

Old World Trade Diasporas

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Abstract: What explains worldwide, historical patterns of trade diaspora dispersal? In the premodern period, trade diasporas were among the most important communities facilitating cross-cultural exchange over long distances. We argue that two general principles explain the proliferation of premodern trade diasporas. First, diaspora merchants were drawn to wealthy societies with the goal of obtaining access to high-value luxury goods produced through the development of complex supply chains. Second, traders sought to establish diaspora communities in locations that exhibited bioclimatic complementarities to the merchant's home region, thereby assisting the procurement of relatively uncommon natural resources. To empirically assess these arguments, we examine the historical record for information about the product composition of historical trade; collect data on the locations of trade diaspora communities across Eurasia between 600 and 1600 AD; and develop an agent-based model that specifies the agents' (i.e., traders') rule-based decisions to migrate in a wealth and resource-differentiated geographic space that represents Eurasia. Taken together, our findings describe the conditions that facilitated diaspora creation and historical cross-cultural exchange — a topic of rich exploration in the fields of global historical sociology and international political economy.

Keywords: trade diaspora; trade; Eurasia; political economy; agent-based model

ALTHOUGH trade diasporas have existed since antiquity, during the medieval and early modern periods improved seafaring technologies provided opportunities for the rapid and widespread development of “communities of merchants living among aliens” (Curtin, 1984:3). Trade diaspora communities emerged as critical components of the premodern world economy. Given the fundamental challenges of long-distance trade — including difficulties associated with the movement of information, credit, and goods — trade diasporas helped to knit together diverse communities through commerce and connection, where shared ethnic, linguistic, or religious ties served as a way to bind distant populations. Importantly, merchant diasporas provided connections to trustworthy local agents, facilitating emergent forms of capitalism.

This article seeks to explain worldwide historical patterns of trade diaspora dispersal, some of which are puzzling. Muslim communities of Arabs and Persians created well-known diaspora settlements in South Asia and even China. Europeans settled in major cities of North Africa and the Middle East. But the absence of Arab and Persian trade diaspora communities in Europe, and the relative paucity of Chinese trading settlements outside of Southeast Asia, stand out as cases of “dogs that didn't bark.” If there existed returns to the creation of merchant diasporas, how can we understand historical patterns in the presence — and absence — of diasporic communities? We argue for the relevance of two general principles that explain the proliferation of premodern trade diaspora dispersal. Although most

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diaspora merchants were drawn to wealthy regions to obtain access to high-value luxury goods, traders also sought to establish diaspora communities in locations that exhibited bioclimatic complementarities to the merchant's home region, a strategy that assisted in the procurement of rare or exotic natural resources.

We employ three approaches for interrogating these ideas. First, we examine the historical record to see if the items traded across long distances by diaspora communities reflected the patterns that we have described. Second, we collect data on the locations of trade diaspora communities across Eurasian cities between 600 and 1600 AD, a time period that ends before the rise of European economic, military, and colonial hegemony. The patterns we report suggest that diaspora communities tended to settle in the wealthy societies of Asia, whereas China — the world's richest region for much of the study period — invested in merchant diaspora communities in areas with vastly different climatic conditions — like Southeast Asia. Third, we develop an agent-based model that reflects our theoretical arguments to simulate patterns of diaspora dispersal. We find that a rules-based approach with model assumptions chosen to resemble historical endowment differences between world regions performs well. Our multi-pronged strategy affirms the importance of factor endowments — proxied as bioclimatic difference — and technological progress — proxied with city size — as major drivers of diaspora formation in the historical global economy.

Our findings speak directly to a scholarly literature on the conditions that facilitate cross-cultural economic exchange — a topic of rich exploration in the fields of economic and historical sociology (e.g., Wallerstein, 1974; Abu-Lughod, 1991; Bentley, 1993; Chase-Dunn and Hall, 1994; Frank, 1998; Go and Lawson, 2017; Evers, 2017; Beaujard, 2019). Scholars have suggested that contract enforcement is among the most important problems in international economic integration (Rodrik, 2000) and a major empirical predictor of cross-national trade (Nunn, 2007). Greif (1989, 2006) demonstrates how ethnic networks facilitate contract enforcement by providing a punishment mechanism for traders who default on their agreements. Ties between immigrants and sending communities increase information flow between potential trade partners, serving as substitutes for formal governance structures (Erikson and Occhiuto, 2017).¹ Our contribution offers a different focus in that we are seeking to understand where and why long-distance trade with diasporic agents occurred in the first place. Although scholars have identified a number of linkages between trade and migration (e.g., Peters, 2015), we shed empirical and theoretical light on a particular instantiation — the historical trade diaspora. Indeed, our findings provide empirical evidence for the drivers of a form of “circular” migration that has been a feature of Eurasian history for centuries, offering insights into patterns of globalization before industrialization.

Finally, our article draws attention to a scholarly tradition that emphasizes the comparative economic development of world regions, including the importance of Eastern societies in the premodern world economy. McNeill (1963, 1990) argues that cross-cultural interactions constitute a major driver of change in world history. Rather than assuming Europe's preeminent role, we have sought to operationalize the “push” and “pull” factors leading people to move great distances to engage in political, economic, and cultural encounters with others. The substantive results

that we derive reenforce scholarship that emphasizes the importance of Asian societies in the premodern world economy (e.g., Abu-Lughod, 1991; Frank, 1998; Kang, 2010; Sharman, 2019; Blaydes and Paik, 2021b). In this sense, our work provides greater balance to the historical, empirical study of the global economy. Our arguments also emphasize the ways that merchants sought to acquire tradeable goods outside of their own climatic zone, encouraging them to travel to locations with different precipitation and temperature profiles. This often involved moving in a North-South direction, consistent with scholars who have suggested the relevance of “continental axes” in determining historical economic and cultural outcomes (i.e., Diamond, 1997; Laitin et al., 2012).

Trade, Identity, and Diaspora

Two ideas are core to the concept of a trade diaspora. The first is that maintaining links between members of a diasporic community and the “sending” community are relatively inexpensive as a result of religious, linguistic, or ethnic ties. The second is that the existence of a merchant diaspora reduces the cost of conducting long-distance trade due to the specialized knowledge and establishment of local relations that such communities can create. This has led scholars to argue that “trade diasporas remained the most efficient way of organizing commerce across much of Afro-Eurasia...until the nineteenth century” (Pomeranz and Topik, 1999:7). This section provides a definition of a trading diaspora and reviews existing related scholarship.

Defining Diaspora

History has produced a diverse set of premodern travelers, many of whom traversed long distances. The medieval pilgrim visited shrines and holy places; the scholar traveled for knowledge or to pursue patronage for his work; the refugee relocated in search of safe haven; and the merchant moved to pursue opportunities to broker economic exchange. Curtin (1984) defines trading diasporas as permanent settlements of merchants on foreign soil who work to facilitate cross-cultural trade. Our focus on trade diaspora places conceptual emphasis squarely on the occupational purpose of the group, while distinguishing the trade diaspora from other forms of economic migration.

Diaspora groups are assumed to derive utility from being socially interdependent on its original community while simultaneously spatially dispersed from that community (Cohen, 1971). This implies that the diaspora should be related to at least two locations — an actual (or imagined) homeland that forms the basis for the diaspora identity in addition to the target destination (Butler, 2001).² It is also essential to distinguish between trade diaspora communities and other related diasporas, including victim diasporas, labor diasporas, and imperial diasporas.³ Although many of these diaspora communities create their own forms of cultural economy, the trade diaspora remains distinct in that it does not make use of military might (like the imperial diaspora), nor does it derive its origins from a catastrophic event (like the victim diaspora).

Brokerage and Minority Middlemen

Scholars have long argued that premodern trade benefited from the existence of on-site agents to represent the commercial interests of actors sending goods over long distances. In this context, information supporting long-distance trade was both valued and scarce; as a result, relations-based contract enforcement encouraged forms of governance built on networks. Shared culture and religious affiliation helped to establish the boundaries across which trade occurred while also generating a common understanding of the terms of trade (Trivellato, 2014:13).⁴

The existing literature on trade diasporas connects to influential streams of research within the social sciences. The first relates to the role of economic brokerage via middlemen. Bonacich (1973) develops a theory of “middleman minorities,” arguing that such groups tended to occupy an intermediate status position in society, typically concentrating on commerce. Seland (2012:74) argues that these resident foreigners served as “intermediaries between host communities and visiting traders, overcoming cultural and linguistic barriers.” Letters from the Cairo Geniza frequently expressed the belief of merchants that, “one who is present sees what one who is absent cannot see,” allowing for intimate knowledge of both customers and producers (Goitein, 1967:157).

Middlemen minority communities are often characterized by a “close degree of kinship” and social ties that have the effect of encouraging forms of within-group trust across great distances and over long time periods (Cohen, 2008). These groups often share particular social characteristics, including a preference for within-group marriage, residential self-segregation, and maintenance of distinctive cultural traits (Bonacich, 1973). By erecting physical and social barriers between the diaspora community and host society, forms of segregation helped to preserve the cultural integrity of the group so that they would not lose their ability to serve as a cross-cultural broker (Curtin, 1984:38).⁵

Theorizing Premodern Trade Diasporas

Our argument rests on three foundational assumptions. The first is that long-distance, premodern trade placed a premium on luxury goods, and especially goods that were not locally available. Items transported over long distances were typically high-value, non-bulky goods including spices, gems, gold, and ivory; silk, porcelain, and luxury wares from China; and opium, rosewater, and pearls from the Middle East (Lewis, 1973:254-255).⁶ Although some of these goods were clearly intended for purchase by the wealthy, in many cases, the goods traded represented “everyday luxuries,” like black pepper and other spices, which were considered an indispensable component of daily life in the medieval and early modern periods (Goldberg, 2012:21).

Luxury goods enjoyed social, economic, and political relevance in premodern Eurasia, a factor that encouraged diaspora creation. Ornamental goods and scarce commodities “from different cultures” fed the desires of the elites to distinguish themselves both within their own social class as well as from those in lower classes (Canepa, 2010:11-12).⁷ In addition, crafted products that reflected a high skill level

were “universally desired by most societies” and enjoyed an “inner appeal” (Chaudhuri, 1990:304-305). And whereas only a relatively slim percentage of Eurasian populations could afford true luxury goods, the actors involved in the trade and acquisition of such goods tended to be societally important because “prestige” goods served as symbols of power and authority (Schneider, 1977; Bentley, 1996).⁸ Lindkvist and Myrdal (2018:516) summarize this perspective when they write that historical long-distance trade was “dominated utterly by luxury goods” and that such goods were markers of social and political status that allowed elites to establish and reproduce their power.⁹

The second assumption is that wealthy locations were better at producing high-value crafted goods in the period that we examine. Why would this be the case? Wealthy societies were able to engage in forms of specialization unthinkable in poorer areas. Less developed world regions did not witness investments in the types of human capital or complex supply chains necessary to manufacture many types of crafted luxury items.¹⁰ Porcelain, for example, was a highly-valued commodity traded across Eurasia for almost a millennium. Obsession with porcelain could be so intense that “porcelain sickness” led some nobles to bankrupt themselves to acquire beautiful, white “china” (De Waal, 2015). Porcelain was valued, at least in part, because it was so hard to produce. It could take decades for porcelain mounds to mature; producing clay vases and other objects also involved tremendous craftsmanship (De Waal, 2015). For 500 years, no one in the “West” even knew how porcelain was made (though a number of unusual theories circulated).¹¹

Scholars have further suggested that silk production represented one of the first supply chains in human history (Haksoz and Usar, 2011). Highly labor intensive, silk production required a variety of complex skills (Haksoz and Usar, 2011). This included sericulture — the rearing of silkworms — as well as reeling and throwing — competencies core to the transformation of boiled cocoons into silk thread and skeins of silk. Beyond that, luxury fabrics required “a labor force composed of fine spinners, weavers, embroiderers, and finishers” (Chaudhuri, 1990:310). Because textiles have long served as markers of status and wealth, trade in textiles has been a powerful driver of the world economic system (Beaujard, 2019:653).

