Trade and Political Fragmentation on the Silk Roads: The Economic and Cultural Effects of Historical Exchange between China and the Muslim East

Lisa Blaydes* Christopher Paik†

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Abstract

The Silk Roads stretched across Eurasia, connecting East and West for centuries. At its height, the network of trade routes enabled merchants to travel from China to the Mediterranean Sea, carrying with them high-value commercial goods, the exchange of which encouraged urban growth and prosperity. In this paper, we examine the extent to which urban centers thrived or withered as a function of political shocks to trade routes, particularly the fragmentation of state and imperial control along natural travel paths. We find that political fragmentation along the roads to Aleppo and historic Chang'an — major terminus locations for cross-regional trade — damaged city growth. Alongside inter-regional trade, the Silk Roads also connected China to the Muslim East by facilitating forms of religious and cultural exchange, including the transmission of ideas, values and aesthetic traditions. We trace one effect of historical Silk Roads trade on the contemporary period — cultural affinity as measured through commonality of basic values. Our findings suggest that pre-modern patterns of economic and cultural exchange have implications for the success of contemporary Chinese soft power projection in Western Asia.

*Department of Political Science, Stanford University
†Division of Social Science, New York University Abu Dhabi

In 2013, Chinese President Xi Jinping officially launched the "One Belt, One Road" Initiative later re-branded as the "Belt and Road" Initiative. Hailed as a new Silk Road, the project invests billions of dollars in infrastructure development to promote economic integration of China with Western Asia, particularly countries of Central Asia and the Middle East. The desire to recreate aspects of commercial integration of China and the Middle East raises a series of important empirical questions — what impact has historical overland trade had on the economic development trajectories of China and Muslim East? And do those historical economic ties have legacy effects today?

Merchants long sought to connect major urban centers across East and West Asia through luxury goods trade in silk, porcelain and spices. Scholars focused on historical Silk Roads trade emphasize the dangers associated with overland exchange (e.g., Millward 2007; Frankopan 2016). Scholarship in this vein suggests that political fragmentation may have been a hindrance to gains from cross-cultural trade. We home in on historical overland trade between China and the Middle East to show the economic effects of political shocks on city size. We find that greater political fragmentation on the roads to Aleppo and historic Chang'an (contemporary Xi'an) — major Silk Road terminus points — damaged gains from trade since merchants had to contend with uncertainty on their route. These results persist even after controlling for both city and time fixed effects, among other control variables, as well as the Chinese tribute-system, which created commercial, diplomatic and security ties between imperial China and smaller, surrounding polities.

Next, we consider the long-term cultural legacy effects associated with these historical trade routes. We find that countries along the Silk Roads enjoy a higher degree of cultural affinity today, even after taking into account a variety of geographic and other variables. These results suggest that there are important legacies associated with historical exchange that have the potential to impact forms of political conflict and cooperation in the contemporary period. Existing scholarship has argued that there is an ideational mismatch between China and major world powers, limiting China's ability to project power globally (e.g., Allan et al. 2018). Our results suggest that China may enjoy an outsized ability to project power in countries located along the historical Silk Roads as a result of shared cultural values transmitted via past exchange. And because these countries are important investment targets of the Belt and Road Initiative, growing trade integration within Asia raises important questions about the political implications of Chinese soft power projection efforts.

Our findings speak to key debates about the political and cultural determinants of economic cooperation and prosperity. Although scholars have debated the extent to which the prevailing liberal economic order relies on shared values versus raw military and material power, few would argue with the contention that shared values among Western powers have facilitated cooperation. If culture 'greases the wheels' of alliance, our findings suggest that Chinese efforts at a counter-hegemonic project based on economic cooperation with Western Asia may present unique opportunities for Chinese efforts at global influence.

The empirical results we present also speak to the question of how jurisdictional uncertainty impacts the gains from cooperation. Scholars have long argued that a well-ordered world is conducive to trade and communication. For example, territorial disputes can hinder economic exchange; empirical evidence suggests that conflict disrupts trade (Anderton and Carter 2001) and that there are large and persistent negative impacts of war on economic welfare (Glick and Taylor 2010). Beyond that, Simmons (2005, 843) argues that the question of "who is formally sovereign over what geographical space" is a first-order concern where ambiguity regarding rules and legal protections leads to fewer cross-border transactions. Epstein (2000, 8) finds that jurisdictional fragmentation increased "negotiation, enforcement and exaction costs" associated with historical trade. For example, fragmentation created potential for extraction by actors like the medieval "robber barons" (or "robber knights") who imposed

high taxes and tolls on rivers and roads that were located in their territory. Cox (2017, 726) defines the phenomenon more generally as intra-route fragmentation — the split in governing authority along a single shipping route, a situation which leads to over-taxation of the common pool of merchants. Our analysis provides an empirical assessment of how barriers to trade hindered pre-modern economic development.

The Global Economic Order before Western Hegemony

Europe's Age of Exploration and, later, the Industrial Revolution ushered into existence new global patterns that disrupted long-standing trade and cultural ties. Existing scholarly work, however, suggests the lack of a global economic hegemony before the 18th century.[1] Frank (1998, 324) writes that until at least 1700, there was nothing "exceptional" about Europe other than its relative marginality and "correspondingly minor role in the world economy." On the other hand, areas like Xinjiang — the current-day westernmost province in China — were locationally important as "roughly equidistant from population cores of China, India and the Mediterranean basin" (Millward 2010, 4). Indeed, historical commercial routes, like the Silk Road and Indian Ocean trade, connected economic interests in prosperous areas, like China and the Middle East, for centuries. At its height, the network of trade routes enabled merchants to exchange high-value goods across great distances, economic interactions that were crucial for urban growth and development.

Eurasia's Economic Distribution of Power

One key challenge associated with identifying the historical global distribution of economic power relates to measurement. Economists have long argued that city size is a good proxy for economic development in the pre-industrial period. For example, De Long and Shleifer (1993, 675) suggest that the population of pre-industrial European cities serves as the best available indicator of economic prosperity, contending that urban areas were key nodes of information and economic exchange that relied on high levels of agricultural productivity and economic specialization. Acemoglu et al. (2002) present both cross-sectional and time-series evidence suggesting a close empirical association between urbanization and income per capita for cities around the world in the pre-industrial period. Stasavage (2014) uses city size as a proxy for economic flourishing in his examination of comparative economic development in pre-modern Europe.

City population estimates from Africa, Europe and Asia suggest that between 1100 and 1800 CE, the largest cities in the world were located primarily in China and the Middle East.[2] Indeed, Eurasia's urban 'center of gravity' for much of the last millennium was located contemporary Iran.[3] Between 1500 and 1700, however, a more diverse set of urban centers emerged, including in Europe, South Asia, the Middle East and East Asia and by 1800 the cities of Northwestern Europe increasingly became among the world's largest, alongside Asian cities. After that point, the cities of Western Asia, long favored as a result of their position as a "commercial and migratory turntable" (Frank 1998, 75), became less prominent than in previous periods; areas of Central Asia which used to be important

[1] Abu-Lughod (1989, 364-365) argues that the world economic system in the medieval period lacked a single hegemon but instead there existed multiple core powers in a non-hierarchical, interdependent world economic system.

[2] See Figure 1 of the Supplemental Appendix.

[3] The mean longitude hovers between 60 and 62 degrees and shows no discernible shift over the course of 700 years analyzed. The mean latitude is also highly stable between 1100 and 1500, although we do observe a mean which is about two degrees further north when comparing 1500 to 1800. This likely reflects the growing population centers of northern Europe. See Table 1 in the Supplemental Appendix for more details.

crossroads "ceased to be so central to world history" as the "world historical center of gravity shifted outward, seaward, and westward" (Frank 1992, 44). Kupchan (2012, 3) argues that the world's center of power shifted from Asia and the Mediterranean to Europe by the 18th century with important implications for the ability of the West to use "its power and purpose to anchor a globalized world."

Trade, Fragmentation and Political Order

One reason that the Middle East and Central Asia thrived for so long relates to the central location of the region with regard to trade routes. Among the most prominent of these routes were the Silk Roads. The term "Silk Road" refers to "all the different overland routes leading west out of China through Central Asia to Syria and beyond" (Hansen 2012, 235).[4] Christian (2000, 3) defines the Silk Roads as "the long- and middle-distance land routes by which goods, ideas, and people were exchanged" between major regions of Eurasia. Commodities included on these trans-Eurasian trade routes included raw silk or yarn; finished silk fabrics; and other luxury goods like coral, pearls, glass, jade, gems, perfumes and incense (von Glahn 2016, 197). During the medieval and early modern periods, Chinese-Middle Eastern trade was both a reflection and driver of economic prosperity for both regions.

Yet, trade ties could be disrupted. How did shocks to trade impact the growth of cities in China and the Muslim East? And how did the rise of the Western international order damage these historical trade ties? Blaydes and Paik (forthcoming) find that proximity to historical Muslim trade routes was positively associated with urbanization in 1200 but not in 1800. In other words, Middle Eastern and Central Asian cities — long beneficiaries of locational centrality between Europe and Asia — declined as Europeans found alternative routes to the East and opened new trade opportunities in the New World.[5]

In this paper, we focus on another disruption to trade — political fragmentation — that likely damaged economic growth along major land routes connecting Western to Eastern Asia. Why focus on Asia? Beyond the need to de-center world historical studies away from a focus on Europe, there are theoretical and empirical benefits from such an approach. First, as discussed in the previous section the Eurasian urban of center of gravity was located in Asia. The Middle East and China — despite important differences of religion and philosophy — shared historical parallels, including their vulnerability to external actors, like nomadic tribesmen (Harris 1993, 23).[6] Park (2012, 191) writes that, "the history of contact and exchange between China and the Islamic world offers one of the most remarkable cases of pre-European encounter because it involves tremendous wealth, transformative ideas, and great power." While exchange continued, largely without interruption for eight centuries, changing political dynamics did create different phases and conditions associated with these interconnections (Park 2012, 191).

Second, we pick up on threads within the existing literature which suggest that China served as the global economic heavyweight with which other cultures sought to trade. Andre Gunder Frank is one of the most prominent proponents of this perspective. According to Frank (1998, 111), China was "unrivaled" in its production of luxury consumer goods like porcelain ceramics and silks. As parts

[4]The term "Silk Road" did not exist before 1877 (Hansen 2012, 235).

[5]This is not to say that mastery of long-distance seafaring was an accident. European navigational triumphs were "the result of deliberate processes of purposeful exploration" (Paine 2013).

[6]In addition, within Asia — despite its tremendous diversity — these exists an "underlying unity" associated with technologies, cultures and disease patterns (Christian 2000, 1). Eurasian merchants, including those from Safavid Iran and Uzbek Turan, were seen as coming from a "broadly similar commercial and linguistic environment" which meant that they had the ability to carry out trade within a shared and understood legal and cultural circumstance (Dale 1994, 10).

of the Middle East and Europe become wealthier, there was a strong interest in acquiring Chinese products. China has been described as exhibiting "outstanding absolute and relative productivity in manufactures" (Frank 1998, 127).[7] Frank (1998, 116-117) goes as far as to argue that "the entire world economic order was — literally — Sinocentric" until the 18th century.

