DATA APPENDIX

This Data Appendix documents our newly collected city-specific data set in detail.

CITY POPULATION

For the European cities in our sample we used the dataset published by Bairoch *et al.* (1988). Bairoch et al. (1988) provide centennial population estimates for cities in Europe. We focus on the period 800 – 1800 (see footnote 2 in the main text). We include all cities documented by Bairoch et al. (1988) to have at least 10,000 inhabitants in our sample. In the Middle Ages a criterion of 10,000 inhabitants to characterize a city is a rather hefty one. As a result, only the really large centers of population pass our criterion in this period (Ennen, 1972, p.199). We excluded the area of the former Soviet Union from our analysis, based on using the geographical borders of the countries as they were around 1990. For the year 1100 (which is missing in Bairoch et al.'s dataset) the population data have been linearly interpolated between those provided for the years 1000 and 1200.

We updated Bairoch et al.'s data by scanning recent literature concerning the major cities covered by the dataset, in particular all cities which during some point in time were larger than 60,000 inhabitants. This led to a number of important revisions of population numbers of Muslim cities in medieval Spain (estimates were corrected downwards on the basis of Glick, 1979), Palermo (email exchanges with Jeremy Johns and S.R. Epstein), Paris, Bruges, and London. According to Bairoch *et al.* (1988), Cordoba was supposed to have 450,000 inhabitants at about 1000 (but only 110,000 according to Glick), Palermo's size was 350,000 according to Bairoch *et al.* (1988), whereas our estimate (following Epstein and Johns) is 60,000. For Paris we used the number of hearths (61,098) from a census of 1328 presented by Pounds (1969) to estimate its population in 1300, for the next two centuries we assumed a decrease in the Parisian population because of the Black Death and the Hundred Years War. London was the only city for which estimates were revised upwards following Campbell (2000). For Bruges we revised the population downwards in 1400 according to Blockmans (1980).

For the cities in the Middle East and North Africa no comprehensive database existed. We fill this gap and have collected information on the same centennial basis as Bairoch et al (1988) for all cities for which we could find evidence that they had at least 10,000 inhabitants. For the cities in North Africa and the Middle East we first established a list of some fifty of the most important ones from Roolvink's historical atlas (1957). Next, we extended these for

Anatolia with the list of cities in Behar (1996), supplemented by a number of older cities named in Vryonis (1971) that met the 10,000 inhabitants criterion. For Egypt we included the cities mentioned in Table 28 from Russell (1972) as well as the older Egyptian cities indicated in the *Encyclopedia of Islam (EoI)* (Houtsma *et al.*, 1993 and Gibb *et al.* 1975-2005). To facilitate our search for city population data, we established the different Roman, Arabic, Persian, Byzantine, Christian and later local names or synonyms for all cities.

Chandler and Fox (1974) provide population data for some dozen cities in our sample and for a number of centuries. However, a considerable fraction of our data was inferred from secondary sources. We used the old (first) and the new edition of the *EoI* to find population estimates for the cities in North Africa, the Middle East and Turkey. For the then still missing periods or cities we additionally used Kennedy (1992), Woodford (1990), Raymond (2002), Escher and Wirth (1992) and various Baedeker travel guides of the areas to establish more or less hard physical data such as the surface area of a particular city in medieval times in hectares from excavations or maps, the numbers of local mosques or the numbers of public hammams in the various cities and time periods, in order to use such physical data as an indicator of the otherwise not-available numbers of inhabitants.

Generally we used a number of 150 inhabitants per hectare of surface area of a medieval city, except for "garden" cities as Baghdad, Basra and Sanaa for which we used a lower number of some 75 inhabitants per hectare. For Baghdad we therefore have come to a lower population estimate (about half) than the one presented by Chandler and Fox (1974). We additionally used a number of roughly one thousand inhabitants per mosque or public hammam when these entities had to be taken as a basis for the population estimates.[1]

Furthermore we used three accounts of Arabic travelers in North Africa and the Middle East: that of Al Muqaddasi around the year 1000 (Collins, 1994), that of Ibn Battuta in the first half of the fourteenth century (Dominique, 1995) and that of Ibn al-Mujawir in thirteenth century Arabia (Rex Smith, 2008) to finetune the various population estimates in order to prevent conflicts with contemporary observations on city sizes made by these three local travelers. Similarly, we also used other contemporary observations, whenever available. For instance, crusaders in the army of Frederic Barbarosa, passing through Konya in 1190, considered its size to be similar to that of their native Cologne (see *EoI*, vol. V, p. 253).