For economic regions that already enjoyed the highest quality goods, what types of commodities might offer profits for merchants? Our third assumption is related to the returns from unique commodities and the relevance of “continental axes.” Trade in natural resources — including exotic woods, spices, and animal products — that derived from biomes that were distinct from the home region enjoyed economic returns. This is related to the ways in which the “taste for the exotic” permeated social classes in Asia (Schafer, 1985:28) and elsewhere (Freedman, 2005).

Part of the appeal of spices and other rare natural products involved their relative scarcity and their exotic provenance.¹² For example, nutmeg and clove were found only in Southeast Asia and became valued commodities for use in foods, as preservatives, and for medical purposes. Acquiring these goods often involved moving in a “North-South” direction. Diamond (1997:182-183) argues that most of the crops across the “East-West” axis were cultivated varieties that share the same favorable mutations; in other words, they were not independently domesticated but, rather, spread from a common domestication experience. The North-South axis,

however, is characterized by climatic differences that made the crops and products unique; merchants traveled across latitudes beyond their own climatic zone, to locations with different precipitation and temperature profiles.

There are multiple empirical implications that arise from assumptions. The first is that, conditional on distance, trade diasporas will gravitate toward the world's most wealthy areas, because the greatest gains might be enjoyed from brokerage in high-quality, luxury goods. If historical urbanization rates are associated with high levels of economic development (e.g., De Long and Shleifer, 1993; Acemoglu et al., 2002; Stasavage, 2014), Asia stands out as the world's wealthiest region during this time period and, as a result, we expect trade diasporas to gravitate toward Asia.¹³ The second implication is that trade diasporas will skew to places with a distinct, geographical resource base relative to the home region. Finally, the composition of historical global trade should reflect the predictions of the theory. To the extent that cultural constraints to diaspora creation existed, we largely view such factors as endogenous to the economic returns expected from exchange.

Our goal in this section has been to put forward a new argument about trade-related migration — and not trade itself. There remain, however, some connections that can be drawn between our theory of trade diaspora dispersion with more generalized principles of trade. First, our arguments about the role played by trade diasporas speak to the literature on transaction costs including how these cross-cultural networks decrease search and information costs; bargaining and decision costs; and policing and enforcement costs (Dahlman, 1979). Second, existing scholarship suggests that differences in factor endowments and technological progress can influence patterns of trade. Our arguments about the relevance of bioclimatic complementarities and complex supply chain investments speak directly to two dimensions that can attract trade-related investments. Third, trade can lead to gains by increasing the variety of products available (Krugman, 1979). Our focus on the importance of luxury goods and rare natural resources supports a “love of variety” driver of international trade. Finally, scholars have argued that trade and migration are closely linked (Peters, 2015). We argue that trade, and the desire to cultivate exchange, are driving the cross-cultural flow of people.

A theory of historical trade diaspora dispersal provides a more general understanding of how globalization operated in the pre-industrial period. Chase-Dunn and Grimes (1995) suggest that the exchange of prestige goods represented the largest and most important of interaction networks in the premodern world-system. If one agrees with the proposition that contact with the cross-cultural “other” constituted a major motor of historical social change (e.g., McNeill, 1990), unpacking the system logic underlying this aspect of the premodern world-system presents both a thorny theoretical problem (e.g., Chase-Dunn and Hall, 1994) but also an important opportunity to model the structural drivers of cross-cultural interactions. Indeed, our arguments encourage a rethinking of concepts associated with the modern period that have deeply-rooted historical antecedents. For example, although circular migration typically describes recent patterns of movement of people from less to more developed societies in order to acquire capital and skills, we suggest that many of the drivers of circular migration today — including wealth, distance, and complementarity — also influenced historical forms of “circular” migration.

In addition, although we generally think of global supply chains as the product of modern, low-cost transportation and connected international markets, our arguments suggest that discrepancies in resource distribution and the transportability of high-value goods meant that certain global supply chains extended into the pre-industrial period as well.

The Cross-Cultural Movement of People and Goods

An observable implication of these arguments relates to the historical global composition of trade. If peoples across premodern Eurasia valued luxury goods and uncommon natural resources, such items should have left a mark on the historical record, including in terms of products identified in cargo manifests or even the contents of past shipwrecks. A focus on material culture allows us to consider the types of objects that crossed religious and cultural boundaries as facilitated by overseas traders. Such an approach is consistent with Kim et al. (2020), who argue that the product composition of trade provides critical information for understanding trading relationships. We use evidence from a rich historical literature on premodern cross-cultural exchange to describe which merchants were moving (and why) and to identify the types of goods imported and exported across regions.

One important challenge with describing the movement of people and goods across space relates to the categories of reference. In the absence of standard spatial units, labeling people and places creates complexities for the premodern period. Chase-Dunn and Hall (1991:15) describe this as the “subunit problem,” as it is particularly challenging to conceptualize the units of which a world system is composed — a concern that applies both to spatial boundaries as well as boundaries of group identity.

We follow existing scholarly work that argues that separate premodern, Eurasian civilizations represent meaningful and distinct human groupings (e.g., McNeill, 1963). In this context, among the most economically significant cultural groups include those emanating from the Chinese empire, the South Asian states, polities of the Middle East, and the European states, especially those on the Aegean and Mediterranean Seas (McNeill, 1963; Chase-Dunn and Hall, 1997).¹⁴ We consider North Africa to be part of the Middle East and both Arab and Persian traders are considered Middle Eastern.¹⁵ The sections to follow describe our diaspora communities of interest in greater detail with a particular emphasis on the types of goods they sought to exchange.

European Traders — Seeking “Eastern” Products

European merchants demonstrated strong interest in trade with North Africa and the Middle East given the relatively high quality of goods produced and traded in these locations. In the medieval period, for example, Europeans were exporting slaves, metals, and swords to the Middle East while importing pepper, spices, textiles, and silk (Goitein, 1967, 154; Findlay and O’Rourke 2007, 45). Goitein (1967:45) observes that, “Europeans were expected to be satisfied with second-rate

merchandise” suggesting the relative lack of sophistication on the part of traders from Europe.

European merchants established diaspora settlements across the southern and eastern Mediterranean with the goal of facilitating trade. For example, Tunis supported a large diasporic community of Genoese merchants during the thirteenth century (Abulafia, 1996:16-17). The Genoese diaspora enjoyed stable rates of taxation, personal safety, and local institutions that provided living space and cargo storage (Pattison, 2021). Indeed, Tunis is reported to have attracted 17 percent of all Genoese investment during this period and individual Genoese traders were among the wealthiest Europeans living in Tunis (Pattison, 2021). Europeans also took up residence in Cairo and appear frequently in the Cairo Geniza (Goitein, 1967:49). Alexandria further played a role in Mediterranean trade, cultivating a reputation for being a diverse and cosmopolitan international shipping locale (Abu-Lughod, 1991:239-240).¹⁶ In addition, European merchants showed a strong interest in the markets of the Levant, especially Syria (Goitein, 1967:211).

Travelers’ institutions — like the *fondaco* — in North African and Middle Eastern cities supported diaspora communities during the medieval period (Constable, 2003). Providing a range of services, these institutions offered food and shelter as well as provision of space for commerce and storage for merchants working in Muslim regions (Constable, 2003). European travelers visiting Muslim territories suggested that “none of the Christian merchants is forbidden entrance or is molested” (Goitein, 1967:70).

European merchants were long active in Middle Eastern cities despite the fact that Middle Easterners did not establish diaspora communities in Europe. Abu-Lughod (1991:106) writes that the “east” and “west” were characterized by asymmetrical interest in that “Europeans eagerly sought out Muslim lands and their wealth.” Goitein (1967:211) points out, “as a rule...it was the Europeans who came to these [Middle Eastern] markets, not the Arabic-speaking traders who transported the goods to Europe.” Abulafia (1996:11) similarly observes that “north Italians were not forced to compete with Muslim merchants operating the same trade routes in reverse direction” and that “twelfth century Genoa make little reference of Muslim visitors.” Why didn’t Muslims establish trade diaspora communities in Europe? According to Constable (2003:328), “there was apparently little to draw Muslim traders to Europe, and several factors — including disinclination and inconvenience — to keep them away.”¹⁷

The wealth associated with societies of the Indian Ocean region also attracted the interest of Europeans since antiquity (Clark, 2006:388). Indeed, it was unthinkable to Europeans that they would be able to produce finished products nearly as refined as those produced in South Asia (Chaudhuri, 1990:298). For centuries, Europeans did not have the capability to directly access the Indian Ocean region given the high costs of long-distance travel. When Portuguese explorer Vasco da Gama disembarked in Calicut in 1498, he became the first European to have identified an all-sea route to India from Europe.¹⁸ The meager merchandise da Gama brought for trading failed to impress Indian intermediaries, leaving the Portuguese without a coveted commercial agreement. Successive Portuguese expeditions were notorious

for their use of maritime violence in order to coerce their way into the Indian Ocean economic system.

Middle Eastern Merchants — Connectors of Eurasia

Middle Eastern merchants were among the most intrepid of long-distance travelers, often establishing distant diaspora communities. For example, direct sailing between the Middle East and China began in pre-Islamic times (Hourani, 1951:46-47), with Persians dominating that trade during the period of the Sassanian Empire (Chaffee, 2018). According to Chaffee (2018:42), “these Arab-Persian merchants in China were not simply isolated individuals pursuing wealth on their own, but part of a diaspora creating the most effective and integrated long-distance trade network that maritime Asia had ever seen.” Hourani (1951:61) describes the sea route between the Persian Gulf and southern China as “the longest in regular use by mankind before the European expansion in the sixteenth century.” Nizami (1994:53) goes as far as to argue that the Arabs — armed with their superior understanding of navigation and oceanography — “discovered the Far East and acted as the commercial link between East and West.”

Middle Eastern traders sought out opportunities to trade in China to facilitate exchange of “silk, ceramics, and porcelains...and to supply China’s growing demand for exotica” (Risso, 1995:25). Quanzhou, for example, was known to Ibn Battuta as Zaitun and was among the most extensive port emporium cities (Chaffee, 2018:138-139). The medieval Muslim chronicler Al-Tabiri wrote of Basra saying, “there is no obstacle between us and China...everything on the sea can come to us on it” (Hourani, 1951:64). Sailing time between Muscat and Canton was 120 days (Hourani, 1951:74). The shipwreck of an Arab-Persian ship headed toward the Persian Gulf from this period included in its cargo lead and silver ingots, gold leaves, and 56,500 ceramic items with painted decoration as well as “blue and white” stoneware (Beaujard, 2019:27).

Trade continued into the Song period, encouraged by extensive and continued economic specialization in Chinese cities and villages (Findlay and O’Rourke, 2007:63-64). In this context, “port cities attracted large communities of foreign merchants, mainly Arabs and Persians, who enjoyed substantial legal protection under a form of extraterritoriality for their activities” (Findlay and O’Rourke, 2007:63). Muslim merchants were leading maritime agents in Guangzhou and members of the diasporic community served as the headman who administered “the foreign quarter” (Chaffee, 2018:93).¹⁹ During the Ming period, however, anti-trade policies meant that merchant communities that had been active for centuries witnessed decline (Chaffee, 2018:162).