Even if we take Frank's position on these issues to be extreme, relatively little scholarship has sought to understand the effects of political fragmentation outside of Europe. Much has been written about the benefits of political fragmentation in Europe where fragmentation is thought to have created conditions ripe for limited government and, eventually, economic development.[8] While an influential literature has suggested that forms of political fragmentation has been directly or indirectly good for economic development (e.g., Tilly 1990; Blaydes and Chaney 2013; Cox 2017), fragmentation also damaged the gains to trade (e.g., Epstein 2000; Simmons 2005).[9] In Eastern and Western Asia, growth-promoting institutions, like parliaments, were slow to develop; we consider the conditions which encouraged or discouraged economic exchange and development outside of the European experience. In this paper, we argue that political fragmentation hindered the exchange of goods, hurting economic prosperity — and that the most appropriate place to test this argument is in pre-modern Asia where the effects of fragmentation were not confounded by growth-promoting institutions, as were found in Europe.

The movement of merchants might be disrupted for a variety of reasons, many of which were related to political fragmentation. In particular, periods of incomplete or uncertain political control could be highly disruptive to trade. For example, tribal warfare posed a security threat (Abu-Lughod 1989, 158). According to Curtin (1984, 93-94), "to take a caravan through uncontrolled nomad country would have been dangerous in the best of circumstances." According to Harris (1993, 22), "the emergence of small warring kingdoms...made the East-West highway more dangerous and difficult and populations along the route began to decline." Beyond that, traversing a number of different polities might also lead merchants to incur multiple tolls as a result of the political fragmentation. Political fragmentation may have also increased jurisdictional uncertainty, increasing transaction costs associated with trade (Epstein 2000; Simmons 2005).[10] As a result, the importance and profitability of the Silk Roads "waxed and waned," at least in part, as a function of the political stability on the edges of agrarian civilizations of China, India, Iran and Mesopotamia" (Christian 2000, 6). Christian (2000, 6) argues that "when the agrarian civilizations or pastoralists empires dominated large sections of the Silk Roads, merchants traveled more freely, protection costs were lower, and traffic was brisk."

[7] India also produced important and valued goods. But given the predominance of sea trade opportunities — and our interest in overland trade — we are focused primarily on trade with China. Europe was considered economically and geographically marginal (Frank 1998, 324).

[8] Fragmentation is thought to have been a common feature of European history, to the point that scholars have argued that the emergence of the Roman Empire — Europe's longest experience with imperial rule — was a historical anomaly (Schiedel 2019).

[9] At least three sets of arguments seek to link political fragmentation with European institutional development. Tilly (1990) focuses on the impact of competition between small, war-prone polities on the development of national states. Blaydes and Chaney (2013) argue that the decentralized forms of political control associated with feudal institutions had positive impacts on the emergence of executive constraint. Cox (2017) argues that political fragmentation — which provided exit options for merchants — combined with self-governing cities and parliaments to facilitate forms of executive liberty.

[10] One less direct factor involved the creation of forms of cultural continuity. Rogers (2007, 263) suggests that political stability and the expansion of imperial powers encouraged the "bridging of ethnic and linguistic diversity in the construction of order" (Rogers 2007, 263). There were also significant gains to be enjoyed from this trade. Christian (2000) describes the benefits of trans-ecological exchange as including gains from the tremendous diversity of items exchanged.

The causes of political fragmentation are many and complex. At some times, large imperial units would take control of vast swaths of territory. The process by which this emerged often involved "initially consolidating groups into a single confederation" which might spread across the steppe to include new territories and peoples (Rogers 2007, 258). Rogers (2012, 206) argues that there is no obvious explanation for when and why these successful polities emerge; polities "emerged, existed, and collapsed in ways that often defy conventional understandings." State formation and collapse, then, can be thought of as caused by a complex set of factors, with a large number of contingencies and, potentially, tied to cyclical patterns (Rogers 2007, 265). Indeed, part of our approach to causal identification relies an increasing preponderance of archaeological and historical climate science evidence which suggests that state formation on the Eurasian steppe was a function of exogenous environmental factors.

One factor that might have worked against the negative effects of fragmentation was the Chinese system of tribute. Zhang (2013) describes the tribute system (*chaogong tizhi*) as embodying institutions and diplomatic norms that dominated China's relations with the non-Chinese world until the late 19th century. Kang (2010, 591) write that the East Asian tributary order was an "enduring, stable, and hierarchic system, with China clearly the hegemon" and a "viable and recognized international system with military, cultural, and economic dimensions that all intersected to create a...stable security system."[11] By providing stability and security, Chinese regional hegemony may have operated in a way consistent with hegemonic stability theory which suggests that a hegemonic distribution of power can have positive effects on trade openness (e.g., Krasner 1976; Gilpin 1981; Gilpin 1987).[12] Other scholars, however, have suggested that pre-modern China was not able to create an open trade order (Shu 2012) and that the application of a tributary-system model to historical international relations is deeply problematic (Van Lieu 2017).[13] For example, Perdue (2015) suggests that arguments suggesting a systematic Chinese tributary system are misleading given the multiple and complex relationships of trade, diplomacy and ritual between China and other Asian polities. Our empirical analysis provides evidence testing the effects of changes in tribute status on urban growth.

Trade Shocks and Economic Prosperity on the Silk Roads

Between 200 BCE and the beginning of the Common Era, overland trade between China and the eastern Mediterranean polities of the Middle East became a regular occurrence (Curtin 1984, 90). The emergence of long-distance Eurasian trade was temporally linked to the Han Dynasty's unification of China as well as Han extension of political control into the Xinjiang region. In Western Asia, the Roman Empire extended political control across the Mediterranean. The timing associated with the consolidation of these trade routes suggests a linkage between consolidation of political control in China

[11] Kang (2010, 594) writes that "Chinese civilization provided a common intellectual, linguistic, and normative framework in which to interact and resolve differences." Arguments by Kang (2010) and Wang (2013) about the ways that Confucianism may have mitigated conflicts are not intended to extend to non-Confucian tribute states, however.

[12] In return for recognizing the legitimacy of Chinese preeminence in regional affairs, "China, as the economic, military, and cultural leader, was responsible for maintaining the political and security order in the region" (Wang 2013, 213). In this setting, Confucianism served as a shared culture that helped to resolve conflicts between China and tributary states (Wang 2013, 213). Not all Asian polities were tributes of the Chinese state. Indeed, Kang (2010) writes that the semi-nomadic peoples on China's periphery were often reluctant to accept Chinese authority. And states that did maintain tributary relations with China were still able to handle their own domestic and foreign policies, separate from China (Kang 2010). That said, Kang (2010) has argued that systemic stability was good for the political regimes in these Sinicized East Asian countries.

[13] In particular, Shu (2012) argues that the regional economic order under tributary trade was never open to all states and that tributary relations were unstable because of dynastic changes in China.

and the Mediterranean basin. Thus while the location of the Silk Roads may have been determined by geographic features, like "mountain passes, valleys, and springs of water in the desert" (Hansen 2012, 235), the robustness of trade connecting urban areas may have been a function of political factors. In this section, we review some of the existing qualitative evidence regarding how forms of political stability and imperial consolidation impacted cross-cultural exchange in the pre-modern period.

Cross-cultural Trade from Late Antiquity to the Middle Ages

The Tang Dynasty (618-907 CE) coincided with the Arab conquests and the first two centuries of Islam. Scholars of the early Islamic period have suggested that the advent of Islam was an important force for breaking the control of the agrarian gentry from "Nile to Oxus" as well as the growth in importance of interregional trade (Hodgsen 1974, 65). According to Hodgsen (1974, 65), it was during this period that trade became "increasingly determinative of the fate of any given region" and mercantile and bourgeoisie interests strengthened relative to agrarian classes. The Tang Dynasty maintained military and commercial connections with Central Asian polities as far west as Persia (Benite 2011).

During this time, trade linking the Middle East and China was economically significant with implications for the growth and development of major urban centers. Caravans of horses and Batrian camels traveled from Mesopotamia to the Iranian plateau and then eastward toward the Oxus after which point there were multiple routes including those which passed through Kashgar and alternative routes that went through Kabul (Lombard 1975, 218). These trade routes not only provided the means by which goods were transmitted across huge distances but also involved the transmission of ideas, technologies and artistic practices (Christian 2000, 1; Hansen 2012, 5).

Political stability associated with large empires created the security zones under which trade might prosper. Curtin (1984, 91) argues that the "Tang Dynasty in China and the Abbasid Caliphate of Baghdad...provided imperial umbrellas over most of the trade routes between China and Mediterranean." These favorable conditions, associated with the power of contemporaneously large empires, made it relatively easy for long-distance traders to move across vast areas (Curtin 1984, 105). Under the "long reach of Tang control to the west," many Middle Eastern and European travelers were able to visit China (Curtin 1984, 105). Foreign merchants transformed small, oasis settlements across Central Asia into larger towns and cities (von Glahn 2016, 197). Merchants and agents, under the protection of local rulers, traveled with relative safety.

China's Song Dynasty (960-1279 CE) was characterized by extensive development of trade, enterprise and finance as well as specialization of production and growth of markets (von Glahn 2016, 265). According to scholars, China was "significantly transformed by market development during the eleventh century" and a growing overall economy (Liu 2015, 8). Von Glahn (2016, 293) argues that the "commercial efflorescence" of the Song period "touched virtually all quarters of Chinese society."[14] Economic growth in the Song was robust and associated with major population expansion, supportive of a robust urban culture (Chaffee 2015).[15] The Song Dynasty in China was temporally concurrent with the Islamic Golden Age, a period of economic and cultural flourishing. The dissolution of the Abbasid Caliphate introduced increasing political fragmentation of the Muslim world during this time, however.

[14]During the 13th century China had very sophisticated agriculture (Abu-Lughod 1989, 319). While family farms produced stable food products, many other items of daily consumption were acquired through market exchange (von Glahn 2016, 293).

[15]During the Song Dynasty, taxes were relatively light and there was a relatively efficacious bureaucracy and a stable currency (Golas 2015).

The Mongol Empire and its Effects on Trade

The Yuan Dynasty (1279-1368 CE), which followed the Song Dynasty, was founded by the Mongols, whose land conquests were a common shock to both the Eastern and Western parts of Asia. For the Mongols, the rich societies of China, Iran, Iraq and Anatolia were particularly appealing targets of attack while "little-known, fragmented Europe" was relatively peripheral (Sinor 1999, 40). While much has been written about the destructive aspects of Mongol rule, historians are increasingly painting a more complex picture of the overall economic impact of the Mongol invasions. While some cities never recovered from the destruction of their populations during the conquests, others saw relatively rapid rebounds in their population (Soucek 2000, 114). Manz (2011) describes both the destructive elements of the Mongol conquests as well as the new opportunities introduced for artisans and merchants.

