d)

Country	d_i	w_i
Albania	1	27
Bosnia & Herzegovina	1	23
Bulgaria	1	26
Macedonia	1	29
Romania	1	15
Serbia	1	22
Croatia	0	7
Hungary	0	7
Slovakia	0	0
Czech Republic	0	0
Slovenia	0	0

For Romania we take the average of Walachia, Moldavia and Transylvania. For Bosnia-Herzegovina we take the average of Bosnia and Herzegovina.

Empirical Model, Table 6: GDP per capita in 1991

Country	GDP per capita in current prices in US dollars (1991)
Albania	503
Bosnia & Herzegovina	440
Bulgaria	883
Macedonia	2437
Romania	1245
Serbia & Montenegro	2456
Croatia	4939
Czech Republic	2634
Slovakia	2163
Slovenia	6549
Hungary	3261

Sources: United Nations, Statistical Division – Data on National Accounts 1991;

Empirical Model, Table 7: Descriptive Statistics

	(1)		(2)		(3)	
	Mean Value	Std. Dev.	Mean Value	Std. Dev.	Mean Value	Std. Dev.
	Whole Sample		Ottoman Successors		Habsburg Successors	
	<i>Dependent Variables</i>					
Rule of Law	4.01	1.29	4.94	0.69	2.902	0.87
Black market	3.91	0.97	4.58	0.66	3.10	0.55
Property Rights	3.45	0.93	4.00	0.63	2.80	0.84
Procedural Complexity	61.2	9.26	66.58	5.49	54.74	9.03
NGO environment	3.37	1.48	4.08	1.49	2.30	0.57
NGO financial liability	4.25	1.29	4.95	0.77	3.20	1.28
Rule of Law - GI	2.56	0.63	3.02	0.35	2.01	0.39
Ottoman weight	14.18	11.70	23.67	4.97	2.80	3.83
Regulatory quality	2.44	0.72	2.90	0.61	1.88	0.33
Legal effectiveness	1.90	0.82	2.19	1.01	1.56	0.36
Legal extensiveness	1.71	0.59	1.99	0.65	1.37	0.30
Stock Market Integrity	1.66	1.23	2.29	1.27	0.90	0.68
Political Stability	2.30	0.75	2.83	0.59	1.66	0.23
Government effectiveness	1.57	0.57	2.04	0.16	1.02	0.29
Corruption	4.43	1.25	5.29	0.66	3.40	0.94
	<i>Independent Variables</i>					
GDP per capita in 1991	2495	1640	1555	871	3622	1693
GDP per capita in '91 UN	2500	1883	1327	913	3909	1811
Oil Resources	128.63	279.61	202.25	374.68	40.3	45.59
Cropland per capita	0.33	0.12	0.35	0.13	0.32	0.13
Natural Gas Reserves	0.76	1.09	0.93	1.46	0.55	0.49
Public Wage ratio	1.02	0.39	1.08	0.51	0.98	0.31

Definitions of all variables and units of measurement are summarized in Table A2 on the next page.