[1] For Ottoman Cairo Raymond presents 243 mosques, while indicating a population of 263,000 inhabitants in 1800, this comes quite close to the rule of thumb derived from other data, which we applied for some of the population estimates where other data were missing.

Therefore we have attributed a similar number of inhabitants to Konya in 1200 as we found in Bairoch *et al.* (1988) for Cologne.

With the procedure that we followed we will have undoubtedly missed a number of the cities in North Africa, Turkey and the Middle East, which at some moment during the millennium of our analysis would have just qualified for the size criterion we use. Also, we do not deny that our population estimates will at times err on the exact number of people living in a certain city in a certain century. However, given our substantial search using many different sources we feel confident that we have limited the amount of error the best we could, giving a very accurate picture of city population development in the Middle East and North Africa.

- The Arab Peninsula in some more detail

We will elaborate in a bit more detail on the process of size estimations of the cities on the Arabian Peninsula (one of the most difficult regions to get accurate city population estimates) to let the reader get a feel for the line of reasoning that we followed to arrive at our population estimates.

For the Arabian Peninsula we concentrated on collecting information on the city sizes of Aden, Jeddah, Medina, Mecca, Muscat, Mokka, Sanaa, Zabid and Taizz. Other potential Arabian cities such as Aqaba, Taif and Salalah dropped out of the analysis because we did not find any information indicating they passed the size criterion of 10,000 inhabitants at some time during the period 800 to 1800.

For Medina we found two walled surface areas: 40 ha with four gates in 1160 and 125 ha with eight gates in 1520 (Freeman-Grenville, 1993). We also found that the size of Medina was approximately half that of Mecca. For Mecca in 1850 we found a population estimate of 30,000 to 45,000 inhabitants (Burton, 1969). This resulted in a point estimate of 38,000 inhabitants around 1800, based on considering the population in Mecca in to be similar to that a half-century later. For the period 1500 to 1800 Mecca was under control of the Ottoman Empire, and we considered it to be unchanging in size.[2] Burton describes that the population of Mecca was in fact exploiting a whole industry that made a living from the yearly hadj of Islamic believers. Mecca could accommodate three times as many pilgrims during the hadj as it had inhabitants, leading to a number of some 100,000 to 150,000 pilgrims per year around

[2] The French traveler de Thévenot describes Mecca in 1658 as being as populous as Marseille in France, which would imply a number of around 40k inhabitants, similar in size range as we estimated, see de Thévenot (1689, 490).

the year 1800. Taking into account that the total population of the Muslim world was considerably smaller in 800 than it was in 1800, and taking into account that the size of Medina increased over time, we think it is not too bold to assume that the size of Mecca would have been lower in 800 than what we found in 1800 and opted for some 20,000 inhabitants in 800, to still allow for a serious contribution of its inhabitants to the hadj industry.[3] The population sizes of Mecca between 800 and 1500 have been found by linear interpolation, with as an exception the year 1400 (estimated as 70% of that in 1300), as it was the century after the Black Death.