One of the most important positive externalities associated with the creation of the Mongol Empire was the establishment of political order over regions that supported overland trade. Curtin (1984, 120) writes that "the new rulers united so much of Asia that travelers could move securely under a single authority from the shores of the Black Sea to China." Anatolia became more connected to long-distance commercial relations coming from Central and East Asia (Meloy 2011). According to Abu-Lughod (1989, 154), the Mongols created "an environment that facilitated land transit with less risk and lower protective rent." Benite (2011) argues that during this time period, larger numbers of merchants were coming to China compared to ever before, many of them from the Islamic world. One result of this increase in overland trade was that Chinese porcelain began to show up, to a greater extent, in the Middle East as well as in Europe (Meloy 2011).

Although the Mongols were a nomadic people, scholars have argued that Mongol rulers "ordered and patronized" economic exchange (Allsen 2001, 191). Manz (2011) suggests that trade was of major interest to the Mongols and that Mongol leaders directly engaged in international trade through commercial partnerships. Caravaners were "prime beneficiaries of the Pax Mongolica" as the formation of a pan-Asian Mongol Empire strongly supported overland, East-West trade (von Glahn 2016, 283). Frankopan (2016, 176) goes as far as to claim that Mongol territorial successes of the 13th century reshaped the monetary system of Eurasia.

The break-up of the Mongol Empire may have also hindered forms of economic exchange. Genghis Khan's efforts to divide the empire into parts to pass on to his sons planted the seeds of political instability (Millward 2007, 61). Subsequent internecine conflict among rival Mongol khanates encouraged a greater interest in maritime trade (von Glahn 2016, 283). This reflected a more generalized pattern that during times of political instability in Central Asia, merchants tended to turn to sea routes instead of overland trade (Schottenhammer 2015). This is not to say that the Mongol conquests were not long-term impactful; in the years after the Mongol invasions, China was able to project political power into Central Asia more effectively (Liu 2015, 99). That said, the lack of a large, overarching land empire covering the Silk Roads may have increased the cost of trade even if the Mongol conquests had important other legacies.

Cross-Regional Trade in Post-Mongol Asia

The Ming Dynasty (1368-1644), which followed the Yuan, was more conservative about foreign contacts than its predecessor; but when economic benefits could be gained from trade, merchants engaged in cross-cultural commerce, even if this required evasion of existing regulations (Rossabi 1998). During the 15th century, cross-regional trade in exotic foods, aromatics, medicines, precious metals and jewels drove long-distance commerce (Reid 2011).

By the late 15th century, China was arguably the greatest economic power in the world with a population of more than 100 million, a productive agricultural sector and craft sectors superior to other parts of Eurasia (Atwell 1998). As European markets grew in importance, demand increased for Asian perfumes, spices and silks. Many of these luxury goods traveled through Persia and the Levant, eventually arriving in Aleppo. Extensive collections of Ming Dynasty porcelain, for example, are found in the Topkapi Museum in Istanbul, Tehran's Archaeological Museum and across the Middle East and even East Africa (Atwell 1998).

Scholars disagree about how much the rise of seafaring damaged overland, Silk Roads trade (Millward 2007, 76). Millward (2007, 76-77) reflects on this disagreement, arguing that some see the early 16th century as a turning point for the Silk Roads while others not observing a decline until the late 16th century or later. Levi (2011) argues that while there were temporary traumas to long-distance trade, these disruptions were often followed by recoveries in commercial exchange. Central Asian trade routes continued to be active into the 17th century but city prosperity was impacted by economic and political transitions (Levi 2011). Samarkand, for example, suffered deurbanization during this period; these declines were not universal, however, with other cities enjoying a vibrant commercial economy (Levi 2011).

Empirical Analysis

Thus far, we have discussed a number of factors which might impact the gains from cross-cultural, overland trade. While some of these determinants are specific to particular locations, others may be vary over time; additional factors may reflect an interaction of geographic factors with time. Some of the most significant of these disruptions involved the rise and fall of land empires in Central Asia. Frank (1992, 44) describes Central Asia as the location where diverse peoples and their civilizations "connected and interacted with each other." Yet the factors that could influence the political stability of Central Asia may be difficult to predict. In this section, our goal is to understand how factors that were disruptive to trade — beyond city-specific or time-specific effects — may have impacted prosperity along the Silk Roads.[16]

One challenge associated with measuring the economic impact of trade and shocks to trade is that sources describe the location of the Silk Roads in different ways.[17] In this paper we do not attempt to introduce a set of definitive Silk Road corridors or claim to add specific route locations that have hitherto not been described in the existing literature.[18] Our aim is, instead, to establish a link between Silk Roads access and economic prosperity, as a function of opportunities and hindrances to trade. For this purpose, we find it useful to look for evidence of how natural travel paths may have been carved, and whether these paths correlate with subsequent development changes in the region. Building on existing work on geography (Frachetti et al. 2017), we suggest that these paths were not endogenous to the Silk Road trade; that is, the path of travel was not chosen with trade or commerce in mind.

[16]While a number of studies have looked at commerce in historical China, little work has sought to measure long-term changes in the impact of long-distance trade (Liu 2015, 20).

[17]For example, a UNESCO report published in 2008 claims that there are over 70,000 extant manuscripts for the Chinese section of the Eastern Silk Roads alone, in historical written records from Buddhist monks, Persians and Turkic travellers, Marco Polo, and other 13th century European visitors.

[18]Despite the abundance of documents, however, information on the specific locations of travel paths connecting major cities remains underdeveloped and primarily descriptive. See Park (2012, 31) for example about depictions of the route from Guangzhou to foreign countries as envisioned by Jia Dan c. 800, in which places of importance are simply marked as dots, and the travel paths as lines connecting them with some information on coastline locations and duration of journey, but little else.

Rather, we rely on natural geographic features to determine the least-cost route using the strategies described in Frachetti et al. (2017). In doing so, we extend their original study of a particular zone within Inner Asia to a broader Asian sample.

In particular, Frachetti et al. (2017) design a GIS algorithm to simulate and identify routes taken by nomads for seasonal travel. This exercise in identifying nomadic travel paths is focused on highland areas, at elevations between 750 to 4000 meters.[19] According to Frachetti et al. (2017), high elevation pathways were an essential part of Silk Road networks, but developed differently from those in lowland regions, the latter being predicted by terrain-based "least cost" travel algorithms on the basis of "ease of travel" and "connecting dots" between known Silk Road locations. This contrasts with the nomadic adaptive strategies that predict the Silk Road corridors in the highlands.

In higher-elevation regions, pastoralists migrated with their animals to highland pastures in the summer and travelled back to the lowlands during the winter to maximize food available for their herds. Using seasonal pasture quality and annual herding "flow accumulation" across highlands in Asia, Frachetti et al. (2017) create an empirical link between nomadic mobility and Silk Road pathways. Importantly, when generating the flow model, the authors do not include Silk Road routes or locations as part of the algorithmic input. As a result, the herding paths that predict subsequent Silk Road routes plausibly circumvent endogeneity concerns since existing patterns of urbanization did not impact pastoralists as they sought the best available land for animal grazing.[20] In other words, herding routes were not intended to connect population settlements, at least initially. Rather, they were pathways to secluded, rich grasslands that subsequently became corridors of commerce and travel.[21] Frachetti et al. (2017) use this flow accumulation model to create a network of short-distance herding corridors that are highly correlated with Silk Road travel routes.[22] The top panel of Figure 1 shows different characterizations of historical Silk Roads; the bottom panel shows an extension of the Frachetti et al. (2017) strategy for identifying nomadic corridors for all of Asia, when we use the same approach and extend the simulation scope to all of the highlands (750-4,000 meter range) in Asia.[23]

Our empirical analysis seeks to assess whether the Silk Roads, proxied by the nomadic migration corridors in the highlands and least-cost routes in low-lying areas, can explain changes in economic development. Our proxy for economic development is urban population size for eighty-five East, West and Central Asian cities for the years 1100 to 1800 CE, on the fifty-year interval. Our panel data set excludes South and Southeast Asia since trade in those regions was more likely to occur via sea routes rather than the overland routes that are the focus of this analysis.[24] Our data come from Chandler and Fox (1974) and contain all the cities which appear at least once on any of the lists

[19]Frachetti et al. (2017) describe this range of elevation to categorize the highlands as different from the lowlands (below 750 meters), which have productive pasture lands that are destroyed by summer heat and aridity, and the upper highlands (above 4,000 meters) that have limited pasture due to permafrost and poor soil quality.

[20]If anything, each herder had an incentive to seek untouched, uninhabited spots away from other groups of herders.

[21]The pastoralist model in Frachetti et al. (2017) employs the same flow accumulation algorithm used to simulate flow of water sources through a watershed. Just as water is pulled to a lower elevation by gravity, the model replaces the grass quality for gravity and animal herds for water, and uses the flow accumulation algorithm to calculate how the pasture quality directs flows of seasonally nomadic herders across the highlands.

[22]This result gives us confidence that the nomadic migration corridors are good proxies for the historical Silk Road passages. For further details, see Frachetti et al. (2017).

[23]Specifically, the geographical extent of this exercise spans from 25 to 135 degrees in longitude, and 5 to 56 degrees in latitude. Frachetti et al. (2017) focuses on the inner Asian mountain corridors of Central Asia, those areas mainly connecting present-day Tajikistan, Kyrgyzstan, Kazakhstan and China.

[24]In particular, we restrict our sample to those located above the 25-degree latitude. Furthermore, the highlands of the nomadic people in Central Asia, characterized as grasslands in Frachetti et al. (2017), are different from the tropic and quasi-tropic forest highlands in Southeast Asia, in which rice cultivation rather than herding would have been common. Given our empirical approach to simulating nomadic migration corridors, it would make little sense to extend

for the world's largest cities across these time periods.[25] Why operationalize economic growth and trade-related prosperity with city size? Beyond the existing literature in economics endorsing such an approach (De Long and Shleifer 1993; Acemoglu et al. 2002; Stasavage 2014), qualitative historical analysis also draws links between overland Eurasian trade and city growth. For example, Lary (2012, 51) argues that trade supported merchants who settled in the cities of Central Asia. Commercial markets created dense networks of exchange which reflected forms of product specialization (Wong 1997, 20). Christian (2000, 9) writes that "the urban geography of the Silk Roads...points to the importance of the trans-ecological routes," with important cities, like Kashgar and Bukhara, located on major trade paths.[26]

For our empirical analysis, we simulate Silk Road pathways between each city in our sample and the two Silk Road end points: Aleppo and historic Chang'an.[27] Chang'an represented a major terminus of overland trade routes in the East (Allsen 2001, 13); Aleppo was an "emporium" for Asian goods in the West (Inalcik 1994, 57) and a long-standing destination of overland caravans. In Figure 2 we show the nomadic migration corridors which form the basis of our Silk Road proxies, and the cities in our sample. The simulated pathways connecting each city with Aleppo and Chang'an are also represented on the map.

In order to assess whether traders encountered different states and non-state territories along their travel paths, we utilize a set of maps from GeaCron, which provides state boundaries around the globe across different time periods.[28] Based on these maps we obtain our main explanatory variable of interest: the number of times that each path crosses different states to Chang'an and to Aleppo. This variable measures the extent of political fragmentation that one would have observed when travelling on the Silk Roads towards the East and the West. We also gather information on whether the departure city was part of a polity identified in GeaCron (as opposed to be located in a state-less area) as well as whether it served as a capital city.[29] Finally, we code for whether the polities traversed were tributary states of imperial China; this variable changes over time as states moved in or out of the Chinese tribute system.