Empirical Model, Table A2: Definitions of Variables and Sources of Data

Variable	Measure & Sources	Definition
Civil Society	NGO environment (USAID – 2001 NGO Sustainability Index)	“assesses the legal status of non-governmental organizations – ease of registration, legal rights and conditions regulating NGOs, and the degree to which laws and regulations regarding taxation, procurement, access to information and other issues benefit or deter NGO’s viability.” (2 = well developed, 7 = poorly developed)
	NGO financial viability (USAID – 2001 NGO Sustainability Index)	financial viability is influenced by the state of the economy, extent of philanthropy and volunteerism in the culture; “sophistication and prevalence of fund-raising” is also considered. (2 = well developed, 7 = poorly developed)
Corruption	Corruption Index (Nations in Transit 2001)	“looks at perceptions of corruption in the civil service, the business interests of top policy makers, laws on financial disclosure and conflict of interest, and anticorruption initiatives” (2 = no corruption, 7 = high levels of corruption)
GDP per capita in 1991	United Nations World Bank (1998 Transition Report)	Gross Domestic Product divided by total population in US dollars (in thousands of dollars – current dollars)
Judicial quality	Procedural complexity (Lex Mundi Project 2002/03)	Procedural Complexity reflects how heavily regulated dispute resolution is; (varies between 0 and 100, where high values indicate more complexity in contract enforcement procedures)
Legal Effectiveness & Extensiveness	Legal Effectiveness (EBRD Transition Reports - average of values from 1997 to 2001)	“assesses the extent to which key commercial and financial laws are implemented and are enforced” (1= very good, 4=very bad, author’s construct from original scale - 2 = very bad, 4 = very good)
	Legal Extensiveness (EBRD Transition Reports – average of values from 1997-2001)	“assesses the extent to which key commercial and financial laws reach international standards” (1= very good, 4=very bad, author’s construct from original scale - 2 = very bad, 4 = very good)
Natural Resources	2002 Oil Resources (Energy Information Administration)	Proven Crude Oil Reserves as of January 1, 2003 (in billions of barrels).
	2002 Natural Gas Reserves (Energy Information Administration)	Proven Natural Gas Reserves as of January 1, 2003 (in billions of cubic feet)

Population	2002 WRI (Earth Trends)	2002 total population (in thousands of people)
Property Rights	Property Rights Index (2003 Index of Economic Freedom)	“This factor scores the degree to which private property rights are protected and the degree to which the government enforces laws that protect private property. It also accounts for the possibility that private property will be expropriated. In addition, it analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts.” (1 = high level of protection, 5 = very low level of protection)
	Rule of Law (Nations in Transit 2001)	“average of ratings of constitutional, legislative, and judicial framework, and corruption,”, where “constitutional, legislative and judicial framework highlights constitutional reform, human rights protection, criminal code reform, judicial independence, the status of ethnic minority rights, and checks and balances among legislative, executive, and judicial authorities” (2 = very good, 7 = very bad)
	Rule of Law (Government Indicators)	“measures the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.” (0 = good, 5 = bad – author’s construct from original scale -2.5 to 2.5)
	Stock Market Integrity Index (Pistor et al.(2000)– average of 1992, 94, 96 and 98)	“Self-dealing, insider trading rules, provisions on the independence of a shareholder register and the existence and formal independence of an agency charged with supervising the stock market to capture this function;”
Public sector wages to average GDP	World Bank Group (Administrative and Civil Service Reform) - latest year available for timeframe 1996-2000	Public sector wages to average GDP “is calculated by dividing the <i>Average Government Wage</i> (defined above) by the <i>GDP per capita</i> figure” Average Government Wage “represents the ratio of the <i>Total Central Government Wage Bill</i> (the sum of wages and salaries paid to central government employees, including armed forces personnel) to the number of employees in <i>Total Central Government</i> . Non-monetary benefits (e.g., free meals, transportation) and expected future benefits (e.g., pensions) are not included in this wage measure.
Quality of Gov’t	Government effectiveness (Governance Indicators – World Bank)	“Government Effectiveness combines responses on the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies.” (0 = good, 5 = bad – author’s construct from original scale -2.5 to 2.5)
	Regulatory Quality (Governance Indicators – World Bank)	“Regulatory Quality instead focuses more on the policies themselves, including measures of the incidence of market-unfriendly policies such as price controls or inadequate bank supervision, as well

	Political Stability (Governance Indicators – World Bank)	as perceptions of the burdens imposed by excessive regulation in areas such as foreign trade and business development.” (0 = good, 5 = bad – author’s construct from original scale -2.5 to 2.5) “Political Stability and Absence of Violence combines several indicators which measure perceptions of the likelihood that the government in power will be destabilized or overthrown by possibly unconstitutional and/or violent means, including domestic violence and terrorism.” (0 = good, 5 = bad – author’s construct from original scale -2.5 to 2.5)
Size of Informal Economy	Black Market Index (Index of Economic Freedom 2003)	black market index” measures black market activities in the production, distribution and consumption of good and services.” (1 = very low level of black market activity, 5 = very high level)
Black Market exchange rate premium in 1990	De Melo et al. (1997), World Bank	Initial condition – measure of economic distortion from the socialist period – “indicator of expectations of depreciation and/or foreign exchange rationing. A high differential between the official and the free exchange rate can also be interpreted as a distortionary tax on imports and subsidy on imports (Easterly, 1994). It stimulates diversion of resources from the official to the informal sector”