According to the *EoI* Jeddah had some 10,000 inhabitants in the period 1000 to 1600, of course we made the regular exception for 1400 (70%, Black Death). We know that Aden declined in the early seventeenth century (Barendse, 2002, 16), and it eventually had a population of less than one thousand inhabitants in 1800. Dumper and Stanley (2007) indicate that Aden was an important commercial center between 1173 and 1538, therefore we assumed a population of 15,000 in 1200-1500 and a lower 10,000 inhabitants in 1600. The Portuguese captured Muscat in 1506 and then its 7,000 inhabitants are reported to have been killed. In 1800 Muscat was at its zenith of power, but reported to be smaller than Basra, therefore we assumed 15,000 inhabitants in 1800 and a slightly lower 10,000 in 1700. Mokka was not important before the sixteenth century and it was in decline after 1609, therefore we amply attributed it with 10,000 inhabitants in 1600. Sanaa was a garden city of 425 ha in the fifteenth century with seven gates and 17 hammams, suggesting around 25,000 inhabitants (at some 60 inhabitants/ha). In 861 Sanaa got its first city wall, and therefore we attributed 10,000 inhabitants to it in 900, with a linear interpolation for the numbers of inhabitants in the periods in between. Zabid had a medieval surface area of some 200 ha with four gates, and in 1800 it is reported to have been half its previous size. We therefore attributed Zabid with 12,000 inhabitants in the period 1200 to 1500, and let it decline to 10,000 in 1600 and below the size criterion afterwards. Taiz was a capital city from 1230 to 1440, therefore we assumed 10,000 inhabitants in 1300, dropping below the criterion in 1400 and thereafter.

[3] Our estimate for 800 with 20k is considerably lower than that of Chandler and Fox (1974) who come with an estimate of 100k inhabitants in Mecca. We think that our lower population estimate is more plausible however, and that probably it may be even somewhat on the high side. Charles Schefer (1881, 188) translated the travels of Nasir-I- Khusraw who traveled to Mecca slightly before 1050. Khusraw ascribes approximately 2.5 thousand adult males to Mecca during his visit. This suggests a total population size of some 13k for Mecca .

Reliability of estimates of urban population

To get a feeling for the reliability of our dataset, we compared our collected data to other sources reporting urbanization and/or actual city population numbers. For Western Europe between 1500 and 1800 we can compare with Jan de Vries' compilation of similar estimates. The differences are small: the correlation coefficient ranges from 0.986 (for both 1500 and 1800) to 0.992, showing how close the two datasets are. A similar comparison with the Malanima (1998) dataset of Italian cities in the period 1300-1800 shows somewhat larger differences, but still the correlation is never below 0.90 [0.903 in 1300 to be precise]. The fit is generally somewhat lower for the pre 1500 period, for which in general the data are less good. From 1600 onwards the correlation between our and Malanima's data is never below 0.98. The very high correlation between our data and these two other datasets provide some additional confidence in our data.

For the data on cities in the Middle East and North Africa no other city population datasets exist to our knowledge, but we can compare with the estimates of urbanization rates in the Ottoman Empire (which covered most of the Middle East and North Africa from about the sixteenth century onwards) reported by Sevket Pamuk. These are generally slightly higher than our estimates[4], probably because we miss a few small cities close to the 10,000 threshold. According to Pamuk's estimates the urbanization rate in the Ottoman Empire increased from 9,2% in 1500 to 12,2 % in 1820. In the Middle East and North Africa (which was with the exception of Morocco, largely under control of the Ottoman Empire from about 1600 onwards) we find an urbanization rate of 8.1% in 1600 and 10.2% in 1800.

Country population

To allow us to calculate urbanization rates, we took the country population numbers from McEvedy and Jones (1979). They provide centennial population estimates for countries based on the country boundaries present during McEvedy and Jones' period of investigation. In calculating urbanization rates in Figure 3 in the main text, we therefore used a geographical definition of Europe and the Islamic World (see Figure 1 in the main text). See also footnote 19 in the main text.

GEOGRAPHY

Transportation possibilities – sea, rivers, Roman roads and caravan routes

[4] The data on the Ottoman Empire were kindly shared with us by Sevket Pamuk.