Arab and Persian traders also established diaspora communities in South and Southeast Asia. According to Nizami (1994:57) the first Muslim colonies appeared on trade routes of western India and Ceylon. Indeed, merchants from countries like Egypt were not concerned with Venice or Genoa, but rather trade in the Indian Ocean (Abulafia, 1996:12). Schafer (1985:12) argues that “from the seventh to the ninth century, the Indian Ocean was a safe and rich ocean” with Persian as the *lingua franca*. In the Maldives, Malabar coast, and Gujarat, Arab merchant colonies

persisted for generations, “undisturbed and unmolested” (Nizami, 1994:58). These traders brought Indian goods to European markets via Egypt and Syria (Nizami, 1994:53). Indian textile production was sophisticated and valued across Eurasia (Abu-Lughod, 1991:280-282) and there was also interest in acquiring botanical products like pepper, cinnamon, teak, cardamom, and betel nuts (Chaudhuri 1983, 186-187; Lambourn 2018, 53).

The Geniza documents provide further information about the diversity of goods handled by Middle Eastern merchants as part of the Indian Ocean trade. One merchant describes the importation of medicinal and culinary herbs, dyeing plants and exotic woods, silk, and perfumes (Goitein, 1967:153). A second merchant makes references to silk, spices, aromatics, perfumes, gum, jewelry, and semi-precious stones (among other goods). The most common items sent from the Middle East to Indian Ocean destinations were relatively low-value textiles and clothing; vessels and ornaments; and chemicals, medicaments, soap, paper, and books (Goitein and Friedman, 2008:18). Chaudhuri (1983:186-187) summarizes the regional exports from Egypt and the Levant as nuts, pottery, arms, paper, linen, and glass; from Aden as incense, pearls, and precious stones; and from the Persian Gulf ports — like Hormuz — as carpets and thoroughbred horses.²⁰ According to Arab geographers, primary exports from India to the Arab world included fragrant woods (e.g., sandalwood), spices (e.g., clove, cinnamon), cloth (e.g., brocade), precious stones, and dyes; the main imports to India from the Arab world were rosewater, dates, silks, furs, hides, weapons, and horses (Nizami, 1994).

South Asian Diaspora Communities — A Limited Presence

What factors drove the expansion of the South Asian mercantile diaspora? Dale (2017) argues that South Asia’s highly productive and fertile agricultural land combined with a large and diverse population to feed the growth of major urban centers and an associated luxury goods trade. Tamil merchants associated with the Chola Empire, for example, were engaged in commercial exchange in Southeast Asia and China (Dale, 2017).²¹ Guangzhou was a major trade emporium and diaspora location where South Asians lived alongside Arabs and Persians (Beaujard, 2019:5).

Historical texts have long made reference to South Asian settlers in Arab regions. For example, Arab chroniclers discussed Indian merchants living in cities on the Arabian peninsula, like Jeddah, and southern Iraqi cities, like Basra; in some cases the Jat people have been described as being responsible for protecting Middle Eastern trade routes (Nizami, 1994:57). As described in the previous section, South Asian and Middle Eastern merchants traded rare commodities between regions. For one particular boat sent from India to Aden, the ship mostly carried pepper; and from Aden to India, the highest value item was copper (Goitein and Friedman, 2008:19).

Gujarati traders were particularly broad in their geographic range and their scope of commercial activity, establishing communities in cities like Aden and Hormuz, along the East Africa coast, and in Southeast Asia where thousands took up residence in Malacca (Lewis, 1973:243-244). Overall, however, Indian merchants were much less represented in China than Arab and Persian merchants (Findlay

and O'Rourke, 2007:70). Hindu dislike of participation in overseas trade and South Asian caste taboos may have also made diaspora formation challenging. Although South Asians existed in trade communities, Indians themselves were not especially active on the sea with the exception of Gujaratis and South Asian Muslims (Abu-Lughod, 1991:284).

Merchants from northern regions of South Asia, like the Punjab, also developed economic engagements in Afghanistan, Central Asia, and Iran, serving as moneylenders and cloth dealers (Dale, 2017). Indian merchants also participated in economic exchange in Russia. According to Dale (2017) "Russia was a primitive, under populated and economically undeveloped country at the time Indian merchants entered the country."

Chinese Seafarers — In Search of Rare Resources

Despite the fact that China long enjoyed the technological capacity to build and sail large vessels capable of carrying an extensive cargo load (Lewis, 2012:162), Chinese traders frequently showed a preference for operating within China rather than across Eurasia. As previously discussed, China was a major destination for diaspora communities from the Middle East and South Asia. On the other hand, "the Chinese, for their part, did not travel much along the trade routes...it was rather agents from other cores and of semi-peripheries...who traveled to China" (Beaujard, 2019:5). This is perhaps not surprising because China's rapid population and economic growth allowed for the development of an impressive market-oriented productive capacity built on economic specialization of Chinese workers (Elvin 1973, 128; Beaujard 2019, 148). Chinese interest in developing diaspora communities abroad was likely dampened because it was the wealthiest location in the world economy during the premodern period.²² According to Abu-Lughod (1991:316), China was the most "populous and technologically advanced region of the medieval world."²³ Frank (1998:111) argues that China was "unrivaled" in its production of luxury consumer items.²⁴

When Chinese merchants did seek to establish diaspora communities to facilitate trade, they showed a particular interest in rare, foreign goods as depicted in Schafer's classic study, *The Golden Peaches of Samarkand: A Study of Tang Exotics*. During the Tang period, Chinese imports included colored glass from the Islamic world, coral, ivory, spices, medicines, perfumes made of incense, myrrh, aromatic woods, nutmeg, cloves, and cardamom; dyes (like red lacquer from cochineal insects), jewels, gems, pearls, rhinoceros horns, and turtle shells. In exchange the Chinese sent silk fabric, raw silk, lacquered items, ceramics, spices and metals made of iron (Beaujard, 2019:26-27).

These patterns continued into the Song and Yuan periods. Wheatley (1959) provides extensive information about the types of commodities that were commonly imported as part of China's maritime trade.²⁵ Chinese maritime imports were particularly concentrated on products that reflect bioclimatic complementarities, rather than just bulk goods, including spices, rare animal products, and exotic woods. Evidence from a Song dynasty shipwreck in Quanzhou Bay, for example, suggested that the vessel was loaded with imported raw materials needed to

make perfumes and medicines, some of them from as far away as Somalia (Deng, 1997:273). What did China export in exchange for these items? China's main exports included "silks, brocades, chiffons, porcelains, and lacquerware" (Wheatley, 1959:37) — all items that reflected relatively sophisticated production processes.²⁶ One Yuan dynasty shipwreck included a cargo of 18,600 pieces of porcelain, as well as processed medicine, silver, tin, and copper coin (Deng, 1997:275).

Despite Ming era prohibitions on trade, a major wave of Chinese diasporic emigration began in the late fifteenth century with increased commercial exchange in Southeast Asia. Until the fifteenth century, the "straits" region was peripheral to the world economy because "industrial goods were not being produced and processed there, but in core regions such as India and China" (Abu-Lughod, 1991:303).²⁷ In this context, Southeast Asian economies increasingly provided "agricultural produce and raw materials for Indian and Chinese industrial wares" (Abu-Lughod, 1991:303), including pepper, cloves, nutmeg, and camphor (Reid, 1980) as well as drugs and aromatics (Wheatley 1959, 32; Findlay and O'Rourke 2007, 64).²⁸ When Chinese diaspora communities did develop, they mostly emerged in locations — like Vietnam, Cambodia, the Philippines, the Malay Archipelago, and Thailand — where merchants might procure items that were not items easily available in the climatic zones of the Chinese polity. Wheatley (1959:19) argues that although the Chinese polity extended into regions with forested hills and varied vegetation, "there came a time when a developing desire for luxuries in a unified Chinese state could be satisfied only by the import of products alien to the soil of the country."

Our discussion about the relative dearth of Chinese overseas trade diasporas raises at least two potential objections. First, perhaps the Chinese tributary system substituted for trade in a way that obviated the need for long-distance merchant diasporas? Deng (1997:259) argues, however, that across Chinese dynasties, the most common types of tribute received by the Chinese empire tended to be livestock (especially horses) and ordinary consumption goods rather than the types of rare spices, animal products, and exotic woods that the Chinese tended to seek out through cross-cultural trade. Second, perhaps Chinese state prohibitions on overseas trade during the Ming and Qing dynasties explain why there were so few Chinese overseas diaspora communities? Again, Deng (1997:261) suggests that private trade easily bypassed government bans and continued to be active during the Ming and Qing periods. Indeed, it is during the periods with the greatest restrictions on trade that we see the largest number of Chinese trade diaspora communities being established in Southeast Asia.

Quantitative Analysis of Diaspora Locations

This section seeks to move beyond a description of the diaspora communities and composition of trade to a more systematic set of tests associated with our arguments. We create a data set that includes all cities that were ever among the world's largest between 600 and 1600 AD and seek to identify if trade diaspora communities existed in each city over those centuries.²⁹ To establish our universe of cases from a single source, we follow the same approach as in Blaydes and Paik (2021a,b). We create our data set to contain all cities that appear at least once on any of the lists generated

by Chandler and Fox (1974) as the world's largest during this 1100 year period (for a total sample of 253 cities across Eurasia and Africa). For each year, Chandler and Fox (1974) have on average 75 cities on each list and provide city rank order by size (in addition to population estimates for many of the cities).

For a city with rank information but without a population estimate, we estimate its population by using the power law distribution.³⁰ In cases where a city makes the list in a given year (and is, thus, included in the data) but does not make the list in another year (i.e., both the city's population and rank order information are missing), we assign a lower bound of zero and an upper bound of the population for the smallest city that appears on that year's list as the city's population interval estimate in a given year. We then take the mean of this range to obtain the city's population point estimate in such a circumstance.

Why focus our attention on large cities, or at least cities that had the potential to be large? There are clear links between historical urbanization and diaspora creation in the premodern period. Curtin (1984:2) writes that "the most common institutional form after the coming of city life was the trade settlement...commercial specialists would remove themselves physically from their home community and go to live as aliens in another town, usually not a fringe town, but a town important in the life of the host community."³¹ Scholars have also noted that trade was conducted across urban networks, especially in notable cities (Lindkvist and Myrdal, 2018:518). We also believe that the richest data about the existence of trade diasporas for the historical period can be found in scholarship on the history of prominent cities.

Coding Trade Diaspora Communities

For every city and time period (e.g., century), we code for whether there was a Chinese, Middle Eastern, European, or South Asian trade diaspora based on mention of these communities in historical sources.³² We identify the general region of origin for each diaspora community as well as the "gravity" center for that region based on city population located within the natural geographic boundaries of the "homeland" region.³³ As we have discussed previously, although it is challenging to demarcate world regions, doing so is necessary in order to undertake comparative historical analysis (e.g., Findlay and O'Rourke, 2007). Similar to Chase-Dunn and Manning (2002), regions are held constant over the entire study period. In our data set, there are 32 cities in Europe, 46 in the Middle East, 74 in South Asia, 27 in China, and 74 in other parts of Eurasia and Africa.

The data that we present cannot speak to every diaspora community and certain regions are under-represented in our analysis. This means that relatively small cities, including many that were important diaspora locations — such as Aden, Malacca, and Manila — do not enter into our analysis as they do not appear in any of the largest cities lists between 600 and 1600 AD. In addition, diaspora communities did exist in sub-Saharan Africa, but because relatively few sub-Saharan African cities ever become large world cities, they do not enter into the data set.³⁴ The omission of these locations means that some diaspora communities are not coded; on the other hand, our decisionmaking rule for inclusion offers a principled strategy for generating our sample.