Empirical Model, Table 8: Nonparametric Results

Variable	n ₁	n ₂	T	p-value
Legal extensiveness	5	6	22	0.10
Legal effectiveness	5	6	20	0.05
Procedural Complexity	5	6	18	0.025
Corruption	5	6	15	< 0.005
Black Market	5	6	15	< 0.005
Gov't effectiveness	5	6	15	< 0.005
Political Stability	5	6	15	< 0.005
Regulatory quality	5	6	16	0.005
Property rights	5	6	16.5	0.01
Rule of law	5	6	15	< 0.005
Rule of Law - GI	5	6	15	< 0.005
Stock Market Integrity	5	6	16	0.005
NGO environment	4	6	11	0.01
NGO financial viability	4	6	13	0.05

Empirical Model, Table 9: Judicial and Legal Systems

	Dependent Variables					
	Legal effectiveness		Legal extensiveness		Procedural complexity	
<i>Panel A (Using Weight Variable as proxy for Ottoman presence)</i>						
	(1)	(2)	(3)	(4)	(5)	(6)
Ottoman weight	0.008 (0.62)	0.029 (1.54)*	0.012 (1.29)	0.025 (1.86)**	0.714 (2.36)**	0.546 (2.38)**
GDP per capita 1991	-0.205 (1.62)*		-0.128 (1.33)		1.61 (0.88)	
Constant	2.295 (4.30)	1.48 (7.00)	1.859 (5.62)	1.35 (7.73)	47.057 (5.44)	53.443 (11.29)
Observations	11		11		11	
R-squared	0.31	0.18	0.34	0.25	0.54	0.47
<i>Panel B (Using Dummy Variable as proxy for Ottoman presence)</i>						
	(1)	(2)	(3)			
Dummy Variable	0.029 (0.09)		0.347 (1.47)*		17.58 (2.47)***	
GDP per capita 1991	-0.234 (1.94)**		-0.107 (1.12)		2.221 (1.22)	
Constant	2.46 (5.04)		1.792 (4.99)		46.056 (5.17)	
Observations	11		11		11	
R-Squared	0.30		0.36		0.54	

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, ***significant at 1%;

Empirical Model, Table 10: Government

	Dependent Variable									
	Corruption		Black market		Government effectiveness		Political stability		Regulatory quality	
<i>Panel A (Using Weight Variable as proxy for Ottoman presence)</i>										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ottoman weight	0.06 (3.14)***	0.08 (3.82)***	0.05 (2.89)**	0.06 (3.77)***	0.036 (3.41)***	0.04 (5.81)***	0.055 (4.02)***	0.052 (5.07)***	0.037 (2.44)**	0.04 (3.00)***
GDP per capita 1991	-0.202 (1.24)		-0.121 (1.58)*		-0.056 (1.12)		0.029 (0.47)		-0.029 (0.33)	
Constant	4.04 (8.52)	3.23 (7.57)	3.478 (8.69)	2.99 (10.3)	1.203 (4.34)	0.978 (7.00)	1.437 (5.48)	1.55 (15.7)	1.979 (4.88)	1.863 (11.9)
Observations	11		11		11		11		11	
R-squared	0.68	0.63	0.64	0.60	0.75	0.73	0.68	0.68	0.44	0.44
<i>Panel B (Using Dummy Variable as proxy for Ottoman presence)</i>										
	(1)	(2)	(3)	(4)	(5)					
Dummy Variable	1.46 (2.59)**	1.297 (2.85)**	1.023 (4.45)***	1.37 (3.64)***	1.137 (2.95)***					
GDP Per capita 1991	-0.16 (0.77)	-0.071 (0.61)	-0.001 (0.02)	0.075 (0.71)	0.045 (0.46)					
Constant	4.04 (6.55)	3.38 (6.80)	1.013 (3.79)	1.37 (3.82)	1.707 (4.05)					
Observations	11		11		11					
R-squared	0.66		0.65		0.68					