One particular advantage of focusing on East, Central and West Asian cities is that state formation on the Eurasian steppe has come to increasingly be understood as a function of exogenous climatic factors, at least in part because nomadic statecraft has been shown to be sensitive to environmental conditions.[30] This may particularly be the case since there are important links between forms of political authority in Central Asia and transport technologies that support pastoral cultures, especially

our analysis to those south of the 25-degree line. At the same time, this benchmark does allow us to keep all the relevant cities along the Silk Roads west of the Tibetan plateau and east of Aleppo.

[25]While actual population figures are often missing for cities on these lists, Chandler and Fox (1974) do provide rankings of cities in the order of their size. Blaydes and Paik (forthcoming) provide further discussion of this data, discuss previous works that have utilized Chandler and Fox (1974) for their studies, and advantages of using a single source for city populations over multiple continents.

[26]Existing research also suggests that merchants, particularly those focused on long-distance trade, were often among the wealthiest in pre-modern cities. For example, court records from 15th century Anatolia suggest that the wealthiest merchants in the city were those involved in either the spice or silk trade (Inalcik 1994, 344-345).

[27]The calculation is based on a combination of both the paths along the nomadic migration corridors, as well as the least-cost path calculated from the city location to the nearest corridor. We confine cities in our sample to those west of Chang'an and east of Aleppo.

[28]See `geacron.com` for details on how these data were collected.

[29]For coding whether the cities in our data were capital cities or not, we utilize city data from Pierskall et al. (2017) and match our city-year observations to theirs. We also check the coding on Chinese cities with a number of sources written in Chinese.

[30]Honeychurch and Makarewicz (2016) find that over the past two decades new field and laboratory methods have meant that archaeological research on traditionally pastoral nomadic regions has increased tremendously.

reliance on horses (Honeychurch 2014). For example, the sudden rise of Genghis Khan was totally unexpected according to historians (Soucek 2000, 103). Scientists specializing in climate change, however, have found that the timing of the Mongol rise was closely linked to climate anomalies since unusually wet weather was associated with a proliferation of grasses to feed horses as the Mongols moved across the Eurasian steppe (Pederson et al. 2014). Additional studies in climate science suggest that the Mongol withdrawal from Hungary in 1242 may also have been a function of unanticipated climactic conditions (Buntgen and Di Cosmo 2016). This perspective is consistent with scholars who have suggested that the process by which Eurasian land empires have formed is relatively unpredictable (Rogers 2007; Rogers 2012), suggesting the importance of exogenous conditions.

Figure 3 provides a stylized illustration of our argument and empirical strategy. Merchants from City A seek trade opportunities that allow them to deliver goods to Aleppo and Chang'an. In order for those merchants to engage in commerce, they may need to traverse a number of polities in order to arrive at their destination. They may also traverse non-state territories, as well as tributary states under the Chinese rule. In this illustration, the solid lines represent independent polities while dotted lines represent independent polities that fall under the Chinese imperial tribute system. Using the interval data with population estimates for each city, we then utilize a generalized maximum log likelihood interval model to obtain coefficient value estimates.[31] The following equation follows a panel regression approach, and can be specified as follows:

$$\begin{aligned} Pop_{it} = \quad & \beta_0 + \beta_1 Path2Changan_i + \beta_2 Path2Aleppo_i + \\ & + \mathrm{X}_i\Phi + \sum_{j=1150}^{j=1800} \mathrm{Z}_i'\mathrm{I}_t^j\Theta_j + \sum_c \gamma \mathrm{I}_i^c + \sum_{j=1150}^{j=1800} \rho_j \mathrm{I}_t^j + \varepsilon_{it} \end{aligned} \tag{1}$$

where Pop_{it} is the natural log of city population of city i in year t, $Path2Changan_i$ and $Path2Aleppo_i$ are our political fragmentation variables, and X is a vector of time-varying control variables including the number of non-state territories crossed en route to Chang'an and Aleppo, the capital status and state rule existence of city i as well as tributary states crossed and tributary status of city i. $\sum_{j=1150}^{j=1800} \mathrm{Z}_i'\mathrm{I}_t^j\Theta_j$ are the city-specific geographic characteristics interacted with time-period fixed effects. Given that city location and their surroundings are paramount to trade and city sizes, these are meant to capture any time-differential effects of geographic variables that determine both the city's access to the Silk Roads and urbanization. They include the distance to the nearest natural migration corridor in the highlands (as simulated in our analysis described above), distance to the nearest coast, longitude and latitude as well as the elevation mean and standard deviation. Finally, $\sum_c \gamma \mathrm{I}_i^c$ and $\sum_{j=1150}^{j=1800} \rho_j \mathrm{I}_t^j$ are the city and time-period fixed effects, respectively.

On average, a merchant's path intersects with five polities to get to Aleppo and five on the path to Chang'an.[32] There exists a great deal of variation across cities, however. For example, in this sample the maximum number of polities crossed is 16 on the path to Aleppo and 17 to Chang'an. Our main findings in Table 1 shows that both the number of polities crossed to get to Aleppo and Chang'an (i.e., political fragmentation in both directions) has consistently negative effects on city size. This is true after controlling for city and time fixed effects as well as the time-varying impacts of geography. Both variables are also statistically significant when we control for the number of non-state territories on the paths (Columns 4 to 9). From a substantive perspective, every additional polity crossed to get

[31] The coefficient estimates from the interval model can be interpreted in the same way as the OLS estimation; see Blaydes and Paik (forthcoming) for more details on specifying the log likelihood function.

[32] See Table 2 in the Supplemental Appendix for summary statistics of all variables included in this regression analyses.

to Aleppo is associated with about a 9 to 15 percent decrease in city population, while for the polities crossed to get to Chang'an, the effect is about a 5 to 9 percent decrease in city population, depending on the regression specification.

The number of non-states territories crossed to Aleppo and Chang'an have negative impact on city size, although the statistical significance of this variable diminishes when we include control variables for whether the city was a polity capital and whether the city was located inside a non-state territory (Columns 6 to 9). We also find that while being a capital city consistently has a positive association with city size (an increase by 117 to 123 percent, depending on the specification), being located in a non-state territory has the opposite effect on city population (a decrease in size by 49 to 60 percent).[33] We further test the impact of crossing Chinese tributary states, by including the number of polities on the paths classified as tributary states as additional control variables (Column 7). We also include an indicator for whether the city is inside a tributary state or not (Column 8). While scholars have argued that tributary practice and exchanges may have facilitated trade in a number of ways (Hamashita 1994; Kim 2016), we find that crossing tributary states was also negatively associated with city size. With all the control variables included (Column 9), we find that crossing tributary states when heading to Aleppo to be more damaging than when heading to Chang'an; this suggests that the tribute system may have spurred less damaging effects for those travelling towards Chang'an and, thus, closer to China.

As a further test, Table 2 presents an alternative way to test the idea that political fragmentation reduced the gains from cross-regional trade. Rather than considering the number of politics crossed to either Aleppo or Chang'an, the economic prospects for a particular city may be a function of fragmentation on the entire East-West trade artery. In other words, the health of the entire route may matter for garnering trade-related gains and, as a result, fragmentation on the two segments should not be considered to be independent from one another. In this set of specifications the main explanatory variable of interest is the total number of polities crossed. We find that a larger number of polities crossed on the combined trade path is associated with lower city population. This is true even after controlling for capital city status, the number of non-state territories crossed as well as tributary state status and tributary states crossed. In other words, the results we report are similar to those found in Table 1.

Our empirical strategy rests on the assumption that deviations from the travel paths that we have identified (i.e., the combination of highland "nomadic corridors" and lowland "least-cost paths") are costly to merchants who view these paths as preferred travel routes. The topography of Central Asia — with large natural barriers like the Taklamakan and Gobi Deserts — make large deviations unlikely yet, nonetheless, we also validate our main findings using the travel paths identified in Hansen (2012) instead of the paths we have simulated.[34] Using the routes identified in Hansen's routes to generate our key independent variable — rather than our simulated Silk Road routes — we find the results to be similar to our main findings as reported in Table 1.[35] We also replicate our findings from Table 2 and, again, find consistent empirical results.[36]

[33] Our goal here is not to make a causal argument regarding the effect of capital city status on city size. Although it is possible that capital status may have been determined by unforeseen factors, rather than endogenously driven by city size, we mainly include capital status to control for alternative channels associated with city size.

[34] See Figure 2 in the Supplemental Appendix.

[35] See Table 3 of the Supplemental Appendix for these results.

[36] See Table 4 of the Supplemental Appendix for these results.

Measuring Cultural Affinity on the Historic Silk Roads

Thus far, we have argued that access to trade via the Silk Roads positively impacted economic prosperity in pre-modern Asia. In particular, we find that the benefits of trade were enjoyed, to the greatest extent, when levels of political fragmentation in Central Asia were relatively low, encouraging cross-regional exchange between China and the Middle East. The effects of cross-regional trade extended far beyond economic benefits, however. Trade routes existed to move goods across huge distances but "ideas, technologies, and artistic motifs" were also exchanged in addition to commercial products (Hansen 2012, 5). Findlay and O'Rourke (2007, 26) describe Central Asia as "a crossroads traversed by the flow of goods, technical inventions, art forms, and religions between the widely separated settled regions." For example, Indo-European languages diffused "from somewhere north of the Pontic steppes to Xinjiang" (Christian 2000, 11). Historians have argued that political, commercial and cultural contacts between China and Iran represent the "longest sustained example of intercultural communication in world history" (Allsen 2001, 8).

One empirical implication of historical trade and exchange is that cultural affinity should be higher for societies along the Silk Roads relative to other regions, even those located closer geographically. And in the contemporary period, these affinities could matter for policy initiatives related to trends in globalization. China's economic growth over the last forty years has positioned it to project power across the world.[37] In 2013, China introduced a set of new initiatives to increase trade ties and economic cooperation between Eurasian countries. While the "Silk Road Economic Belt" will link China to Central Asia, Iran, Turkey, and the Balkans, the "21st Century Maritime Silk Road" will connect China with South and Southeast Asia as well as the Persian Gulf. Together, these projects have come to be known as the "Belt and Road" Initiative (BRI). According to one report, the Chinese government has already spent $250 billion on these projects and will spend up to $1 trillion more on out-of-state projects in the next decade. Many of these prospective economic partners are Muslim societies of the Middle East. Indeed, existing and planned BRI projects parallel historical Silk Road trade routes to a great extent.[38]

Yet the economic influence of China on the Middle East is not well understood. While existing scholarship suggests that China's economic rise provides conditions conducive to the emergence of China as a new global hegemon, Allan et al. (2018) argue that there is an ideational identity mismatch between China and the world's great powers, blocking the ability of China to challenge the current Western neoliberal order. In their account, hegemonic orders rely on legitimating ideologies that need to be consistent with the identity preferences of major world powers, both at the mass and elite levels (Allan et al. 2018).[39] Because counterhegemonic coalitions are only likely to be successful if other states find that alternative order ideologically appealing, Allan et al. (2018) argue that China's "national identity" is inconsistent with the identities of nine great powers — Brazil, China, France, Germany, India, Japan, Russia, the United Kingdom and the United States. They conclude, as a result, that these identity differences constitute a "system-level barrier to a Chinese hegemonic succession" (Allan et al. 2018). While countries that share China's Confucian cultural values may be well-positioned to enjoy stable and cooperative relations with China (Johnston 1995), it is less clear how a Chinese worldview would be accepted more broadly, particularly to world regions not strongly influenced by Confucianism.