Geographical information concerning the location of a city at a sea coast and along navigable waterways comes from Dumont and Miermans (1959). When a town was indicated to be lying along a waterway that is presented on one of the maps with a scale of at least 1:2,000,000 it was classified as being located along a navigable waterway. It was classified at sea when there was a possibility to beach or harbor boats along the coast where the city was located. The presence of a Roman road or a hub of Roman roads (two or more meeting) was collected from Hammond (1981) and Talbert (2000). To determine if a city was lying on a Roman road or at sea, the original location of the city and coastline was used as a criterion and not the current sometimes much more extensive surface that a city occupies nor the current position of the coastlines. As a result, for a few cities such as Ephesus, Bruges or Seville their location at sea changes over time due to variations in the local coastline or by the actual displacement of a city (as happened with Damietta: after it had been captured by the Crusaders and then recaptured by Islamic forces, they moved the city away from the coast to protect it from future sea-borne attacks).

The information on caravan routes in the Middle East and North Africa was derived from maps by Barraclough (1981, p. 134-136), Roolvink (1957, p. 16-17), Rostovtzeff (1971, p. 2) and Kennedy (2002). For Anatolia the information on caravan routes was collected from the new edition of the *Encyclopaedia of Islam*: in the lemma: "Anadolu" (*EoI*, vol. I, map between p. 480-481). We used the map of roads in seventeenth-century Turkey and only counted the double tracks as important caravan roads and used this information to classify whether or not cities were lying on a caravan route or a hub of caravan routes (two or more meeting).

Coordinates

For the European cities we used the coordinates provided in Bairoch et al. (1988). For the cities in the Middle East and North Africa, we collected each city's geographical coordinates (latitude and longitude) from *http://*www.heavens-above.com a website that provides the coordinates of over 2 million places in the world. We also used this website to verify the coordinates provided in Bairoch et al. (1988) for our European cities resulting in a few changes in the original Bairoch et al. (1988) coordinates (double-checked in Google Earth). We use these coordinates to calculate the great circle distance between each specific pair of cities in our sample. These distances are the input into our *Urban Potential (UP)* measures, see expression (1) in the main text, and the various other distance measures we use in Table A5 in Appendix A.

Elevation and ruggedness

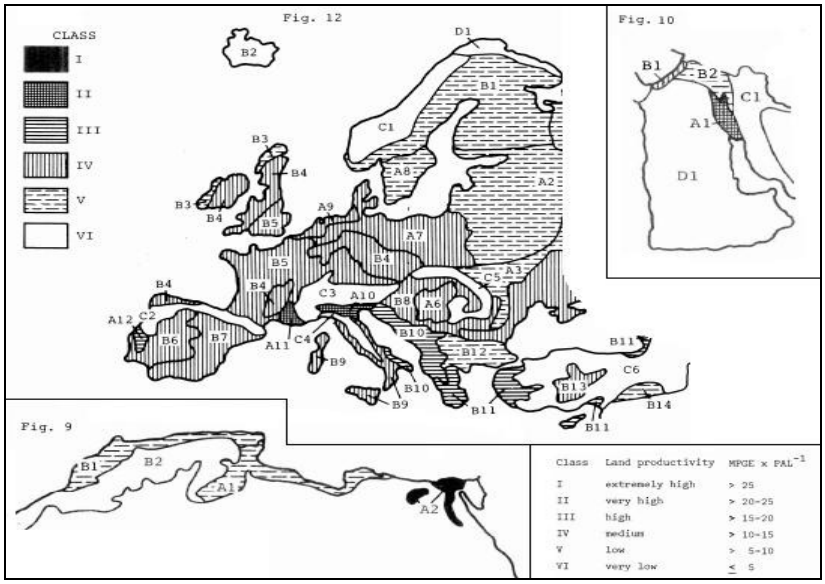
As a proxy for a city's accessibility (as well as its agricultural potential) we used its elevation above sea level, and the ruggedness of the terrain within 10km of each location. This variable is obtained from the Global Land One-km Base Elevation Project (Globe) of the US National Geophysical Data Center. We assign each city an elevation by matching its coordinates to the GLOBE database. Furthermore we calculate ruggedness as the standard deviation of the elevation of the terrain within 10 km from each city.