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%

Empirical Model, Table 11: Property Rights

	Dependent Variables							
	Property rights		Rule of Law		Rule of law – GI		Stock Market Integrity	
<i>Panel A (Using Weight Variable as proxy for Ottoman presence)</i>								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ottoman weight	0.05 (2.7)**	0.05 (2.8)**	0.072 (3.5)***	0.089 (4.2)***	0.039 (3.2)***	0.043 (4.6)**	0.014 (0.46)	0.049 (1.88)**
GDP per capita 1991	0.056 (0.41)		-0.157 (1.00)		-0.049 (0.76)		-0.34 (1.61)*	
Constant	2.53 (2.85)	2.47 (7.99)	3.38 (7.19)	2.75 (7.57)	2.136 (7.7)	1.94 (11.77)	2.31 (2.38)	0.95 (2.38)
Observations	11		11		11		11	
R-squared	0.40	0.39	0.67	0.64	0.67	0.66	0.38	0.23
<i>Panel B (Using Dummy Variable as proxy for Ottoman presence)</i>								
	(1)	(2)	(3)	(4)				
Dummy Variable	1.57 (3.31)***		1.81 (3.47)***		0.989 (3.44)***		0.739 (0.89)	
GDP per capita 1991	0.145 (1.06)		-0.087 (0.41)		-0.009 (0.10)		-0.25 (1.10)	
Constant	2.23 (3.52)***		3.25 (5.43)***		2.047 (6.37)***		1.887 (1.89)**	
Observations	11		11		11		11	
R-squared	0.49		0.69		0.70		0.41	

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%

Empirical Model, Table 12: Civil Society

	Dependent Variables			
	NGO environment		NGO financial viability	
<i>Panel A (Using Weight Variable as proxy for Ottoman presence)</i>				
	(1)	(2)	(3)	(4)
Ottoman weight	0.081 (1.56)*	0.07 (2.51)**	0.089 (2.10)**	0.078 (2.69)**
GDP per capita 1991	0.11 (0.34)		0.15 (0.43)	
Constant	1.873 (1.70)	2.23 (6.94)	2.538 (2.20)	2.024 (5.53)
Observations		10		10
R-squared	0.32	0.31	0.49	0.47
<i>Panel B (Using Dummy Variable as proxy for Ottoman presence)</i>				
	(1)	(2)		
Dummy Variable	2.62 (2.31)**		2.57 (2.80)**	
GDP per capita 1991	0.433 (1.03)		0.425 (1.10)	
Constant	0.891 (0.60)		1.81 (1.52)	
Observations		10		10
R-squared		0.47		0.59

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%;

Empirical Model, Table 13: Bootstrap Method

Institutional Feature	t-value	Number of Replications
Black Market	2.40**	100
Rule of Law (GI)	3.59***	100
Government Effectiveness	3.38***	100
Rule of Law (Nations in Transit)	2.06**	100
Procedural Complexity	1.60*	100
Regulatory Quality	1.37	100
Political Stability	4.55***	100
Corruption	1.70*	100
Property rights	1.24	100
Legal Effectiveness	0.35	100
Legal Extensiveness	0.63	100
NGO environment	2.95**	100
NGO financial viability	1.57*	100

* significant at 10%; ** significant at 5%, *** significant at 1%;

This table summarizes the result of estimating equation (1) with Ottoman weight as explanatory variable (excluding GDP per capita) by Bootstrapping. For reasons of space, only the t-statistics and the number of iterations are reported. The dependent variables are indicated in the first column, named 'institutional feature.'