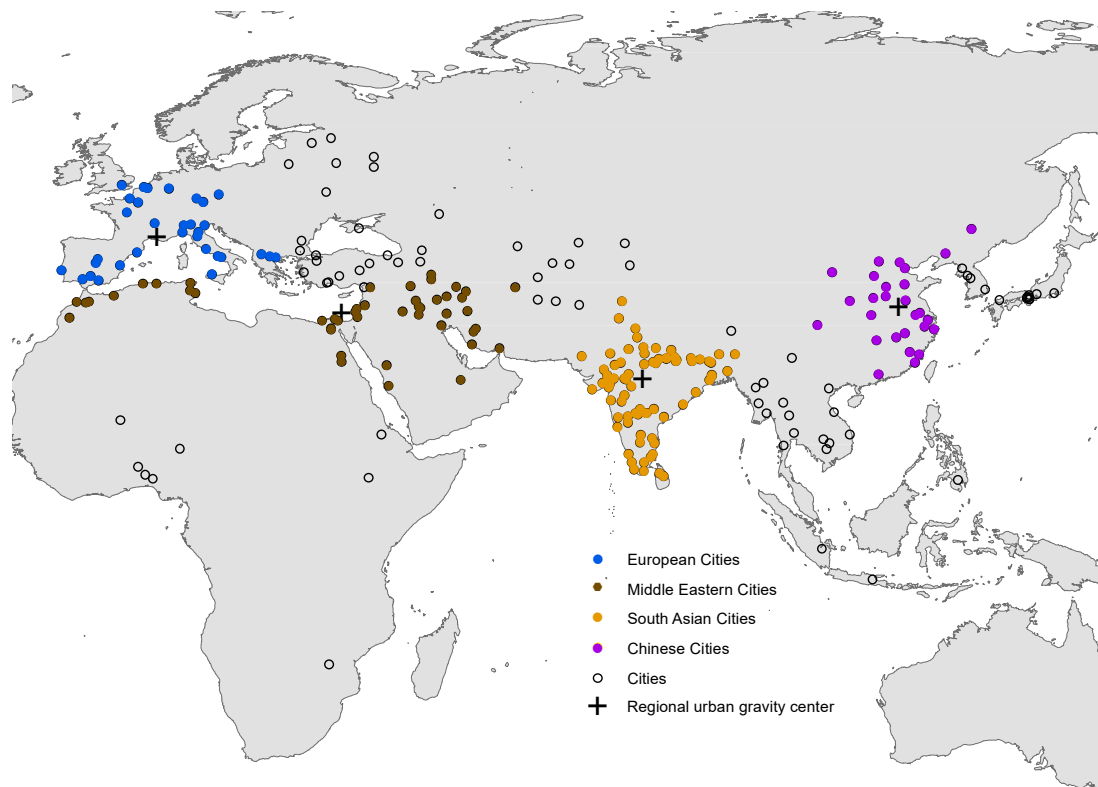


Figure 1: Regions of origin and destination cities.

Figure 1 shows cities grouped under the broadly-defined “homeland” regions of China, South Asia, the Middle East, and Europe. In assigning the location for each diaspora group’s origin, we calculate the urban center of gravity for each region marked as the group’s “homeland” in a given year, using the population estimates for cities in that region. That is, we take the average longitude and latitude for all the cities in the region, weighted by the city population estimate. Figure 1 also shows these gravity centers for 1600 AD marked as crosses.

Each dyadic entry, $Diaspora_{ijt}$, in our compiled data set provides information about whether diaspora group i is found in destination city j in time t . We exclude observations in which destination city j is located within group i ’s region of origin. That is, we focus on cross-regional diaspora communities only and omit observations in which migration occurs within the group’s homeland region. In total, we have 262 historical accounts of diaspora communities out of 8,330 observations; that is, about three percent of the observations are coded as “one” and the rest as “zero.”³⁵ This represents an underestimate of actual diaspora formation but likely identifies the most significant occurrences of trade diaspora. Figure 2 shows the

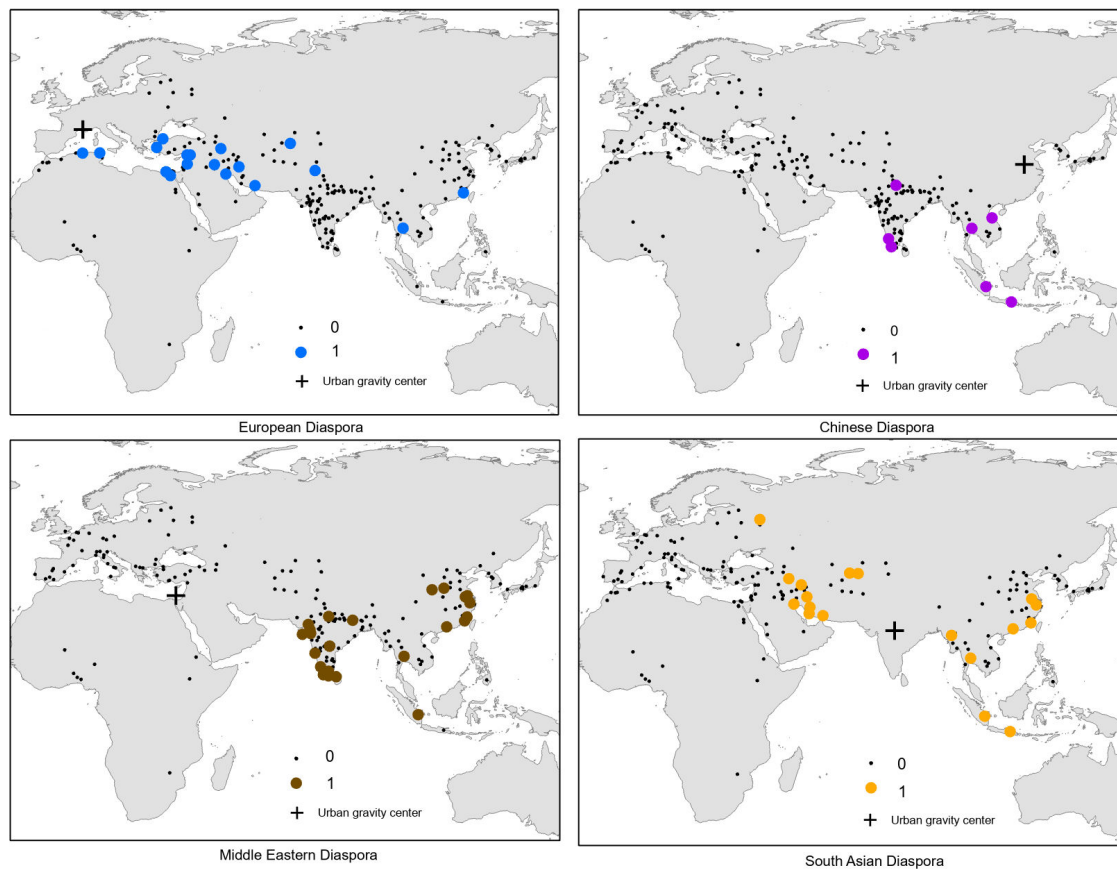


Figure 2: Diaspora community locations, 622 to 1600 AD.

locations of cities where the four diaspora communities were found between the years 600 and 1600 AD.

Among the destination cities in our data, Quanzhou saw the highest number of different diaspora communities recorded across time, some of which existed for more than eight centuries. Cities like Kayal (known as Kayalpatnam in current-day India) and Hormuz (in current-day Iran) also hosted diaspora communities for multiple centuries. Chang'an (known as Xi'an in current-day China) long hosted Arab and Persian diaspora communities. Other cities with significant history of diaspora communities include Ayutthaya (known as Phra Nakhon Si Ayutthaya in current-day Thailand) which hosted Chinese traders as well as Middle Eastern and European trader communities.

We observe several broad trends in the data. First, Middle Eastern diaspora communities are found across cities in China, South Asia, and Southeast Asia. The absence of Arab and Persian trade diaspora settlements in Europe — despite Europe's relative geographic proximity — is notable. Second, we find South Asian trade diaspora communities spanned cities to both the east and the west of the

subcontinent. The fact that there were no South Asian trade communities found in Europe suggests either that European destinations were too far or that they lacked the types of commodities merchants valued, or both. Third, we find that in our data European trade diaspora communities are mainly located in North Africa and the Middle East. Excluding religious, colonial and imperial diasporas, we still find European diaspora presence in the region (Cairo, for example) prior to the First Crusade, as well as in major cities like Baghdad and Basra in the fifteenth century.³⁶ Finally, cities with a Chinese diaspora presence are concentrated in Southeast Asia and South Asia, and the majority are located in areas with a tropical ecological zone.³⁷ Importantly, the biomes of South and Southeast Asia differ markedly from those of the major cities in China and Europe, which are mostly situated in temperate and mixed woodlands.³⁸

Empirical Results

One way to operationalize our research question is to make use of a basic gravity model of the type commonly used in the literature on international trade. A “gravity law” of population predicts that the number of diasporic merchants will be a function of population in the destination city and origin areas, divided by the distance between the two locations. Our data is not precisely of this form, however. Our dependent variable is binary; we are able to identify whether there was a mention of a certain diaspora community in a given city for a particular year based on the work of historians, but not the exact number of merchants who moved to each locale. As in a gravity model that explores dyadic trade and migration patterns between two polities, we include the population of the destination city as a factor explaining the presence of a diaspora community, as well as the cost of travel between the region of origin and the destination city. City population is our proxy for level of economic development.

In order to calculate the cost of travel to distant locations, we employ the least-cost path analysis in ArcGIS. This allows us to calculate the length of a simulated path between locations that accounts for the low cost of travel by water (relative to travel by land), as well as the cost of traveling on sloped terrain.³⁹ This distance measure is time-varying; in each period, the location of the urban gravity center changes based on the population of each city within the region.⁴⁰

We are also interested in understanding the appeal of establishing a diaspora community in a location that offers complementarities in terms of biodiversity. Given the relevance of “continental axes” in explaining these complementarities (Diamond, 1997; Laitin et al., 2012), we present latitude and longitude differences between the urban gravity center of each region and the destination city as measures of complementarities between the two locations. For each diaspora group, these differences are also informative in that they tell us the direction of diaspora group travel. Positive latitude and longitude differences would indicate that the destination city is located north and east of the gravity center, respectively.

As alternative measures, we also take into account two factors that determine the predominant forms of vegetation in an area — temperature and rainfall.⁴¹ In particular, we seek to explore the incentives for creating a trade diaspora based

on the idea of bioclimatic complementarity between the region of origin and the destination city. Our regression specifications, then, include variables representing the difference in annual mean temperature between the destination city and the region of origin, as well as the difference in annual precipitation between the two locations.⁴² Positive values mean that the destination city is warmer and wetter than the merchant's home region.

Given the region-to-city panel data setup that we employ, and the relatively small number of trade diaspora communities compared to the large number of potential dyads, we use a logistic regression that allows for rare-event corrections (i.e., `relogit` in STATA) as our baseline model (King and Zeng, 2001). We run the regression analysis separately for each diaspora community. We do not include destination city fixed effects but do make use of time-period dummy variables (where feasible) to capture any temporal effects commonly affecting all of the diaspora communities at different points in time. We also cluster the standard errors at the diaspora group-destination city dyad level, as these observations may not be independent within the dyad-group across time periods.⁴³

Table 1 provides information about diaspora settlement patterns. Each column represents the correlates of diaspora formation for the four different groups (i.e., Column 1 shows correlates of European diaspora formation). The first four columns operationalize bioclimatic complementarity with differences in longitude and latitude; columns 5 through 8 use differences in temperature and precipitation as proxy variables. Because the rare-events logistic regression does not readily lend interpretable coefficient estimates, we report our results as predicted probabilities.⁴⁴ Based on the coefficient estimates with all variables at their means, we find that the probability of European diaspora in a city is 0.3 percent. Those that did migrate were likely to establish trade diaspora communities in large cities that were relatively close to Europe and to the east of their homeland.