Agricultural potential

We capture the agricultural potential of each city's immediate hinterland using two sources. First, in a study to compute the absolute maximum food production in the world, Buringh *et al*. (1975) classify the world's landmass into six different productivity classes on the basis of its agricultural potential. This distinction in classes is based on the available land resources, potential agricultural land, climate and a factor for water deficiency, that together determine the *maximum production of grain equivalents of potential agricultural land* (MPGE/PAL), measured in tons per hectare per year. An advantage of this particular study is that it explicitly focuses on the agricultural potential of each part of the world on the basis of soil quality, climatic conditions, instead of looking at actual production.

Figure A1 shows the geographical distribution of the six classes in the two regions that we consider in this paper. It ranges from the superb agricultural potential (class I) of the Nile, Po, and Euphrates and Tigris River valleys with an agricultural potential of more than 20 MPGE/PAL, to the average agricultural potential (class IV) in most parts of Europe (10-15 MPGE/PAL), to the dismal agricultural conditions (class VI, a potential of less than 5 MPEG/PAL) in the Sahara, the Pyrenees, or the Alps.

Figure A1 Agricultural potential



Notes: compilation of figures 9, 10 and 12 and Table 11 taken from Buringh *et al.* (1975). MPGE/PAL denotes the maximum production of grain equivalents in tons per year per hectare.

Second, we use geographically more detailed data from Ramankutty et al. (2002). That study combines information on climatic conditions (surface air temperature, precipitation and potential sunshine hours) and soil quality (total organic content [carbon density], availability of nutrients [pH] and water holding capacity) into one index indicating the probability that a certain location will be cultivated. This data is available in gridded form at a resolution of 0.5 degrees latitude-longitude (in case of our sample this corresponds to a grid of on average 55 km by 39 km). We match each of our cities to this data on the basis of its coordinates. Locations within the same grid cell are assigned the same cultivation probability.

INSTITUTIONS

Capital cities

We characterize capital cities from the maps of the different political entities that were indicated in the historical atlases by McEvedy (1977a,b). Because of the large scale of these maps relatively small entities (e.g. city-states) will not always have been indicated and cities might be missed as capitals. Also, for some medieval empires such as the German where there were no natural administrative centers during a large part of their history this leads to the situation that capital cities there only start to appear at the end of the Middle Ages. In the early medieval period for instance Charlemagne did not have a specific capital city and due to the size of his realm his court used to travel from place to place.

- Medieval map as a check

As a touchstone of our capital city data (and also to some extent of our population numbers) we used a medieval Catalan world map (Paris, BnF, Esp 30) that describes the known world (to Catalans of course) around 1375. Grosjean (1977) gives a detailed description of this *mapa mundi*. His description shows that, on this map, the most important residencies or capital cities have been indicated in red with a flag. The somewhat less important cities were indicated in red too but without a flag while even smaller cities were indicated in black. The average numbers of inhabitants in 1400 in our database are 59,100 for the cities indicated in red with a flag on the Catalan world map, 19,400 inhabitants for the cities only indicated in red and on average a mere 8,700 for the cities with a name in black. Indicative for the situation with a capital city in Germany is that none of the German cities has got a flag with it on the Catalan world map of 1375, while for instance the not too distant capital cities of Prague (Bohemia) and Krakow (Poland) were both indicated in red with a flag on this map.

Universities

The numbers of universities in the various cities and their dates of foundation have been mainly characterized from the ninth edition of the *Encyclopaedia Britannica* (1898) and Jedin *et al.* (1980). For the Islamic countries the there prevailing and sometimes high numbers of madrasas (e.g. 150 in Damascus in 1500), which by some authors have been classified as universities (Eche, 1967, p.150), have not been classified by us as such because the higher education they offered was more comparable to that at a western college than that at a real university. (Huff, 2003, p. 77). Huff (2003, p. 179) sees the European uniqueness of universities at three distinct levels: legal and organizational, curricula, and philosophical and metaphysical. As a result, we only classified the Muslim cities of Istanbul, Fez, Cairo and Baghdad to be home to a university. These four universities were the most important centers of learning in the Islamic World; moreover they are among the oldest in our sample. In Europe, with the exception of the medical school in Salerno (established in the ninth century), universities start to make an appearance in the twelfth century and their number rapidly increases over the centuries thereafter.