Empirical Model, Table 14: Robustness Check: Corruption

	Corruption
Ottoman Weight	0.065 (3.27)***
Public Wage to average GDP ratio	1.106 (2.93)***
Constant	2.206 (3.42)
Observations	9
R-squared	0.72

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%;

Empirical Model, Table 15: Seemingly Unrelated Regression

	Coefficient	Std. Err.	t	p-value
<i>Dependent Variable: Government effectiveness</i>				
Ottoman weight	0.0361913	0.0102223	3.54***	0.001
GDP per capita 1991	-0.0529763	0.0829144	-0.64	0.526
Constant	1.196209	0.3082073	3.88	0.000
<i>Dependent Variable: Property Rights</i>				
Ottoman weight	0.0549509	0.0250922	2.19**	0.033
GDP per capita 1991	.0230743	.2037441	0.11	0.910
Oil per capita	-1.875502	6.097249	-0.31	0.760
Constant	2.616541	.7618691	3.43	0.001
<i>Dependent Variable: Rule of Law (Government Indicators)</i>				
Ottoman weight	0.0397745	0.0126756	3.14***	0.003
GDP per capita 1991	-0.0049272	0.1028138	-0.05	0.962
Constant	2.044596	0.3821767	5.35	0.000
<i>Dependent Variable: Black Market</i>				
Ottoman weight	0.052848	0.0206518	2.56**	0.014
GDP per capita 1991	-0.0692546	0.1675106	-0.41	0.681
Constant	3.370736	0.6226658	5.41	0.000
<i>Dependent Variable: NGO environment</i>				
Ottoman weight	0.0810125	0.0414515	1.95**	0.056
GDP per capita 1991	0.1113066	0.3362201	0.33	0.742
Constant	1.872896	1.249788	1.50	0.141
<i>Dependent Variable: Stock Market Integrity</i>				
Ottoman weight	0.0088366	0.0306616	0.29	0.774
GDP per capita 1991	-0.6034005	0.2487013	-2.43**	0.019
Constant	2.851937	0.9244656	3.08	0.003
<i>Equation</i>				<i>R-squared</i>
Government effectiveness				0.69
Property right				0.41
Rule of law				0.59
Black market				0.53
NGO environment				0.32
Stock Market Integrity				0.50
F-test of significance of Ottoman legacy: $F(6, 41) = 6.33, \text{Prob} > F = 0.0001$				

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%;

The table reports the results of SUR estimation for small samples. The inclusion of oil per capita in the property rights regression allows some variation (otherwise SUR is equivalent to OLS).

Empirical Model, Table 16: Correlation of Residuals Matrix

	Black Market	NGO environment	Property Rights	Procedural Complexity
Black Market	1.0000			
NGO environment	0.5179	1.0000		
Property Rights	0.6373	0.3492	1.0000	
Procedural Complexity	-0.3002	-0.2346	-0.1901	1.0000

The table shows the matrix of residuals of regressions used for the meta analysis in Table 17.

Empirical Model, Table 17: Meta Analysis Controlling for Correlation Issues

Regressions Included	Fischer Combined Test	Winer Combined Test	Diffuse Test
Black Market NGO environment Property Rights Procedural Complexity	P = 33.97 (p-value < 0.005)	T = 4.52	D = 1.25 (p-value > 0.75)

Empirical Model, Table 18: Role of Natural Resource Endowment

<i>Panel A</i>				
	Rule of law (GI)	Property Rights	Corruption	Government Effectiveness
Ottoman weight	0.047 (5.81)***	0.053 (3.08)***	0.09 (4.14)***	0.045 (7.85)***
Natural Gas Reserves per Capita	2.41 (2.06)**	2.49 (0.85)	4.74 (1.49)*	2.20 (2.35)**
Constant	1.72 (11.60)	2.52 (6.41)	2.80 (4.80)	0.78 (6.81)***
Observations	11	11	11	11
R-squared	0.74	0.43	0.71	0.81
<i>Panel B</i>				
	Rule of law (GI)	Property Rights	Corruption	Government Effectiveness
Ottoman weight	0.043 (4.17)***	0.048 (2.34)**	0.083 (3.58)***	0.04 (5.34)***
Oil Reserves per Capita	5.65 (1.13)	10.39 (0.86)	5.47 (0.50)	7.36 (1.50)*
Constant	1.89 (10.89)	2.67 (7.42)	3.196 (6.66)***	0.92 (6.20)***
Observations	11	11	11	11
R-squared	0.68	0.41	0.63	0.77

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%;