[37] Indeed, China's impact on economic growth in Africa is well documented in a series of influential studies (e.g., Brautigam 2011; French 2015).

[38] See our map of current BRI routes in Figure 3 of the Supplemental Appendix

[39] This perspective echoes Kupchan (2012) who argues that Chinese efforts to cultivate support for its hegemonic project rely on the distribution of ideas among the other world powers.

Allan et al. (2018) measure national identity using discourse analysis of texts including political speeches, newspapers, high school history textbooks, novels and movies. This constitutes only one of a number of strategies for examining ideational affinity and perhaps not the most effective approach for measuring the core concept of interest. Blaydes and Grimmer (forthcoming), for example, measure variation in political cultures both within and across societies around the world, operationalizing political culture as a constellation of shared societal values as expressed in response to survey questions.[40] Which countries around the world tend to share China's basic cultural values based on the Blaydes and Grimmer (forthcoming) metric of political culture? About 40 percent of China's population holds a set of cultural values which predominate in countries like Iran, Indonesia and Turkey, with a strong sense of nationalism, believing that work and technology are important and caring a great deal about maintaining order and being relatively intolerant toward groups that do not conform with societal expectations, including religious minorities, homosexuals and unmarried couples. Countries like Iran, Indonesia and Turkey are all key players in the BRI.

In addition to identifying the distribution of cultural types, Blaydes and Grimmer (forthcoming) also empirically estimate the distance between the cultural groups they identify. Using the Blaydes and Grimmer (forthcoming) metric of the distribution of cultural types along with the distances between types, we calculate the cultural "distance" between China and other countries in the world based on data from the World Values Survey.[41] In addition, we calculate a *weighted* cultural distance measure as we take into account different cultural types as well as how "far" those types are from one another.[42]

The weighted cultural distance between country X and China (d_{wpc}) is

$$d_{wpc} = \sum_{i=1}^{7}\sum_{j=1}^{7}(s_{Xi} \times s_{Chinaj} \times d_{ij}) \quad (2)$$

where the s_{Xi} is the share of type i in country X, s_{Chinaj} is the share of type j in China, and d_{ij} is the cultural distance between groups i and j.

Table 3 provides details about the cultural distance between China and countries around the world — both those associated with the BRI and the major world powers identified in Allan et al. (2018). Given that China has welcomed all countries to participate in the BRI, there is no official list of "BRI countries," and different versions of unofficial lists exist (Boffa 2018). Recent policy reports from the World Bank list 66 countries as BRI participants (Boffa 2018; Bastos 2018), while the Hong Kong Trade Development Council (HKTDC) has 79 countries on its list.[43] Since we expect BRI countries to change over time, we note the group of participants as tentative and varying across different sources.

[40] Another reason why values consensus may be a better measure of ideational affinity is that it is unclear how to think about the significance and interpretation of discourse in authoritarian regimes, like China. Authoritarian regimes tend to be highly propagandistic and citizens in such regimes often realize that available media content is censored, often reflecting the doctrine of the regime.

[41] To calculate the distance between types, Blaydes and Grimmer (forthcoming) compare the question-specific expected distributions for each type.

[42] In doing so, we follow closely existing scholarship that has created similar measures of cultural distance but which use alternative measures of culture, including linguistic (Laitin 2000), ethnic and religious (Alesina et al. 2002; Fearon 2003) and genetic composition (Spolaore and Wacziarg 2009).

[43] The additional group of countries included are extensive in their geographic scope and economy. They include countries in the Caribbean and South America (Antigua and Barbuda, Panama, Trinidad and Tobago, Bolivia), Africa (Ethiopia, Libya, Madagascar, Morocco, Senegal, South Africa), Asia-Pacific (South Korea, New Zealand, Papua New Guinea) and Europe (Austria). The only country listed in the World Bank reports that is missing from HKTDC is Greece. Both appear to discount ongoing regional tensions that likely jeopardize the BRI and question the positions of some of the countries that are currently listed as BRI participants (i.e., India's concern with the China-Pakistan Economic Corridor, which passes through Pakistan-occupied Kashmir).

For countries that might be thought of as major world powers today, the cultural distance is large. For example, China's weighted distance to Britian is 0.568; to France it is 0.543; and to the US it is 0.553.

China's cultural distance to important BRI countries is much lower, however. For example, weighted distance to Turkey is 0.447; Vietnam is 0.433; Indonesia is 0.434; and Iran is 0.419. Indeed, China's weighted cultural distance is closer to Iran's than any other country included in the sample.[44] This analysis suggests that China's national identity may not be as idiosyncratic as it first appears; rather, the counterhegemonic bloc of relevance may be a different set than that explored by Allan et al. (2018). In addition, by using the Blaydes and Grimmer (forthcoming) measurement strategy for political culture, it is possible to extend analysis to cases not considered in the Allan et al. (2018) study.[45]

Next, in order to see whether cultural distance can be explained by the legacy of the Silk Roads, we regress weighted cultural distance between each country in our sample and China on the country's distance to the nearest Silk Roads as documented in Hansen (2012).[46] Table 4 presents our findings associated with the bilateral weighted cultural distance between China and other countries in our sample. The results reported in Table 4 include a variety of control variables. We find that a country's distance to the historic Silk Roads is positively associated with its cultural distance to China; put another way, countries close to the historical Eurasian trade routes enjoy more cultural affinity with China today. Each column adds additional control variables, including ones related to geography as well as genetic, linguistic and religious difference. While genetic, linguistic and religious distance are likely correlated with distance to historical Silk Roads, we gain some reassurance that our main coefficient of interest is fairly stable across different specifications. For example, in Table 4 Column 6, the coefficient estimate shows 0.86, suggesting that a one-standard deviation increase in distance to the Silk Roads (4.08) is associated with an increase of 3.5 units, about 0.6 standard deviations in the weighted cultural distance, or a 7 percent increase from mean weighted cultural distance.

We next include longitude and latitude as locational control variables, since geography has been associated with a country's level of development (e.g., Diamond 1997; Sachs et al. 2001). The final two column of Table 4 includes variables that are likely implicated in a more complicated causal relationship with cultural distance — per capita GDP and a country's "stock" of democracy over the course of the 20th century. A country's proximity to the Silk Roads continues to be positively associated with its cultural distance to China, although at just below conventional levels of statistical significance. Both are significant at the 0.15 level or better, however.[47] Overall we find that even after controlling for a variety of dyad-level characteristics, including ones that are likely endogenous, Silk Road connections appear to have a lasting cultural legacy which could magnify Chinese soft power projection in Western Asia.

[44]Examining the plurality group distance measure, which is the distance between the plurality types of each country in a pair, suggests a similar pattern. The countries which share a plurality cultural group with China include Ghana, Indonesia, Iran, Morocco, Romania, Turkey and Vietnam. A number of these countries are associated with the Belt and Road Initiative.

[45]It is also worth pointing out that it is not inconsistent for countries to share basic values with China but to still have negative attitudes toward China. It is very possible that citizens do not have good information about the extent to which they share values with other societies.

[46]The top panel of Figure 1 includes Hansen (2012)'s Silk Road routes. Summary statistics associated with this analysis are reported in Table 4 of the Supplemental Appendix.

[47]In Column 8 ("GDP"), the p-value for the distance to the nearest silk road is 0.105, and in Column 9 ("Dem"), the p-value is 0.141. Both outputs show that the positive association persists in the same direction as reported in the other specifications.

How does the distance between China and other countries compare to the countries which have formed the core of the current liberal international order? There is no single obvious way to operationalize the prevailing alliance structure so we provide results with alternative operationalizations. Out of 56 countries in our sample, 10 countries that are directly connected by overland Silk Roads other than China (Georgia, India, Iran, Iraq, Russia, South Korea, Thailand, Turkey, Ukraine, Vietnam) have the mean weighted cultural distance of 0.46 to China, compared to 0.51 on average between China and the countries in our sample. The mean weighted cultural distance between the United States and the founding members of NATO is 0.35; and 0.33 for the distance between Britain and those same countries.[48] The mean weighted cultural distance between current NATO members represented in our data and USA is 0.41. The mean weighted cultural distance between US and the G-8 countries is 0.39. To provide a benchmark measure, the mean cultural distance between the US and 56 other countries in our sample is 0.46.

These measures indicate several things: countries in our sample have, on average, greater cultural distance to China (0.51) than the USA (0.46). While, on average, the countries connected by the overland Silk Roads have closer distances to China (0.46) than the others, the distance is still significantly larger than between USA and NATO founding countries (0.35), current NATO members (0.41), and G-8 countries (0.39). Overall these results suggest that China may be closer to those connected by the Silk Roads than other countries, but it is still culturally further away from them than the US and its partners associated with the current liberal economic order.[49]

Conclusions

While some of the most prominent works on historical development have focused on the origins of states and state institutions, scholars have increasingly drawn attention to the importance of transnational and global dynamics (Go and Lawson 2017, 8), including forms of pre-modern, proto-globalization. Historical global encounters offered opportunities to build channels of understanding across space and often involved the movement of people, goods, ideas and diseases as well as values, ethics, and aesthetic traditions. Cross-regional trade routes, like the Silk Roads, connected economic interests between prosperous regions of the world for centuries. In this paper, we take a long view with regard to the global economic order in the spirit of international relations scholars who are focused on *longue durée* trends in power and influence (e.g., Kupchan 2012; Acharya 2014). Our results draw attention to trade and exchange between West and East Asia, the most prosperous regions of the world before the rise of Western hegemony.[50] Our focus on prosperity in pre-modern Asia does not tackle the question of why Europe pulled ahead of other world regions economically but does allow us to understand more about variation in development in a world of "natural states" rather than "open access orders" (North et al. 2012). Epstein (2000, 39) points out that while scholars have commonly viewed all pre-industrial economies as equally stagnant, "regional diversity has became *the* central question of recent research."

Our empirical results suggest that the benefits of cross-cultural exchange are diminished as a result of shocks to political stability on cross-regional trade routes. We find that intra-route fragmentation makes trade difficult, suggesting the costs of jurisdictional uncertainty (Simmons 2005), formal and

[48]The founding nations included in our sample data are Britain, Canada, France, Netherlands, Norway, USA; Belgium, Denmark, Iceland, Luxembourg, and Portugal — the other five original founders — are missing in our data.

[49]These results are very similar if we replace the US with Britain in our analyses.