Madrasas

To further capture the main educational institution in the Islamic World, we collected information on the numbers of madrasas per city and per century. The numbers of madrasas have been collected from Brandenburg (1978), the city specific lemmas in the *EoI* or

sometimes other available secondary sources. We used this information to construct a dummy variable indicating whether at least one madrasa was present in a city in a particular century (see also footnote 14 in the main text). We opted for a dummy variable to prevent conflicting numbers of madrasas from different sources to influence our analyses (the number of madrasas reported in different sources can sometime vary widely). Also, madrasas come in very different sizes (it could refer to a small school in a mosque or to the very large Islamic universities such as Al-Azhar or Al-Qarawiyyin). As such it is difficult to know what the actual numbers mean (this also explains the varying numbers reported in the literature). We think that the use of a simple dummy variable is a cautious way of using our madrasa information. Also, given the close relationship between a mosque and the madrasa using the actual number of madrasas (similar to using the number of churches) has an almost one-to-one relation to the number of people in a city (i.e. using a simple dummy variable to some extent, although far from perfect, limits reverse causality issues; see also the discussion at the end of section 4.2.2 in the main text). We did not look for madrasas in the Christian world.

Local participative government – the commune variable

For the dates of the first appearance or the loss of a local urban participative organization we used specialized studies, such as e.g. that of Charles Petit-Dutaillis (1970) for France, where possible. However, as such studies unfortunately are sparse we mainly had to rely on other secondary sources for our information on the local urban political organization. For a general overview in medieval Europe we used the city-specific descriptions in the *Lexikon des Mittelalters (LdM),* in which a mentioning of the occurrence of a commune, consuls or a town council (*Rat, raad, vroedschap, conseil, consejo, conselho*) in the city-specific lemmas was used to classify the various towns in our sample and attach a date (in the form of the subsequent whole century) to the first signs of a local administration in which (at least part of) the citizens participated. This source (*LdM*), which covers the period of the Middle Ages, had to be supplemented with various others to expand the period to 1800 and also to fill gaps in its coverage. Wikipedia e.g. presented supplementary information on the occurrence of local councils in the UK for the 178 reformed boroughs from the Municipal Corporations Act from 1835 and the boroughs incorporated in England and Wales 1835-1882.

As a general fall back option when the *Lexikon des Mittelalters* failed to present the sought after information on a local town council, we used the mentioning of the building date of a town hall in that specific city as a proxy for the first appearance of local participative government. The building dates of town halls were generally collected from the various area

specific Baedeker travel guides, complemented with the city-specific lemmas for Italy from the *Enciclopedia Italiana, di szienze, lettre ed arti*, (published by: Instituto Giovanni Trecani, 1929) for Spain from the *Enciclopedia Universal Ilustrada* (published by: J. Espase-Calpe, 1905) and for Portugal from the *Grande Enciclopédia portuguesa e brasileira* (published by: Editorial Encyclopedia, 1936). Of course we also checked whether these encyclopedias gave more specific information on the occurrence of local participative government in the various cities. If so, such information was preferentially used. For the building dates of Dutch town halls we used the *Kunstreisboek voor Nederland* (published by: P.N. van Kampen, 1960) as a complementary source and for Germany Wikipedia readily presented us with this building information on the halls of the various towns in our sample.

To translate a building date of a town hall into the first sign of a local political administration we used a simple rule of thumb: we assumed that a town council would have been functioning at the turn of the century preceding the presented building date of a town hall. When a building date of a town hall was indicated to have been that of the second town hall in succession, we assumed the local participative administration to have begun even two centuries earlier, to compensate for the demise of the previous town hall (by assuming a rather conservative useful life of only two centuries for the first town hall). Naturally, the procedure used above with building dates of town halls as a proxy for missing information on the appearance of a local participative administration will lead to some misclassifications, as building dates of town halls are only rough proxies of the occurrence of town councils.