Empirical Model: Table A3: Socialism and Reforms (Events and Dates)

Country	Events	Number of Years under Socialism	Socialist Weight Variable
Albania	Communists seized power in November 1944. Diplomatic ties with the USSR broken off in 1961. The regime imposed a virtual isolation of the country from the outside world, as well as political oppression and censorship of all activity.	1944-1989	90
Bulgaria	King Simeon ousted in September 1946. Bulgaria becomes a Communist state. The regime was one of the most restrictive among countries that followed the Soviet Union.	1946 - 1989	86
Czechoslovakia	1945 – The Third Czechoslovak Republic was established. 1948-1953 – strict adherence to the Soviet model. 1953 – 1957 – mild liberalization as result of pressure from the people. 1957 – 1968 – re-imposition of Stalinist regime. 1968 - democratization and liberalization (Prague Spring). 1969 – 1989 – reversal of reforms (as result of Soviet intervention).	1945 - 1989	84
Yugoslavia	In 1945 the partisans established Communist rule. Between 1945 and 1949, the party followed the Soviet model closely. In 1948 Soviet Union denounces Yugoslavia at a Cominform meeting in Romania. After 1952, Yugoslavia moved toward market socialism and became one of the least repressive regimes in the region.	1945-1990	65
Romania	The monarchy was abolished in December 1947. Communist Party took control. After 1953, Romania distanced itself from the USSR. Regime severely restricted personal liberties, censored the press; followed a very closed off domestic policy despite maintaining diplomatic relationships with the West in foreign policy.	1947 - 1989	84
Hungary	August 1949 The Hungarian People’s Republic was established. 1949-1953, the party pushed for transformation of the economy based on the Soviet model. From 1953 to 1955 the economic policies were softened somewhat (liberalization, etc.). 1956 – Hungarians revolted against the USSR (Soviets suppressed the revolts). 1956-1968 – Strict controls imposed. 1968 – the New Economic Mechanism (NEM) was introduced – helped Hungarian production and competitiveness on international markets, reduced government control over the economy and allowed for greater individual freedom.	1949 - 1989	60

Source: MSN Encarta Encyclopedia

Empirical Model, Table 19: Measure of Socialism

Country	Socialism & Reform	Socialism
Albania	1	90
Bulgaria	1	86
Czech Republic	0	84
Slovakia	0	84
Slovenia	0	65
Croatia	0	65
Serbia & Montenegro	0	65
Macedonia	0	65
Bosnia & Herzegovina	0	65
Hungary	0	60
Romania	1	84

Empirical Model, Table 20: Validity of socialist proxies

Dependent Variable: Black Market Premium in 1990 (%)				
	OLS	OLS	Bootstrap Method	Bootstrap Method
Socialist regime & Reform	510.39 (3.21)***		407.00 (2.00)**	
Socialist regime		20.81 (3.25)***		16.28 (1.39)*
Constant	56.62 (2.14)	-1296.37 (3.14)	27.00 (0.63)	-1031.2 (1.35)
Observations	10	10	10	10
R-squared	0.65	0.55	0.47	.41

Dependent variable is black market premium in 1990 (%) – Source: De Melo et al. 1997, The World Bank. A high black market exchange rate premium implies economic distortion higher distortion.

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%;

Empirical Model, Table 21: The Role of Socialism on Institutional Performance

	Government effectiveness		Rule of Law		Black Market	
	(1)	(2)	(3)	(4)	(5)	(6)
Ottoman weight	0.042 (5.23)***	0.042 (5.46)***	0.045 (4.45)***	0.044 (4.32)***	0.066 (3.81)***	0.064 (3.67)***
Socialism & Reform	-0.001 (0.01)		-0.148 (0.66)		-0.148 (0.34)	
Socialism		0.005 (0.59)		-0.001 (0.10)		0.005 (0.26)
Constant	0.979 (6.12)	0.583 (0.85)	1.977 (9.57)	1.859 (2.04)	3.032 (8.47)	2.619 (1.69)
Observations	11	11	11	11	11	11
R-squared	0.73	0.74	0.67	0.66	0.60	0.61

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%, *** significant at 1%;

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