[50]Scholars have already suggested that the Indian Ocean region requires study as an integrated economic, social and political system and are increasing focused on "Mediterreanization" (Morris 2005) as an object of understanding, in this paper we are providing empirical evidence for the relevance of trans-regional study across Asia through connectedness via land routes of trade.

informal barriers to trade (Epstein 2000) and taxation on the common pool of merchants (Cox 2017). Analysis of trade along the Silk Roads is particularly amenable to a study of this type. Recent interdisciplinary work in archeology and historical climate science has suggested that pre-modern state formation on the Central Asian steppe — a key location of Silk Road corridors — has been subject to exogenous weather-related shocks that impacted pastoral communities in ways that may not have been the case in other world regions.[51] We also extend recent scientific work that identifies likely Silk Road routes along naturally-occurring migration corridors that formed across the highlands of Asia. Political fragmentation along likely routes is associated with smaller city size, even after controlling for city and time fixed effects and the inclusion of a variety of control variables, including Chinese imperial tributary state status.

Beyond the effects on historical economic development, we also find that there are longer-term implications of Silk Roads trade. In particular, cultural distance today is lower for countries along the historic Silk Roads, even after controlling for a variety of first-order geographic and other variables. These findings have important implications for China's ability to project political power in Western Asia. China is already the top trading partner for most Asian countries and it has introduced the Belt and Road Initiative to reduce the cost of trade between China and the countries of Western Asia. Foreign trade has long been viewed as a tool of power politics since the ability to interrupt commercial relations can be a major avenue of influence (e.g., Hirschman 1969); China's size and economic power have potentially created the conditions for a restructuring of trade patterns.

What is at stake with the revival of Chinese-Middle Eastern trade? China's vision of a new economic order does not rely on a particular set of Western liberal values. According to Schweller and Pu (2011, 57), "China's flexible economic diplomacy attracts many developing countries" since its "aid, in contrast to that of Western donors, is typically offered without political preconditions."[52] China's growth and investment model may lead developing countries to be sceptical about the benefits of democratizing reforms and the associated role of advanced industrial democracies as leaders of a Western-dominated, liberal economic order.[53] While China may face difficulties in attempts to create counter-hegemonic coalitions with the "great powers" of the current liberal economic order (Allan et al. 2018), cultural affinity based on shared values may create new opportunities for Chinese soft power in the Muslim East. There is intense scholarly debate regarding whether the era of liberal, Western hegemony is actually over; whether it is robust to the changes in the global material capabilities; and if the liberal, Western order actually carries the meaning often attributed to it,[54] but if material capabilities are shifting in a way that favors China, the liberal, Western order may be replaced by a more pluralistic world order that involves a diversity of ideas, actors and leaders (Acharya 2014) and new claims for cultural recognition (Reus-Smit 2017).

[51] In particular, the growing preponderance of climate science shows that even climatic fluctuations combined with particular environmental conditions can have important historical implications for the creation of nomadic empires.

[52] They also argue that China's economic success — including its political authoritarianism and gradualist reform approach — provides "an attractive developmental model for many poor, nondemocratic countries" (Schweller and Pu 2011, 57).

[53] It is also not clear if there is a short-term pay off in terms of investment. Li and Resnick (2003) find that new democracies often struggle to attract foreign direct investment, particularly if their property rights regimes remain underdeveloped in the face of efforts to stabilize their political institutions.

[54] See Paul Staniland, "Misreading the 'Liberal Order:' Why We Need New Thinking in American Foreign Policy," `www.lawfareblog.com`, July 29 2018 for more on this debate.

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Table 1: *Effect of Fragmented Polities on City Size*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Polities to Aleppo	-0.132**		-0.123**	-0.125**	-0.157***	-0.149***	-0.098*	-0.149***	-0.097*
	(0.053)		(0.056)	(0.055)	(0.057)	(0.056)	(0.057)	(0.057)	(0.057)
Polities to Chang'an	-0.051		-0.049	-0.082*	-0.077*	-0.098**	-0.082*	-0.090**	-0.082*
	(0.045)		(0.046)	(0.044)	(0.047)	(0.045)	(0.047)	(0.045)	(0.047)
Non-state territories to Aleppo		-0.316***	-0.309**	-0.189*	-0.236*	-0.123	-0.128	-0.103	-0.129
		(0.119)	(0.123)	(0.113)	(0.126)	(0.117)	(0.120)	(0.119)	(0.120)
Non-state territories to Chang'an		0.123	0.055	0.007	0.164	0.087	0.126	0.108	0.127
		(0.098)	(0.105)	(0.100)	(0.114)	(0.107)	(0.119)	(0.107)	(0.119)
Capital city				0.793***		0.775***	0.802***	0.789***	0.802***
				(0.111)		(0.112)	(0.112)	(0.111)	(0.112)
In non-state territory					-0.916***	-0.723***	-0.673***	-0.726***	-0.671***
					(0.237)	(0.234)	(0.227)	(0.234)	(0.227)
Tributaries to Aleppo							-0.414***		-0.424***
							(0.136)		(0.148)
Tributaries to Chang'an							-0.149		-0.160
							(0.134)		(0.150)
In tributary state								-0.286**	0.021
								(0.145)	(0.162)
N	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275
Geography X Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors reported in parentheses.* p <0.1, ** p <0.05, *** p <0.01.

Table 2: *Effect of Fragmented Polities on City Size (whole route combined)*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Polities crossed	-0.124**		-0.115**	-0.113**	-0.147***	-0.132**	-0.086	-0.129**	-0.092*
	(0.051)		(0.055)	(0.052)	(0.057)	(0.053)	(0.054)	(0.054)	(0.054)
Non-state territories crossed		0.118	0.057	0.045	0.104	0.084	0.145	0.104	0.147
		(0.097)	(0.106)	(0.104)	(0.111)	(0.105)	(0.113)	(0.104)	(0.112)
Capital city				0.800***		0.787***	0.809***	0.801***	0.813***
				(0.110)		(0.111)	(0.112)	(0.111)	(0.112)
In non-state territory					-0.795***	-0.638***	-0.613***	-0.631***	-0.614***
					(0.224)	(0.221)	(0.220)	(0.223)	(0.221)
Tributaries crossed							-0.526**		-0.436**
							(0.220)		(0.218)
In tributary state								-0.290**	-0.163
								(0.142)	(0.137)
N	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275
Geography X Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors reported in parentheses.* p <0.1, ** p <0.05, *** p <0.01.

Table 3: *Cultural Distance between China and World Countries*

Country	*Weighted Distance*	*Plurality Distance*	*BRI (HKTDC)*	*BRI (World Bank)*	*"Great Powers" (Allan et al. 2018)*
Iran	0.4185141	0	Yes	Yes	
Russia	0.4286112	0.432007	Yes	Yes	Yes
Malaysia	0.4312954	0.439282	Yes	Yes	
Vietnam	0.4326603	0	Yes	Yes	
Ukraine	0.4327213	0.432007	Yes	Yes	
Indonesia	0.4339336	0	Yes	Yes	
Rwanda	0.4370028	0			
South Korea	0.4440412	0.439282	Yes		
Moldova	0.4459826	0.439282	Yes	Yes	
Thailand	0.446952	0.439282	Yes	Yes	
Turkey	0.4472114	0	Yes	Yes	
Bulgaria	0.4500394	0.432007	Yes	Yes	
Japan	0.4552197	0.439282			Yes
Georgia	0.4560277	0	Yes	Yes	
Taiwan	0.4571292	0.439282	Yes	Yes	
Hong Kong	0.4586784	0.439282	Yes	Yes	
Serbia	0.4634053	0.439282	Yes	Yes	
Morocco	0.4657612	0	Yes		
Ethiopia	0.4657898	0.439282	Yes		
Zambia	0.4667883	0.45156			
Romania	0.4698513	0	Yes	Yes	
South Africa	0.4708772	0.365233	Yes		
Poland	0.4712436	0.365233	Yes	Yes	
Burkina Faso	0.4840525	0.45156			
Ghana	0.4855952	0			
Peru	0.4890093	0.365233			
Chile	0.4957908	0.365233			
Germany	0.4974796	0.432007			Yes
Colombia	0.5003269	0.365233			
India	0.5026765	0.45156	Yes	Yes	Yes
Brazil	0.5030731	0.365233			Yes
Mexico	0.5044914	0.365233			
Argentina	0.5054422	0.365233			
Mali	0.5126856	0.45156			
Italy	0.514559	0.657121			
Guatemala	0.5201932	0.365233			
Uruguay	0.5237377	0.365233			
Egypt	0.5260838	0.45156	Yes	Yes	
Jordan	0.531994	0.45156	Yes	Yes	
France	0.5431458	0.657121			Yes
USA	0.5533924	0.657121			Yes
Spain	0.554081	0.657121			
Australia	0.5675955	0.657121			
Britain	0.5676283	0.657121			Yes
Finland	0.5849115	0.657121			
Canada	0.5880353	0.657121			

Table 4: *Bilateral Cultural Distance and Distance to Silk Roads*

	Baseline	Geography	Genetic	Linguistic	Religious	All	Locational	GDP	Dem
Distance to nearest Silk Road	0.990**	1.015***	0.917**	1.017**	0.977**	0.863**	1.387***	0.462†	0.454†
	(0.373)	(0.378)	(0.384)	(0.383)	(0.379)	(0.397)	(0.323)	(0.278)	(0.302)
Contiguous		-5.951**	-6.164**	-5.937**	-6.760*	-6.886*	-0.428	1.458	-2.383
		(2.598)	(2.590)	(2.647)	(4.013)	(3.979)	(4.202)	(3.078)	(2.248)
Capital cities distance	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	0.002***	0.001	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Genetic distance			-0.002			-0.002**	0.000	-0.000	-0.001
			(0.001)			(0.001)	(0.002)	(0.002)	(0.001)
Linguistic proximity				-4.435		-8.265	19.641**	23.682*	9.994
				(11.541)		(12.327)	(8.928)	(12.334)	(8.698)
Religious proximity					0.716	0.587	-3.538	-2.743*	-1.829
					(2.674)	(2.725)	(2.439)	(1.539)	(1.632)
Latitude							0.347***	0.135	0.155*
							(0.093)	(0.090)	(0.078)
Longitude							0.152***	0.069*	0.060*
							(0.041)	(0.037)	(0.033)
Per capital GDP (2005)								0.321***	
								(0.056)	
Democracy stock, 1900-2000									0.009***
									(0.002)
N	54	54	54	54	53	53	53	52	53
Shared Language	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shared Sea	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shared Gulf	Y	Y	Y	Y	Y	Y	Y	Y	Y

Robust standard errors reported in parentheses. †p <0.15, * p <0.1, ** p <0.05, *** p <0.01.