Column 2 shows that Middle Eastern traders also sought large cities in which to settle. Middle Eastern merchants further appear to show a strong interest in establishing diaspora communities in locations with a complementary natural habitat in the southeast direction from their homeland, as indicated by the signs of the coefficient estimates. Difference in longitude appears as statistically significant for Europeans and Middle Eastern traders who mainly travelled towards the east in the direction of the relative wealth of China and South Asia. Latitude difference, on the other hand, emerges as significant for all diaspora groups except Europeans. In other words, traders were — on average — heading south of their regions of origin. The size and statistical significance on the coefficient for Chinese diaspora groups is particularly notable; as the wealthiest region in the world during our period of study, Chinese traders had the largest incentive to establish diaspora communities in locations with bioclimatic complementarities (i.e., Southeast Asia and South Asia).

In terms of the substantive interpretation, suppose a destination city had a population of 20,000, which is about the 25th percentile in our population data. Under column 2, the coefficient estimate for that city population suggests — holding other variables at their means — the probability of finding a Middle Eastern trade diaspora community in that city is 1.4 percent. This probability increases to 3.5

percent when the population increases to the 75th percentile (i.e., population of 47,000).⁴⁵ In Column 2, we also observe that Middle Eastern traders were more likely to migrate to cities in the south. The probability of diaspora is 5.2 percent under the 25th percentile latitudinal difference (-11.48) and 1.0 percent under the 75th percentile latitudinal difference (7.30). Column 3 suggests that the likelihood of finding a South Asian diaspora in a city is generally smaller (0.8 percent) relative to Middle Eastern traders. In the case of South Asian traders, larger cities close to South Asia were also more attractive for establishing diaspora communities.

Although very few Chinese traders established diaspora communities, like other diasporas, a large urban population was a draw. Relative to other groups, however, the latitudinal difference appears to have been much more important for the Chinese traders. Trader communities were likely to be found in cities that were south of the homeland, suggesting that the traders were drawn to nearby tropical zones, particularly those found in Southeast Asia.⁴⁶

Columns 5 through 8 in Table 1 replicate the results from columns 1 through 4, but replace the longitude and latitude differences with temperature and precipitation differences. Difference in annual precipitation appears as statistically significant for European and Chinese traders but in the opposite directions; Europeans mainly travelled towards drier-climate regions of the Middle East, whereas the Chinese went in the direction of the wetter region of Southeast Asia. In both cases, this represents the importance of seeking out bioclimatic complementarities. Difference in mean temperature emerges as a significant correlate for Middle Eastern and South Asian traders.⁴⁷

It is worth noting two general patterns reflected in Table 1. First, all diaspora groups show a preference for settling in larger cities. This empirical fact is consistent with our argument that wealthy societies had the potential to attract trade diasporas as a result of their luxury goods production. Second, in all cases, distance is negatively correlated with the creation of a trade diaspora. This is not surprising given the high costs of travel during the premodern period. If we were to simply look at these two patterns, our findings would be remarkably similar to those associated with gravity models of international trade in which bilateral trade tends to be a function of the economic size and distance of two units. The fact that we are able to establish this pattern for the period from 600 to 1600 AD suggests basic commonalities in the drivers of exchange, past and present.⁴⁸

Taking State Characteristics into Account

Taken together, the results presented in the previous section suggest that diaspora communities tended to gravitate to larger cities; closer cities; and cities that were closer to the equator. Although the empirical specifications that we have presented thus far focus on what we consider to be foundational incentives associated with the creation of trade diaspora communities, our analysis has not taken into account the extent to which trade diaspora communities settled in locations with favorable political institutions. On the one hand, scholars have suggested that traders in Eurasia for the most part operated with minimal interference from their host state beyond the setting of taxes and terms of trades (Gordon, 2007). The main reason

Table 1: Trade diaspora communities — difference in longitude and latitude, mean temperature and annual precipitation, origin and destination city.

	Middle		South		Middle		South	
	European (1)	Eastern (2)	Asian (3)	Chinese (4)	European (5)	Eastern (6)	Asian (7)	Chinese (8)
Destination city population	1.179 [†] (0.188)	1.101 [†] (0.226)	1.177 [†] (0.195)	1.265* (0.577)	1.137 [†] (0.183)	1.029 [†] (0.222)	1.156 [†] (0.197)	1.235* (0.536)
Least-cost path to destination city	-1.083 (0.597)	-0.250 (0.142)	-0.483 [†] (0.170)	-0.962 (0.698)	-0.235* (0.102)	0.221* (0.112)	-0.495 [†] (0.156)	-0.400 (0.404)
Longitudinal difference	0.083 (0.051)	0.042 [†] (0.015)	0.006 (0.009)	-0.026 (0.045)				
Latitudinal difference	-0.024 (0.039)	-0.092 [†] (0.019)	-0.061 [†] (0.020)	-0.209 [†] (0.059)				
Difference in mean temperature					0.026 (0.029)	0.218 [†] (0.056)	0.079 (0.041)	0.242 (0.184)
Difference in annual precipitation					-1.552* (0.768)	-0.077 (0.602)	0.368 (0.446)	1.736 [†] (0.411)
Observations	2210	2070	1790	2260	2210	2070	1790	2260

Notes: Robust standard errors clustered at diaspora group-destination city dyad and reported in parentheses.

† $p < 0.01$; * $p < 0.05$.

for this is that rulers valued the taxes earned from trade and if a polity treated merchant diasporas poorly, they would simply move to a competitor city with better conditions (Gordon, 2007). On the other hand, trading systems are dependent on their regulatory environments. Merchants were likely concerned with a variety of factors including the safety of the host location, its relative stability, and the probability of expropriation by the state.⁴⁹ There is considerable reason to believe that political conditions in the host city would influence the decision of a diaspora community to settle in a particular location.⁵⁰

This section investigates if our main results persist even after taking into account characteristics of the states in which diaspora-hosting cities might have been located. Although we are not able to empirically control for the full range of relevant political factors, we can operationalize political institutions in two ways, each of which provides useful information for understanding the prevailing political context. Our first empirical strategy is to include a control variable for the size of the state in which potential host city was located. Although large, tribute-taking empires may have been more repressive than city states toward outsiders, imperial capitals of large states — like Chang’an and Constantinople — were important, longstanding locations of mercantile and cultural exchange. On the other hand, small city states tended to be insular and composed of tight elite networks that may have been difficult for foreign traders to penetrate; at the same time, city-states have long been thought of as important trade emporia, politically supportive of diaspora communities. Our second empirical strategy focuses on relative stability of rule as related to the state in which the host city was located. Stability of rule provides information about the existence of the potential for long-standing political institutions and regularized norms surrounding societal relations.

We construct state size and duration variables as alternative measures of state characteristics by utilizing a set of maps from GeaCron, a database that maps state boundaries around the globe for different time periods. For each city-period observation in our data we obtain the geographic area of the state in which the city was located in.⁵¹ We also identify whether the same state ruled the city in the previous time period (one century before), and code our state duration variable as “one” if such is the case and “zero” otherwise. Table 2 follows the same specifications as in Table 1 with longitude and latitude differences, but adds the state size and the duration measures as additional control variables.⁵² We find that our main results remain robust and substantively similar to our main specifications.

Taking Cultural Characteristics into Account

In addition to state characteristics, cities likely differ in their willingness to welcome diaspora communities as a result of cultural factors. Our preferred interpretation is that cultural attitudes toward outsiders are endogenous to the gains to be made as a result of economic exchange. At the same time, however, some locations may have very strong prior beliefs about the acceptability of foreigners as a result of their histories. One way to think about the cultural acceptability of outsiders connects to cosmopolitanism — the idea that all people are deserving of respect and consideration, regardless of their origin (Appiah, 2006). There are deep historical roots to

Table 2: Trade diaspora communities — difference in longitude and latitude and state characteristics.

	European (1)	Middle Eastern (2)	South Asian (3)	Chinese (4)	European (5)	Middle Eastern (6)	South Asian (7)	Chinese (8)
Destination city population	1.157 [†] (0.186)	1.042 [†] (0.237)	1.097 [†] (0.203)	1.330* (0.547)	1.180 [†] (0.180)	1.076 [†] (0.230)	1.298 [†] (0.228)	1.318* (0.557)
Least-cost path to destination city	-1.051 (0.555)	-0.339* (0.147)	-0.552 [†] (0.182)	-0.964 (0.684)	-1.059 (0.611)	-0.283 (0.153)	-0.471 [†] (0.183)	-1.011 (0.724)
Longitudinal difference	0.080 (0.049)	0.049 [†] (0.017)	0.004 (0.010)	-0.026 (0.043)	0.079 (0.051)	0.044 [†] (0.016)	0.009 (0.010)	-0.031 (0.046)
Latitudinal difference	-0.031 (0.033)	-0.107 [†] (0.021)	-0.084 [†] (0.020)	-0.209 [†] (0.057)	-0.026 (0.041)	-0.095 [†] (0.020)	-0.073 [†] (0.019)	-0.211 [†] (0.060)
State size	0.066 (0.088)	0.135 [†] (0.031)	0.177 [†] (0.060)	0.161 (0.113)				
State duration					-0.499 (0.407)	-0.017 (0.189)	-1.227 [†] (0.369)	-0.357 (0.332)
Observations	2210	2070	1790	2260	1989	1863	1611	2034

Notes: Robust standard errors clustered at diaspora group-destination city dyad and reported in parentheses.

† $p < 0.01$; * $p < 0.05$.

the idea of cosmopolitanism and associated ideas about the natural ties between all people. Beaujard (2019:671) suggests that cities “served as points of articulation” between commercial interests and identity categories where cosmopolitanism was a major characteristic of such spaces. Although large cities, both past and present, are generally thought to be locations with high levels of cosmopolitan values, not all major cities are equally accepting of outsiders.⁵³ Cartier (1999) draws linkages between maritime and trade-based economies and cosmopolitan values, arguing that such locations have historically been diverse and polyglot.

We propose two empirical strategies to control for historical levels of cosmopolitan values. Our first measure seeks to control for historical trade routes as a proxy for cosmopolitanism. For a subset of city-year observations in our data — in particular, for years 1000, 1200, 1400 and 1600 — we identify the distance from each city to trade routes from the century prior. Kennedy (2002) provides trade route maps for the years 900, 1100, 1300 and 1500 that allow us to calculate each city’s distance to the nearest major overland or sea trade route.⁵⁴

Second, we exploit the fact that the world’s most prominent trade routes have sought to connect Eurasia’s important land and sea chokepoints.⁵⁵ Because these natural chokepoints were so important to the history of global trade, we argue that such locations are more likely to cultivate cosmopolitanism values. We identify six natural geographic chokepoints for use in our analysis: the Strait of Hormuz, the Strait of Gibraltar, the Bab al-Mandab (i.e., the Mandab Strait connecting the Red Sea to the Gulf of Aden), the Bosphorus Strait, the Strait of Malacca, and the isthmus of Suez. These natural connecting points served as critical pathways for traders over centuries. For each city in our data set, we identify the nearest chokepoint and calculate the distance to it. Table 3 replicates our main results from Table 1 (columns 1 through 4), controlling for our two measures of cosmopolitanism.⁵⁶ Again, we find that after including proxy variables to control for trade route-based cosmopolitanism, the main findings remain similar to those in Table 1.