When information on building dates of town halls was missing too, we used information on the first time a town was described as a *ciudad* (Spain), or when city rights were granted (Spain, Portugal, Hungary, Poland and Yugoslavia) as a different proxy for the appearance of a local administration. The sources of this information on city rights were the *Lexikon des Mittelalters,* and the various other encyclopedias we used (see above and the references). As a basic rule of thumb we decided that a local council evolved in the first turn of the century after the granting of city rights to a town. Quite often city rights granted were belonging to a specific category (e.g. those of Magdeburg, Lübeck, etc.), under auspices of such city rights it was more often then not customary for a local council to operate, therefore we think such an assumption based on the proxy of city rights may be justified. Generally however, we preferred more direct data, if available, on the occurrence of a commune, council or consuls, above those on building dates of town halls or city rights.

Whenever there were no clear indications of either a specific stop of a council or an inclusion of a city (and its council) into a hereditary seigneurie we assumed the local

participative institutions to have functioned until 1800. Charles Petit-Dutaillis (1970, p. 193) indicates for France the following: « *Notons d' abord que généralement les communes françaises qui existaient à la fin du Moyen Age ont subsisté jusque à la Révolution.* » However, sometimes the various sources listed above reported dates at which a local participative administration in a town stopped functioning. If so, these dates of course have been used. For instance, at times a ruler punished a disobedient or insurgent city by dissolving its city council and quite often he then designated a specific administrator to the city. In other instances, which happened regularly in Italy, an initially participative town council was eventually taken over by an important and powerful local family. The occurrence of such hereditary seigneuries indicates that the participative aspect in the local administration disappears and for these towns we have ended the indication of a commune. The rule of thumb we applied for such a change to occur, is the occurrence of the second generation of a certain family indicated as local town rulers. For the different towns in the Balkans we assumed that the local participative organizations disappeared after they were conquered by the Ottomans.

National political organization – political entities.

The individual cities have been classified according to the political entities they belonged to at the end of each century between 800 and 1800. The information to do this comes from the Periodical Historical Atlas of Europe, expert version 1.2, by Christos Nüssli (2003). It leads to a total of more than 400 different political entities that were active at some time in the period. Based on this information, we use the following two variables in our analyses:

Large state dummy

The individual cities that were located in a large state have been classified with the large state dummy. Large here refers to the surface area controlled by a particular state. The following 37 states or political entities with a large surface area in the Periodical Historical Atlas of Europe have been classified as a large state: Ottoman Empire; Austrian Monarchy; Kingdom of Naples; Kingdom of France ([West] Frankish Kingdom); French Republic; Kingdom of Spain; Kingdom of Portugal; Kingdom of Morocco; Kingdom of England; Kingdom of Denmark; Kingdom of Sweden; Prussia / Brandenburg; Poland ; Venice; Sultanate of Egypt; Hungary; Castile / Leon; Kingdom of Aragon; Ilkhan Empire; Dominions of the Ayyubids ; Dominions of the Almohades; Fatimid Caliphate; Dominions of the Almoravids; Roman Empire (Byzantium); Abbasid Caliphate of Baghdad; Omayyad Emirate of Cordoba; Holy

Roman Empire; Tulunid Emirate; Aghlabid Kingdom; Idrissid Kingdom; Caroligian Empire; Kingdom of Italy; Bulgarian Khanate/Empire; Burgundy (Upper and Lower); State of the Maranids; Hafsid Kingdom; Federation of the 'White Sheep'. This classification can be argued to be somewhat arbitrary, but basing this large-state dummy on a smaller subset of only the largest states gives very similar results to those presented in the main text. Results available upon request.