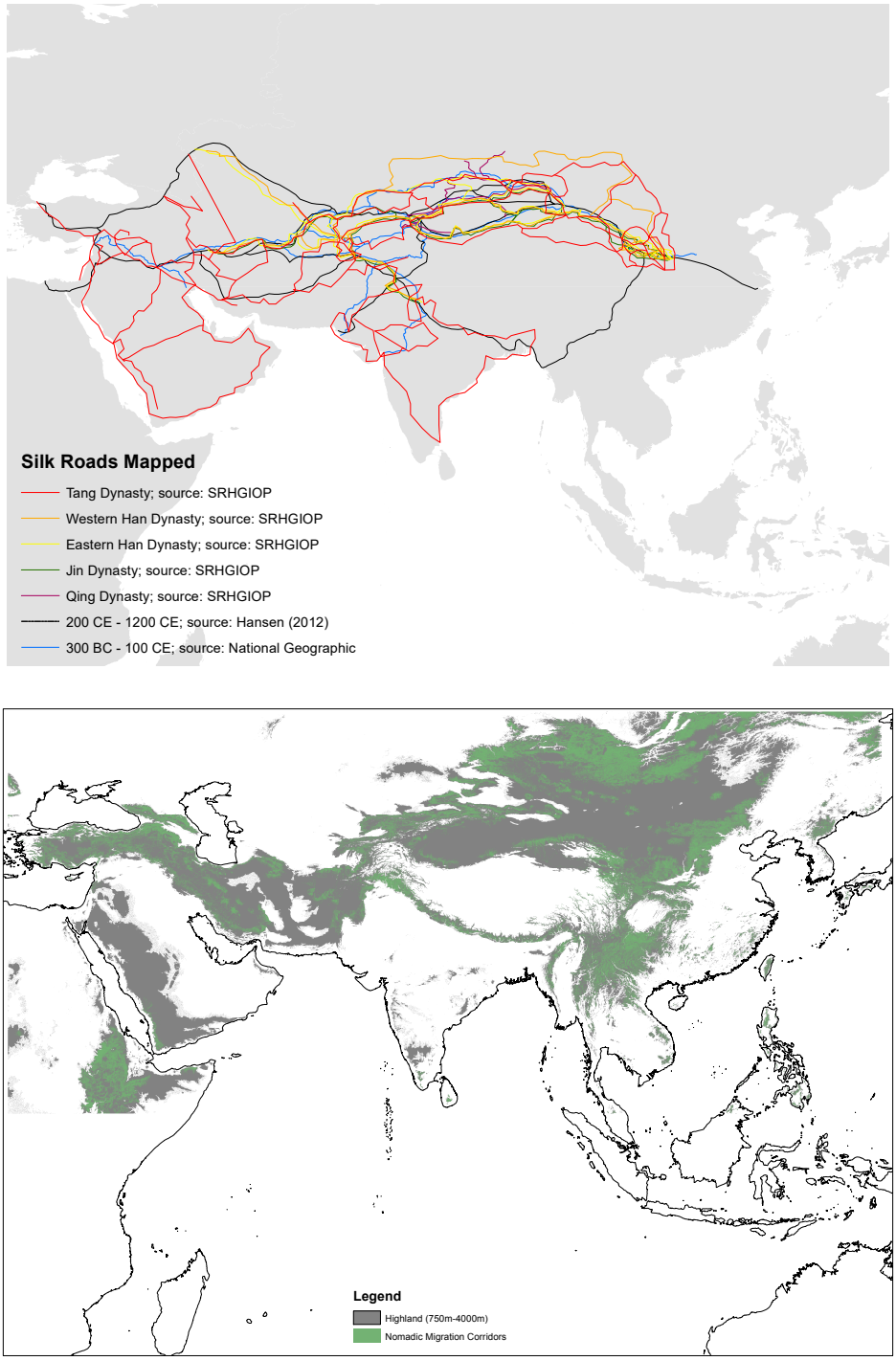

Figure 1: *Silk Roads Mapped (Top); Highlands and Nomadic Corridors (Bottom)*

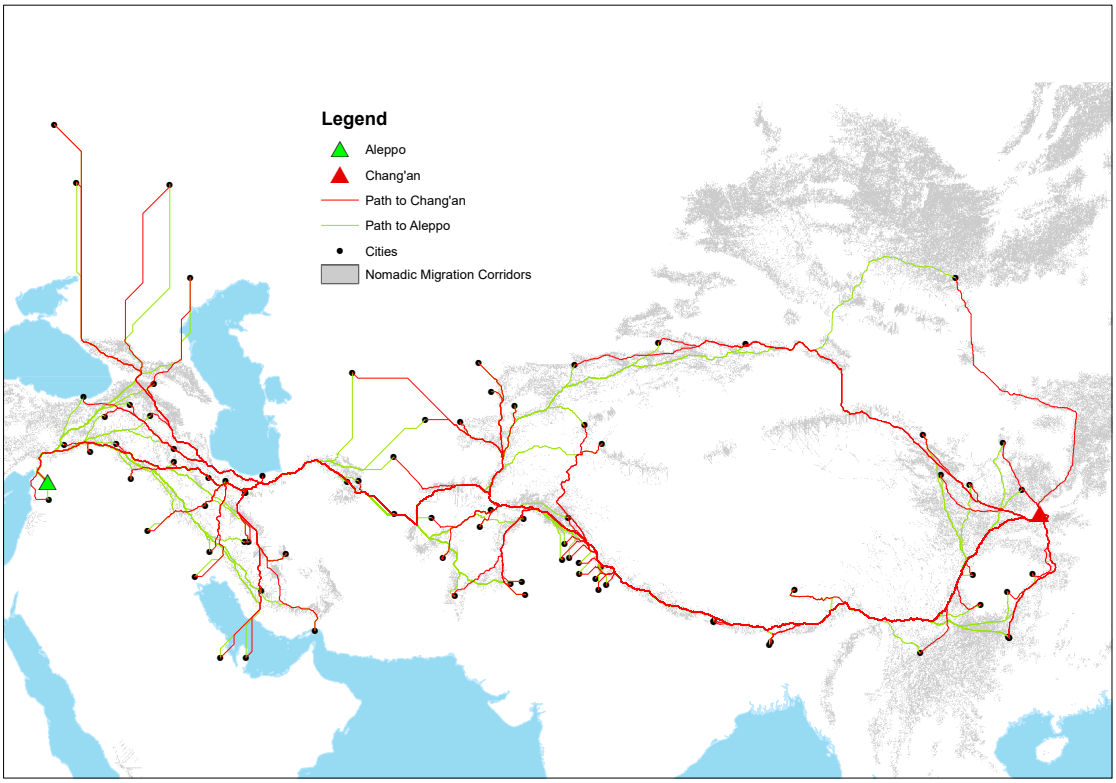

Figure 2: *Nomadic Pathways as a Proxy for Silk Roads*

Figure 3: *Stylized illustration of the argument regarding the effects of crossing jurisdictions on the costs of trade. The solid lines represent divisions between independent polities. The dotted lines represent independent polities that fall under the Chinese imperial tribute system.*

Supplemental Appendix

"Trade and Political Fragmentation on the Silk Roads: The Economic and Cultural Effects of Historical Exchange between China and the Muslim East"

May 2019

Figure 1: *Largest Eurasian Cities, 1100-1800; "X" indicates Eurasia's urban "center of gravity"*

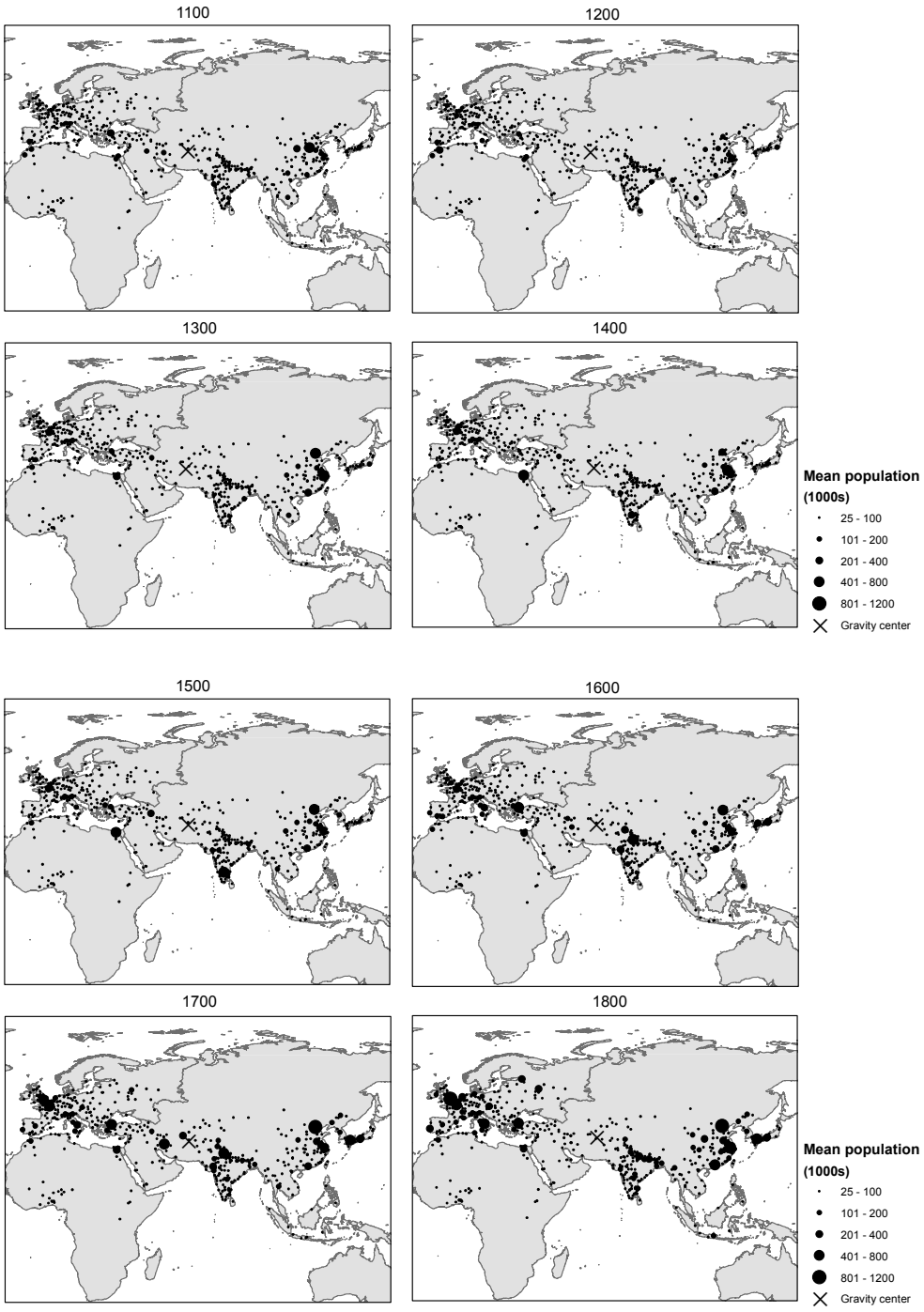

Table 1: *Eurasian Urban Center of Gravity, 1100-1800 CE*

Year	Latitude	Longitude	Count
1100	32.99631	61.98586	586
1150	33.15095	59.91880	586
1200	32.94798	59.67324	586
1250	33.05159	60.11353	586
1300	33.23095	60.82225	586
1350	33.15543	61.44813	586
1400	33.13059	61.44409	586
1450	32.98265	62.26588	586
1500	32.97121	62.28126	586
1550	33.58465	59.81576	586
1600	33.57519	62.21168	586
1650	33.74231	61.06998	586
1700	33.85598	62.18932	586
1750	34.46906	61.89826	586
1800	35.05676	62.71095	586