An Agent-Based Model of Diaspora Formation

Our empirical findings draw on the historical record to explore trends in the establishment of trade diaspora communities. But to what extent can we ground those patterns in the behavior of individual traders moving from one place to another? Scholars have suggested that agent-based models (ABMs) are useful for deriving macro-outcomes from decisions made by individual agents at the micro-level, allowing for the construction of the micro-to-macro mapping that can help to validate theoretically-motivated research (Chattoe-Brown, 2013; De Marchi and Page, 2014; Bruch and Atwell, 2015; Hedström and Manzo, 2015). In an overview on the use of ABM in sociology, Macy and Willer (2002) describe the approach as aiding understanding of global patterns derived from dynamic processes of decisionmaking. In this section we create an environment for agents — in our case, traders — with constraints and opportunities that are meant to represent a stylized version of what merchants faced in the historical context.⁵⁷

We characterize an ABM environment in which there exist varying degrees of natural resource availability and urbanization levels. Our goal is to explore trader

Table 3: Trade diaspora communities — difference in longitude and latitude and cultural characteristics.

	Middle		South		Middle		South	
	European (1)	Eastern (2)	Asian (3)	Chinese (4)	European (5)	Eastern (6)	Asian (7)	Chinese (8)
Destination city population	1.341 [†] (0.213)	1.064 [†] (0.246)	1.407 [†] (0.256)	1.596* (0.686)	1.147 [†] (0.193)	1.099 [†] (0.229)	1.167 [†] (0.205)	1.319 [†] (0.490)
Least-cost path to destination city	-0.565 (0.404)	-0.141 (0.165)	-0.507* (0.224)	-0.279 (0.863)	-0.930 (0.642)	-0.356 (0.188)	-0.252 (0.201)	-0.470 (0.507)
Longitudinal difference	0.056 (0.037)	0.044 [†] (0.017)	0.010 (0.017)	0.029 (0.077)	0.077 (0.048)	0.050* (0.020)	0.046 (0.025)	-0.002 (0.033)
Latitudinal difference	-0.047 (0.036)	-0.316 [†] (0.028)	-0.082 (0.046)	-0.224 [†] (0.065)	-0.020 (0.041)	-0.102 [†] (0.024)	-0.003 (0.049)	-0.148 [†] (0.036)
Distance to overland trade route (lagged)	-1.540* (0.750)	-0.640 (0.358)	-0.489 (0.584)	-0.904 (0.760)				
Distance to sea trade route (lagged)	-0.059 (0.463)	-0.253 (0.130)	0.060 (0.178)	0.313 (0.281)				
Distance to nearest chokepoint					-0.330 (0.714)	0.343 (0.262)	-1.149 (0.601)	-0.338 (0.349)
Observations	884	828	716	904	2210	2070	1790	2260

Notes: Robust standard errors clustered at diaspora group-destination city dyad and reported in parentheses.

† $p < 0.01$; * $p < 0.05$.

(1) Europe $R=4, P=5$	(2) Central Asia $R=3, P=1$	(3) East Asia $R=6, P=10$
(4) Middle East $R=4, P=10$	(5) South Asia $R=8, P=8$	(6) Southeast Asia $R=10, P=2$

Figure 3: Stylized illustration of a six-region agent-based model environment; values for R (raw materials) and P (urbanization).

migration patterns as a function of these factors. We use Netlogo, a programming language and modelling environment that offers a visual interface for simulating agent-based models.⁵⁸ In the model, we define an environment that is made up of six regions, roughly representing Europe (1), Central Asia (2), East Asia (3), the Middle East (4), South Asia (5), and Southeast Asia (6).⁵⁹

Each grid-cell within a region is endowed with rare raw materials and goods, R , and urbanization that fosters production of luxury goods, P .⁶⁰ In other words, the endowment of any grid-cell can be described by the vector (R, P) . These variables are randomly distributed and range in values between 0 and the assigned maximum values. Figure 3 shows a stylized version of the ABM environment. The assigned maximum R and P values for each region are determined in the following way. For R , we take the temperature and precipitation observations at the city level in our data and means for each region. With each regional mean temperature and precipitation, we calculate the ratio over the maximum value, and then average the two variables and multiply by 10 to obtain our measure of R .⁶¹ Similarly for P , we first take the city population estimates in 1000 AD (around the midpoint in our data set) and sum them to obtain the regional total urban population estimate. For each region we calculate the population ratio over the maximum value, and then multiply by 10 to obtain our urbanization measure.

On average, grid-cells in Southeast Asia have the highest level of desirable natural resources, followed by South Asia and East Asia. Grid-cells in East Asia and the Middle East have the highest urbanization levels, followed by those in South Asia. Europe has some urbanization, whereas Central Asia has the least urbanization. Naturally, this is only a rough approximation of the relative population levels across Eurasian regions.

Figure 4 (left panel) illustrates this simplified world using the Netlogo interface, where there are initially 1,000 traders randomly distributed across the six regions.⁶² The figure captures an initial model setup in our simulation. We run the model 100 times to obtain the average concentration of diaspora groups across the regions, each iteration terminating after 50 periods. Figure 4 (right panel) shows a capture shot of diaspora patterns of traders after 50 periods in the ABM world.⁶³ Grid-cells

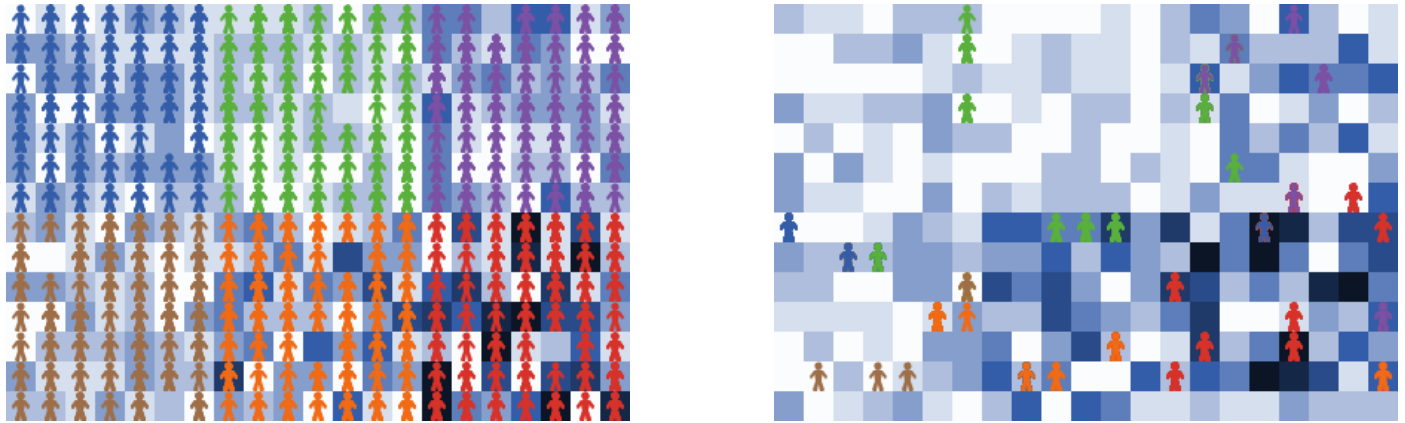


Figure 4: Initial six-region framework with individual traders (left); dispersal of individual traders after 50 time periods (right).

in darker shades of blue represent those with higher R values. Blue figures represent traders from Europe, green from Central Asia, purple from China, brown from Middle East, orange from South Asia, and red from Southeast Asia. Each trader derives his utility from R and P of the grid-cell that he is in. The relative weights he puts on these two factors are given as a vector $(x, 1 - x)$, where $x \in [0, 1]$ is the weight given to R and $1 - x$ is the weight given to P . Trader i 's utility can then be calculated as the product of the weight vector $(x, 1 - x)$ and the endowment vector (R, P) of the grid-cell j he is in:

$$U_{ij} = x_i R_j + (1 - x_i) P_j \quad (1)$$

In each period the trader compares the utility at his location and the utility that he can get from moving to another grid-cell. Within a set mobility radius, he looks for the grid-cell that offers him the highest utility. But moving incurs a cost, and this cost is a function of the distance from his current location, j , and the potential destination, k , as well as the region that he is located in. In any given period the trader migrates when the following holds:

$$x_i R_j + (1 - x_i) P_j < x_i R_k + (1 - x_i) P_k - C E_j d_{jk} \quad (2)$$

Rearranging the terms we obtain:

$$x_i (R_k - R_j) + (1 - x_i) (P_k - P_j) > C E_j d_{jk} \quad (3)$$

This means that the trader's utility gain from bioclimatic complementarities ($R_k - R_j$) and higher urbanization ($P_k - P_j$) must be greater than the cost of traveling ($C E_j d_{jk}$), where C is the universal cost-of-travel factor. In the first period C is set at 10 and in every subsequent period C decreases by the power of 0.9,⁶⁴ eventually

Table 4: Long-distance traders (rows) and their destinations (columns), agent-based model outcomes.

	Europe	Central Asia	East Asia	Middle East	South Asia	Southeast Asia
European	NA	0	2	44	37	17
Middle Eastern	0	0	8	NA	35	23
South Asian	0	0	19	19	NA	24
Chinese	0	0	NA	0	13	29

reaching a value of 1. E_j is the region-specific cost of travel from region j . The costs of travel are high for Central Asia (0.50) and Southeast Asia (0.50), middling for Europe (0.13), and low for South Asia (0.06), East Asia (0.05), and the Middle East (0.05).⁶⁵ This cost assignment is based on our observation that historically there had been a long tradition of cross-regional trade in the Middle East with associated navigation technology and cities serving as important transportation hubs. Highly urbanized regions with many cities in South Asia and East Asia also enjoyed the types of technological advances associated with lower cost transportation and logistics. This means, for example, that a merchant migrating from Europe would incur a higher cost for the same travel distance than one migrating from East Asia, because East Asia is more urbanized and, thus, likely enjoys more advanced transportation technology. Finally, d_{jk} is the Euclidean distance between the merchant's location, j , and the destination, k , that offers him the highest net utility, after taking into account the cost of migration.

Table 4 shows the average concentration of different diaspora groups across the six regions after the 50 period-run, when the cost factor has decreased to one from the initial value of 10 for each of the 100 iterations. Because we do not consider within-region diasporas, we denote "NA" for European migration to Europe, South Asian migration to South Asia, et cetera. In other cells, we indicate the percentages of traders that moved from their homeland region to other regions. We present the outcomes for which $x_i \in [0, 1]$, which is trader i 's preference weight given to R , is randomly assigned.⁶⁶

We find that the Europeans migrate to East Asia, the Middle East, as well as South Asia and Southeast Asia with the largest number of traders moving to the Middle East (44 percent). All the traders in Europe eventually migrate, whereas none of the traders from other regions migrate to Europe. Like the Europeans, the majority of Middle Eastern traders also migrate to the east. Of these migrants, the largest number is found in South Asia (35 percent), followed by Southeast Asia (23 percent) and to a less extent in East Asia (8 percent). The South Asian traders on the other hand move to East Asia, Middle East, and Southeast Asia in similar percentages, ranging from 19 to 24 percent. Finally, the majority of Chinese traders stay in their homelands. Chinese traders who do migrate only settle in South Asia (13 percent) and Southeast Asia (29 percent).