Active parliaments

The literature on the development of Parliaments in Europe makes a clear distinction between royal councils and 'modern' Parliaments. The latter is, in line with Antonio Marongiu (1968), the author of a seminal overview of the rise of Medieval Parliaments, an independent body, representing the subjects of the realm, containing members of three estates (the clergy, the nobility and the cities – in a few cases also the peasantry was represented as well), whose main functions are the granting of taxes and the participation in realm-binding legislation, while sometimes its functions might include the high court of justice, foreign relations (decisions on war and peace) or the appointment or abdication of a sovereign. What distinguishes the Parliament from a council or an ad hoc assembly is that it forms an independent body, a legal and political entity, with certain rights and obligations, which guarantees the continuity of its activities (Marongiu, 1968, p. 47). We classified a parliament as active when it had at least one meeting during the previous century. The second major difference with previous royal councils is the presence of representatives of the cities in Parliament – if only the Church and the nobility are present, we do not consider the institution to be a fully developed Parliament. For more information we refer to van Zanden *et al.,* (forthcoming). Based on our list of active parliaments, we constructed our active-parliament dummy variable by documenting whether a city in a particular century fell within a political entity defined by Nüssli (2003) that had an active parliament.

Religious data: Church organization, holy cities, and cities' main religious orientation

(Arch)bishoprics

We use Jedin *et al.* (1980) for the data on the Episcopal organization (bishopric, archbishopric) and their foundation dates for the various cities in our sample. Additional information on the demise or relocation of bishoprics has been found in Wikipedia under "Roman Catholic (arch)diocese of…", or under the city-specific lemma in the English, French or German editions of Wikipedia. As both Europe and the Islamic World shared a common

Christian heritage, these (arch)bishops are found throughout both regions. Bishoprics and archbishoprics in Islamic cities therefore always concern the various Christian minorities in these cities. We assumed that a local (Byzantine) bishopric still functioned during the first century after the Muslim conversion, where after it ceased to function in practice (a process that has been described for many Anatolian cities by Vryonis, 1971). To the extent that these (arch)bishops continued to wield power, this always concerned only the various Christian minorities in these cities, and they no longer played an important part in deciding on worldly matters.

Second, we used the *Atlas of Church History* by Jedin *et al.* (1980) to categorize the main religious orientation (Christian or Muslim) of a city. Especially in the Iberian Peninsula, Italy (Palermo), in the Balkans and Turkey (former Byzantine Empire), and during the crusades the religious orientation in a number of cities shifted between Muslim and Christian or vice versa during our sample period. For Turkish cities we used Vryonis (1971) or the *Encyclopaedia of Islam* (EoI) to establish the conversion dates of the rulers of a city.

Holy Cities

The nature of the Islamic faith, which lacks a structured religious organization like that of the Roman Catholic or Eastern Orthodox Churches, unfortunately does not allow us to characterize and arrange Muslim cities in a similar administrative way as we could do for the Christian bishop and archbishop cities (Makdisi, 1981 p.282). To also say something about a possible effect of cities' religious importance in the Islamic World, we construct a dummy variable indicating Islam's four most holy places: Mecca, Medina, Jerusalem and Damascus. To treat the Christian data in a similar way we also constructed a dummy variable indicating four of the most important (holy) cities in the Christian World: Jerusalem, Rome, Byzantium and Santiago de Compostella.

Plunder of cities

We have classified the individual cities in our database according to the number of times they have been physically plundered during each century. "Plunder" is hereby defined as the near complete demolition, looting, carnage or burning down of a city or the killing or deportation of the major part of its inhabitants. Lots of conquests and captures of cities were not accompanied by plunder as we defined it above. Only a rather limited number of cities have been actually "plundered" during history, compared to the numbers of times a regime changed by a new ruler moving in. At the city level such a "plunder" of course had serious short-term

consequences. The information on the plunder of cities was collected from the *Lexikon des Mittelalters*, *EoI,* other encyclopedias, and the various city-specific sites of Wikipedia. To give an example: according to our definition the Crusaders "plundered" Constantinople in 1204; while in 1453 with the conquest by the Ottomans, it was not "plundered". The *EoI* (vol iv, p 234), reports only a few hours of plunder after the Byzantine surrender that was called off abruptly by Sultan Mehmed II when he realized he wanted the city to become his capital and wanted it unscathed, thereby reneging his previous promises to his military of a three day plunder of the entire city.

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