Table 2: *Summary Statistics for City Size Regression Analysis*

	Mean	**Std Dev**	**Min**	**Max**	**Count**
Mean population (in 1,000s)	36.11	33.37	3	600	1,275
Polities to Aleppo	5.03	2.92	1	16	1,275
Polities to Changan	5.48	2.80	1	17	1,275
Capital city	0.05	0.23	0	1	1,275
Tributaries to Aleppo	0.49	0.77	0	3	1,275
Tributaries to Changan	0.76	0.95	0	3	1,275
In tributary state	0.15	0.36	0	1	1,275
Non-state territories to Aleppo	0.53	0.82	0	3	1,275
Non-state territories to Changan	1.62	1.02	0	4	1,275
In non-state territory	0.04	0.19	0	1	1,275
Distance to nearest natural path (km)	116.46	279.41	0	1,678	1,275
Distance to coast (km)	993.30	651.34	1	2,934	1,275
Longitude	68.40	21.28	37	108	1,275
Latitude	35.05	6.20	25	54	1,275
Mean elevation (m)	1,035.66	864.81	-10	4,367	1,275
STD elevation (m)	241.26	221.58	5	1,058	1,275

Figure 2: *Nomadic Corridors and Silk Roads as identified by Hansen (2012)*

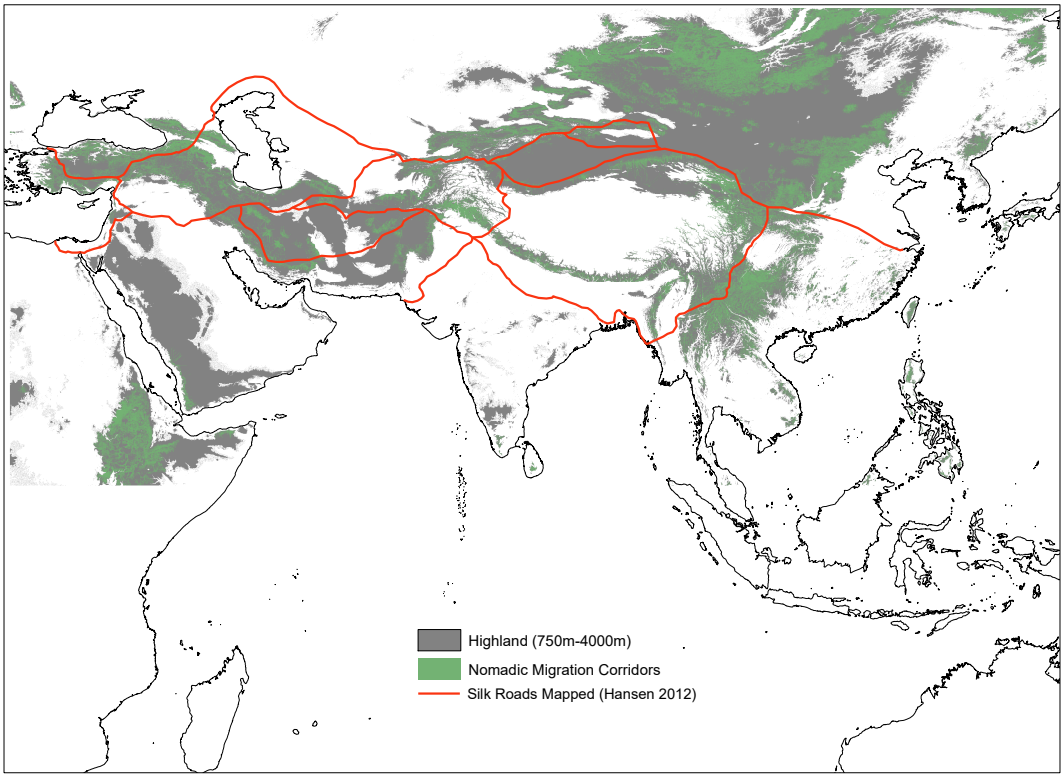

Table 3: *Effect of Fragmented Polities on City Size (Hansen routes)*

Polities to Aleppo	-0.069		-0.065	-0.092*	-0.078	-0.100*	-0.085	-0.107**	-0.091*
	(0.048)		(0.050)	(0.054)	(0.051)	(0.055)	(0.054)	(0.054)	(0.054)
Polities to Chang'an	-0.069		-0.096*	-0.119**	-0.111**	-0.126**	-0.161***	-0.129**	-0.169***
	(0.047)		(0.051)	(0.052)	(0.052)	(0.052)	(0.057)	(0.053)	(0.058)
Non-state territories to Aleppo		-0.660***	-0.741***	-0.609***	-0.637***	-0.536***	-0.587***	-0.519**	-0.559***
		(0.197)	(0.211)	(0.191)	(0.224)	(0.207)	(0.207)	(0.211)	(0.209)
Non-state territories to Chang'an		0.219**	0.220**	0.106	0.251**	0.126	0.139	0.116	0.164
		(0.094)	(0.106)	(0.105)	(0.109)	(0.108)	(0.114)	(0.108)	(0.115)
Capital city				0.803***		0.792***	0.819***	0.810***	0.827***
				(0.111)		(0.112)	(0.110)	(0.111)	(0.110)
In non-state territory					-0.726***	-0.522**	-0.547**	-0.514**	-0.584**
					(0.246)	(0.235)	(0.243)	(0.236)	(0.244)
Tributaries to Aleppo							-0.377***		-0.291***
							(0.106)		(0.102)
Tributaries to Chang'an							0.120		0.194
							(0.120)		(0.142)
In tributary state								-0.301**	-0.255
								(0.145)	(0.168)
N	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275
Geography X Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors reported in parentheses.* p <0.1, ** p <0.05, *** p <0.01.

Table 4: *Effect of Fragmented Polities on City Size (whole route, Hansen routes)*

Polities crossed	-0.079*		-0.078*	-0.108**	-0.084*	-0.111**	-0.110**	-0.114**	-0.115**
	(0.043)		(0.044)	(0.047)	(0.044)	(0.047)	(0.046)	(0.046)	(0.046)
Non-state territories crossed		0.050	0.040	-0.010	0.044	-0.006	-0.011	-0.012	-0.005
		(0.093)	(0.093)	(0.091)	(0.092)	(0.090)	(0.093)	(0.090)	(0.093)
Capital city				0.831***		0.821***	0.821***	0.839***	0.839***
				(0.111)		(0.112)	(0.112)	(0.112)	(0.112)
In non-state territory					-0.684***	-0.520**	-0.516**	-0.502**	-0.507**
					(0.235)	(0.220)	(0.222)	(0.221)	(0.223)
Tributaries crossed							-0.016		0.021
							(0.107)		(0.109)
In tributary state								-0.304**	-0.308**
								(0.144)	(0.149)
N	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275	1,275
Geography X Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors reported in parentheses.* p <0.1, ** p <0.05, *** p <0.01.

Figure 3: *Belt and Road Initiative Routes*

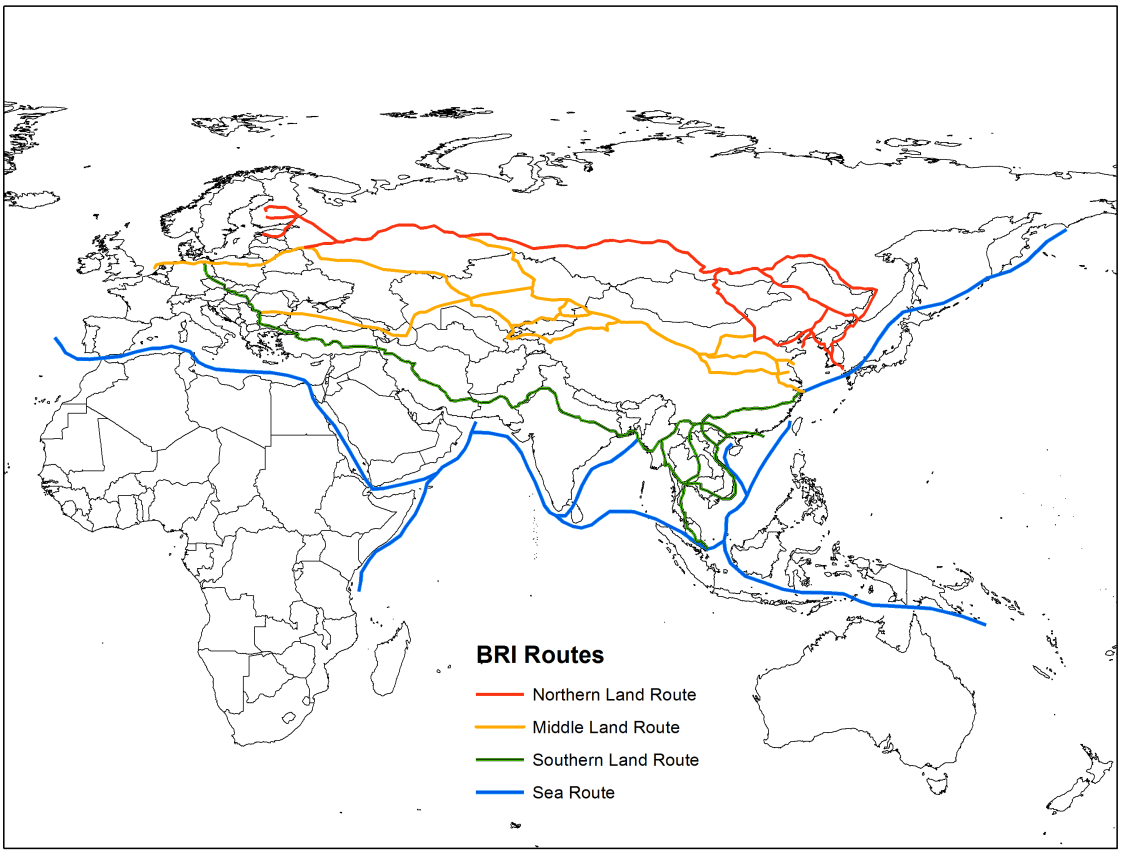

Table 5: *Summary Statistics for Cultural Distance Regression Analysis*

	Mean	**Std Dev**	**Min**	**Max**	**Count**
Weighted cultural distance	50.69	5.90	42	65	55
Distance to nearest Silk Road (1,000 km)	3.84	4.08	0	13	55
Latitude	24.28	28.95	-44	60	55
Longitude	17.61	61.08	-99	175	55
Democracy stock, 1900-2000	92.05	353.08	-380	638	55
Per capital GDP (2005)	10.47	12.17	0	40	54
Contiguous	0.06	0.23	0	1	54
Shared language (by min 9% of population)	0.02	0.14	0	1	54
Capital cities distance	8,957.88	4,184.83	956	19,297	54
Pair connected by a common sea	0.09	0.29	0	1	55
Pair connected by a common gulf	0.02	0.13	0	1	55
Genetic distance	1,216.99	522.02	123	2,933	55
Linguistic proximity	0.09	0.54	0	4	54
Religious proximity	0.37	0.43	0	2	53