One might be concerned that by the end of our time period, European cities were growing at such a rate that we should expect a reversal in diaspora formation patterns. From an empirical perspective, although it was the case that cities like Naples, Paris, London, and Venice were all increasing significantly in population size, the largest cities in the world continued to be found in East Asia and South

Asia. In online supplement Tables 15 and 16 we present results based on an assumption of 1600 AD as the benchmark year in order to explore the impact of changes in European economic development might impact our model outcomes. Relative to 1000 AD, urbanization in Europe (P) increases from five to six while the regional cost of travel (E) decreases from 0.13 to 0.05. These parameter changes lead to ABM outcomes that are also different from our baseline results using 1000 AD as the benchmark year. European traders now settle predominantly in South Asia (56 percent), East Asia (24 percent), and Southeast Asia (20 percent). Chinese traders also increase their presence in South Asia (23 percent), although they continue to settle most in Southeast Asia (25 percent). The Middle East's decreasing urbanization (P) from 10 to 8 means that it loses its appeal to both European and South Asian traders. Whereas the Middle East region was the most viable option for European diaspora formation in 1000 AD, by 1600 AD our model predicts that European merchants will travel further in order to gain direct access to rare raw materials and goods (R) in South and Southeast Asia, as well as urbanization centers of East Asia that produce highly-valued items.

The results from the agent-based model are in generally in line with our empirical findings and suggest the feasibility of a rules-based understanding for how natural resources and societal wealth, together, drive diaspora dispersal. Whereas natural resource endowment (R) serves as a driving factor for the Chinese diaspora, urbanization (P) seems to matter more for other diaspora groups. For all groups, the cost of travel is relevant; European traders, in particular, migrate in the largest numbers as the cost of travel decreases. This is roughly consistent with the idea that as seafaring technologies improved, Europeans had strong incentive to strike out overseas in search of luxury goods and exotic commodities around the world.

Conclusions

Curtin (1984:3) argues that during the time period between the Neolithic and Industrial Revolutions, trade diasporas were “one of the most widespread of all human institutions.” Pomeranz and Topik (1999:8) concur, suggesting that “diasporas remained an indispensable way of organizing trade until full-fledged colonial rule was established across much of the globe.” Diaspora communities served an important economic role given the challenge of contract enforcement in long-distance trade. In this context, networks facilitated trade across space by building, or substituting for, relationships of trust (e.g., Forrest and Haour, 2018) that were weak or non-existent between distant trading partners (e.g., Rauch, 2001).

Despite the historical importance of such communities, relatively little scholarly work has sought to explain when and where trade diasporas form. Indeed, existing scholarship rarely tackles the question of why pre-industrial globalization was dominated by particular merchants communities in particular places — for example, why Europe was a “taker” while China was a “maker” of luxury goods and Middle Eastern communities were active economic brokers. In this article, we explain patterns of trade diaspora dispersal before the rise of European hegemony.⁶⁷ We argue that trade diaspora formation exhibited distinctive patterns in the pre-industrial period. Our argument focuses on the “push” and “pull” factors associated with

the desirability of products offered by different societies where value could be conferred in two ways. In some cases, complex supply chains combined with worker specialization to generate high-value luxury goods. In other cases, rare or exotic natural materials were sought after for the utility that their consumption conferred. Both types of goods were conducive to long-distance trade and were markers of status in societies across Eurasia.

The relative wealth of eastern societies, particularly as found in China and South Asia, attracted trade diasporas seeking luxury items. Asian products exhibited “fine differentiation in technology” that made them valued across Eurasia (Chaudhuri, 1990:306). Indeed, India and China maintained a virtual monopoly over sophisticated industries until the eighteenth century (Chaudhuri, 1990:318). From an empirical perspective, we find that — conditional on cost of travel — trade diasporas tended to be established in wealthy cities of South Asia and China. These results reflect the strong “gravitational pull” exercised by China which became the largest economy in the world “in both gross and per capita terms” between 500 and 1000 AD (Adshead, 2004:68). In addition, we find that trade diaspora communities were also more likely to form in locations with bioclimatic complementarities to a merchants’ home region. This represents the first empirical application — of which we are aware — of Diamond’s continental axis theory (1997) to international trade. The patterns that we observe are robust to the inclusion of variables to take into account host city political and cultural characteristics.

Although exploring the impacts of trade diaspora formation are beyond the scope of this article, the study of premodern trade diasporas assists in our understanding of how intersocietal relations have shaped forces of historical development (Chase-Dunn and Hall, 1991:1). It is commonly assumed that cross-cultural trade has political and economic implications (e.g., Bentley, 1998) where the expansion of markets has been associated with efflorescence, or prolonged periods of economic growth and prosperity (Goldstone, 2002). Indeed, scholars have argued that the “accumulated knowledge, contacts, and ways of operating” proved to be enduring economic legacies associated with diaspora communities (Pomeranz and Topik, 1999:6-7). In this context, diasporic merchants — and the trading opportunities that they facilitate — were engines of historical economic growth (McNeill 1990: Chase-Dunn and Hall 1997, 212-213; Trivellato 2014, 28).⁶⁸ And the effects of diasporic communities were likely felt beyond the economy. Networked trade relationships may have influenced the direction of institutional development (e.g., Greif, 1989, 2006) as well as how such networks led to “significant circulation of ideas and knowledge” (Beaujard, 2019:5).

Notes

- 1 Rauch and Trindade (2002) show how ethnic Chinese networks encourage forms of exchange in the contemporary period by matching buyers and sellers; sanctioning opportunistic behavior; and providing market information. Diaspora networks and connections have also been shown to influence the international flow of investments (Leblang, 2010).

- 2 Brubaker (2005) suggests that diaspora communities must be dispersed, oriented towards a homeland, and characterized by a distinctive identity relative to the host society. See Ho (2006) for more on the ways that diaspora communities maintain forms of memory associated with distant homeland regions.
- 3 Trade diaspora communities are also distinct from itinerant merchants.
- 4 Pomeranz and Topik (1999:7) sum up the problem concisely: "In an era when contracts could be hard to enforce, especially across political boundaries, it helped to deal with people who came from the same place you did. You were likely to understand them better than you did strangers: not only did you speak the same language but you shared an understanding of what was good merchandise, of when a deal could (and could not) be called off, and of what to do in an embarrassing but inevitable situations like bankruptcy or accident."
- 5 Existing work on diaspora also considers the conditions under which assimilation occurs. Diasporic communities are sometimes met with repression and violence. Given the challenges associated with being a member of a trade diaspora, why didn't all foreign traders assimilate? Curtin (1984) writes that in some cases trade brokers work themselves out of business by becoming culturally integrated. Laitin (1995) looks at how diaspora communities resist assimilation, despite the fact that marginal groups are often consigned to a low status position within society; he finds that marginal groups frequently enjoy higher returns in the minority than they would have received in an entry-level job (should they assimilate). In this way, diaspora communities can maintain their identitarian integrity.
- 6 On the other hand, bulk trade tended to take place within rather than across world regions during this period, spatially restricted by transport costs (Lewis, 1973; Chase-Dunn and Grimes, 1995:256). This is not to say that luxury goods were the only items aboard ships traveling long distance. High-bulk, lower-value goods (like dates or relatively low-value ceramics) often served as ballast; so although luxury goods provided the greatest profits they were not the only goods on long-distance trading vessels.
- 7 Indeed, elite tastes for luxury items were often popularized as non-elite sought to acquire down-market versions of crafted imports or small quantities of exotic goods (Deng, 1997).
- 8 A robust debate in economic sociology considers the relative importance of luxury versus non-luxury goods in the historical world economy. Although Wallerstein (1974) deemphasizes the importance of prestige goods in the premodern global economy, a preponderance of scholars have subsequently argued that prestige goods both reflect and create forms of political power (e.g., Schneider, 1977; Chase-Dunn and Grimes, 1995; Bentley, 1996).
- 9 Kings and rulers across Eurasia valued similar items of symbolic status, including honorific robing for ceremonies, driving up demand for such items (Gordon, 2007).
- 10 Supply chains refer to the resources, human capital, and activities involved with transforming raw materials and components into a finished product that is delivered to an end customer.
- 11 Another example of a desirable traded good can be found in medieval Damascus where steelmaking developed as a high art, generating demand for strong but flexible "Damascus blades" across Europe and Asia (Gordon, 2007).
- 12 The scarcity and cost of pepper (believed by some to be because pepper trees were guarded by snakes) made pepper consumption to be associated with higher social status (Freedman, 2005:1212). Indeed, the Old English saying "he hath no pepper" was used to

- describe people who were “nobodies” in contrast to those who were able to consume pepper and enjoyed associated social status (Smith, 2007:237). In sixteenth century Germany, 4-8 percent of household expenditure was spent on spices (Smith, 2007:248).
- 13 Even during the medieval period, levels of urbanization were closely associated with perceptions of development (Thrupp, 1977:71).
 - 14 McNeill (1963:419) argues that these four regions of high culture in Eurasia enjoyed periods of rough economic parity, composing what he describes as the “fourfold character of the Eurasian cultural equilibrium.”
 - 15 Although these groupings obscure important forms of religious and linguistic diversity, they nonetheless provide useful categories for analysis. Consider, for example, our choice to consider Persians and Arabs together, under a general heading of “Middle Eastern” traders. Historians have argued that it was often difficult for host communities to distinguish between Arabs and Persians, especially for locations more distant from the Middle East (Chaffee, 2018:13). In addition, there may have been a co-mingling of these groups, as they often arrived by sea together and, frequently, shared the Islamic faith (Chaffee, 2018:19). Indeed, previous scholars working on related issues also typically analyze these communities together. For example, Abu-Lughod (1991) often refers to Arabs and Persians together when discussing trading communities. Muslim settlements typically saw the establishment of a shared mosque, market, and hospice (Chaffee, 2018:141). In addition, members of these diaspora communities often lived separately from locals, rarely intermarrying with members of the host population (Harris, 1993:16). Our goal is not to obscure variation within the categories but rather to aggregate in historically sensible ways that allow us to engage in comparative analysis.
 - 16 One might think that Jewish merchants could serve as a link between the Middle East and Europe. Goitein (1967) points out, however, that Jewish, Arabic-speaking merchants were largely confined to the Islamic world and they did not enjoy business relations of significance in Europe. According to Goitein (1967:211), “the European traders with whom the Geniza merchants dealt were exclusively Christian.”
 - 17 See Van Doosselaere (2009) for a discussion of the economic superiority of Eastern societies, relative to Europe, and the implications for exchange.
 - 18 The economic implications of the discovery of an all-sea route to Asia from Europe are explored by Blaydes and Paik (2021a).
 - 19 Foreign merchants could enjoy significant returns for their economic activities but needed to worry about excessive customs duties and demands to surrender cargo to the Chinese officials (Schafer, 1985:24). Diaspora communities also suffered from political insecurity. For example, during the rebel-led Guangzhou massacre in 878 AD, more than 120,000 foreign merchants were killed (Hourani, 1951:76-77), the majority of whom were Arabs and Persians.
 - 20 South Asian nobility had a particular interest in importing horses — a crucial status symbol — from the Middle East as horses from India tended not to breed well (Gordon, 2007).
 - 21 More particular knowledge about specific South Asian mercantile communities is relatively scant before the eleventh century, however (Dale, 2017).
 - 22 The assessment of China as the wealthiest world region during the study period is empirically supported with an assumption that urbanization is a reasonable proxy for economic development. According to Chandler and Fox (1974), Chinese cities including Kaifeng, Loyang (Luoyang), Chang’an (Xian), Hangchow (Hangzhou), Canton (Guangzhou), Peking (Beijing), Soochow (Suzhou) and Nanking (Nanjing) were consistently ranked as among the top ten largest cities of the world between 622 and 1600 AD.

- 23 Broadberry et al. (2018) offer a comparative perspective on precisely when European economic development begins to rival China. Broadberry et al. (2018) argue that China — as a whole — may have been poorer than Italy by 1300 and that Britain and China were of similar levels of economic development by 1400.
- 24 In addition, Rosenthal and Wong (2011:72) write that “most Chinese merchants carried out the entirety of their business within the confines of their empire,” a space within which they could rely on the Chinese imperial administration to settle commercial disputes.
- 25 See online supplement Table 1 for more details.
- 26 Song dynasty state revenue from maritime trade was one-fifth of total revenue (Beaujard, 2019:187).
- 27 It would be difficult to argue that Chinese merchants were not capable of engaging in the creation of overseas diaspora communities. China was part of a “complex maritime system” between the eleventh and fifteenth centuries with economic ties to South, Southeast, and West Asian regions (Lockard, 2013:766). Phillips and Sharman (2015:61) argue that “the early centuries of the second millennium...saw increased direct Chinese participation in the Indian Ocean region.” One striking example of the Chinese ability to travel widely is exhibited in the Ming Dynasty “treasure voyage” expeditions, many of which were led by Admiral Zheng He. These voyages from China to the Indian Ocean began in 1405 and continued for thirty years, visiting Southeast Asia, South Asia, and eventually went as far as Aden and the East African coast. Musgrave and Nexon (2018) describe the fifteenth century expeditions as economically unproductive but having high symbolic value. At the same time, however, the extent of Chinese diaspora formation was limited. For example, Hourani (1951:75) finds a dearth of description regarding Chinese ships coming to Western ports in Arab sources.
- 28 For example, the wreck of a Chinese ship which sank in the 1640s while traveling from China to Southeast Asia included 60,000 pieces of the Ming dynasty era porcelain (Deng, 1997:275).
- 29 More specifically, our data spans the following century intervals (622, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500 and 1600).
- 30 The regularity of city size distribution according to the power law has been well-documented; see Gabaix (2009) for a survey of the relevant literature. Using both the available population estimates for many of the cities on the list as well as their rank vis-a-vis other cities, we can obtain an OLS slope estimate of the log of city i 's known rank ($\hat{\beta}$) using the following equation:

$$\text{LogPopulation}_i = \alpha + \beta \text{LogRank}_i + \varepsilon_i \quad (4)$$

Using $\hat{\beta}$ and city i 's known rank order, we calculate the population estimate for city i .

- 31 Rather than an exceptional feature of premodern economies, long distance trade was intimately connected to local interests in medieval and early modern cities (Abulafia, 1988). Elites living in Eurasian cities exhibited strong demand for sophisticated goods from across the world; cities were also places where specialized manufacturers could create opportunities for training and employment for high skilled artisans (Gordon, 2007).
- 32 See the online supplement for a list of the historical texts used to code trading diasporas.
- 33 Online supplement Table 2 provides information on the list of cities classified by region. We group each city based on continent and assign its regional identity based on its geographic location, rather than its changing religious or political affiliation. For example,

the Muslim conquest of the Iberian Peninsula in the eighth century suggests that cities in Spain were at one point ruled not by “Middle Easterners.” We do not, however, reclassify Spanish cities as Middle Eastern cities as a result.

- 34 In addition, because African merchants mostly traded locally — and less frequently to China or Europe (Abu-Lughod, 1991:36) — these actors are not coded as a major diaspora community in the data set. Similarly, Curtin (1984) argues that sub-Saharan Africa remained relatively isolated from the main currents of world trade for longer than the rest of the Afro-Eurasian landmass.
- 35 Online supplement Figure 1 shows the total number of centuries of diaspora existence for each group.
- 36 We do not code in the European diasporas from military-backed trade and colonial ventures starting in the sixteenth century (e.g., Portuguese colonization of India, seizure of Malacca in 1511 AD and the establishment of the Dutch and British East India Company); see online supplement 2 (“Diaspora Coding Reference”) for more details.
- 37 See online supplement Figure 2(a) for the location of “Tropical Woodlands” across Eurasia and Africa. The biome information is obtained from Ramankutty and Foley (1999). From the authors’ classification of potential biomes that would have existed under minimal human intervention, we combine “Tropical Deciduous Woodland” and “Tropical Evergreen Woodland” as “Tropical Woodlands.”
- 38 Online supplement Tables 3 to 6 provide summary statistics for each diaspora group.
- 39 Online supplement Figure 3 shows the paths from each region of origin to destination cities. We assume that travel by land is twice as costly as travel by water. We also avoid any travel path with a slope of over 9 degrees, a benchmark set by Raepsaet (2002).
- 40 As an alternative measure to the least-cost path, we also use the straight-line distance between the urban gravity center of each region and the destination city. The results are presented in online supplement Table 7.
- 41 Online supplement Figures 2(b) and 2(c) show the global coverage of annual precipitation and mean temperature, respectively.
- 42 We use bioclimatic data from Hijmans et al. (2005). The global temperature and precipitation data are from the years 1960 to 1990. Although we are unable to find global coverage contemporaneous with our diaspora data, Hijmans et al. (2005) do provide potential climate conditions prior to any known trade diaspora, the mid-Holocene period (about 6,000 years ago). Using the variables calculated from this period instead, we find that our results remain substantively similar.
- 43 As a robustness check, online supplement Table 8 presents logit model results, in which we find that the outcomes remain substantively similar.
- 44 The primary variable of interest would be to figure out the probability $P(Y = 1)$, which can be calculated as $\frac{\exp(\beta_0 + \beta_1 x_1 + \dots + \beta_k x_k)}{1 + \exp(\beta_0 + \beta_1 x_1 + \dots + \beta_k x_k)}$.
- 45 We can also calculate the *migration likelihood ratio* = $Pr(Y = 1|x_1) / Pr(Y = 1|x_0)$ where Y is the binary indicator for whether a Middle Eastern trade diaspora occurs in a destination city. If we were to take x_1 to be the 75th percentile and x_0 the 25th percentile population, the ratio is $0.035/0.014=2.50$. This means that there is about a 150 percent increase in the likelihood of Middle Eastern diaspora with that level of population increase.
- 46 See online supplement Table 9 for more details on the predicted probabilities associated with various levels of population, longitude and latitude.
- 47 Another way to conceptualize our outcome variable of interest is in terms of the duration of a diaspora group presence measured in centuries. In order to assess this, we sum up

the number of centuries of diaspora group presence in each city between 600 and 1600 AD, and regress the duration measure on the means of the predictors from Tables 1 and 2. Online supplement Table 10 reports results from an ordinary-least squares regressions. We find outcomes broadly consistent with our main findings — Chinese diaspora groups were drawn to destination cities south of China which were typically characterized by warmer climates and more precipitation. For Europeans and other diaspora groups, the size of the urban center served as a major draw.

- 48 It is also possible to think about the negative coefficient on the least-cost path in a complementary way. Scholars have argued that trade may have been “segmented” whereby merchants established diaspora communities in a proximate region with the goal of piggy-backing off of traders from that region connecting to the world region beyond that area (e.g., Chaudhuri, 1983; Sen, 2006; Chaffee, 2006). A focus on segmented trade may also be consistent with scholars who have suggested that seasonal winds from India to Southeast Asia — as well from China to Southeast Asia — favored a monsoon-based segmentation of trade networks (e.g., Chaudhuri, 1983). Our variable for distance from homeland region might be thought of as a strategy to empirically control for segmented trade (because trade segments were geographically proximate). These empirical findings suggest that even after taking into account distance, our two key variables (i.e., city size and geographic complementarity) remain important correlates of diaspora formation. This lends support for the idea of trade zones, or segmented trade, without detracting from the relevance of our two main predictors.
- 49 Might “good” institutions substitute for merchant diaspora communities? Many of the benefits associated with reducing transaction costs in trade are independent of the local institutional environment. Indeed, relationships of trust were always valued even in favorable institutional environments. Scholars have suggested that regardless of institutional quality in the host community, trust-based relationships were important in facilitating exchange (Forrest and Haour, 2018)
- 50 Political conditions have been found to be important in determining immigration decisions in the contemporary context (Fitzgerald et al., 2014).
- 51 If a city in a given time period was not located inside any state boundary, we assume that the city in that period essentially functioned as a city state without being under the rule of an external polity, and assign an area value equal to the smallest state size that we have in our data.
- 52 Online supplement Tables 11 and 12 provide summary statistics of state size and duration, by region. Online supplement Table 13 replicates Table 2 in the main text but replaces the longitude and latitude differences with the temperature and precipitation differences. The results remain substantively similar to the main results in Table 1 columns 5 through 8.
- 53 Seaports have been described as breeding grounds for globalization with ports playing a particular role in the emergence of a “world economic system” (Driessen, 2005).
- 54 See online supplement Figure 4(a) for more details regarding historical trade routes.
- 55 See Blaydes and Paik (2021a) for more details on this empirical approach.
- 56 Online supplement Figure 4(b) shows the natural chokepoint locations. Online supplement Table 14 replicates Table 3 but replaces the longitude and latitude differences with the temperature and precipitation differences. The results remain substantively similar to the main results in Table 1, columns 5 to 8.
- 57 De Marchi and Page (2014) argue that agent-based models provide a way to explore how complex systems of diverse and spatially situated actors operate. Hedström and

Manzo (2015) further emphasize how agent-based models simulate the behavior of interdependent agents endowed with various attributes and behavioral rules. International migration is, in particular, a multifaceted process with different stages and decision points (e.g., Helms and Leblang, 2019), further suggesting the potential relevance of agent-based models for understanding these complex dynamics.

- 58 The shareware package is available for download at ccl.northwestern.edu/netlogo/.
- 59 This classification is based on our reading of historical diaspora destinations considered by European, Middle Eastern, South Asian, and Chinese traders. Because we are interested in the initial decision process of diaspora groups, we assume that individual traders primarily moved based on travel distance and resources offered in destination cities, rather than pre-existing diaspora communities or traders from the same region of origin. Although extensions to the model are possible, we do not emphasize the interdependency of agents as a determinant factor in our model. Instead we assign parameter values for each spatially distinct destination region to reflect how the level of population and natural resources differed across the regions.
- 60 There are 7 X 7 grid-cells, for 49 in total, in each region.
- 61 For example Europe's regional mean temperature is 12 degrees Celsius and precipitation is 694 mm. Given the maximum regional mean temperature of 26 degrees Celsius (i.e., Southeast Asia and South Asia) and the maximum annual mean precipitation of 1,756 mm (i.e., Southeast Asia), R for Europe is $\frac{12/26+694/1,756}{2} \times 10 = 4$.
- 62 Note that we are not interested in the actual number of traders from each region, and the random assignment of traders in grid-cells is not meant to represent the historical distribution of trader population. As will be shown below, we are primarily interested in the *percentage* of each trader group that choose to eventually migrate, and their destination choices.
- 63 The search mobility radius is set at 30. Because the longest possible Euclidean distance between two locations in the model is around 24, this means that each trader can consider all the grid-cells in the world and look for the best destination among them.
- 64 $C^{0.9}$.
- 65 For E_j , we take the inverse of the number of largest cities of the world that existed in region j in 1000 AD according to Chandler and Fox (1974)
- 66 This setup allows traders of different preference types to exist within each trader group. For example, although all Chinese traders may be initially exposed to similar endowments and cost of travel in their homeland region (i.e., high urbanization, middling rare materials and goods, low cost of travel), not all Chinese traders may seek out the same destination with exotic materials and goods.
- 67 Trade diasporas remain a subject of sustained intellectual interest as they provide a window into how localities have managed trends toward greater globalization, cross-cultural exchange and multicultural societies (Halevi, 2014). Trivellato (2009) argues that studies of historical cross-cultural trade assist in our understanding of the development of capitalism. Our research builds upon this work and suggests that trade diaspora communities served as vital intermediaries in premodern globalization.
- 68 Put succinctly, long distance trade "was intimately linked to the domestic economy, by which it was stimulated and on which, in turn, it acted as a stimulus" (Abulafia, 1988)

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