

Online Appendices for:
**Consequences of the Black Sea Slave Trade:
Long-Run Development in Eastern Europe**

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A Slave Raids Dataset

A.1 Main Sources

TABLE A1. MAIN DATA SOURCES FOR SLAVE RAIDS DATASET

Author	Title	Translation	Year	Source Type	Language	Coverage	Publication Information
Adamczyk, Jan L.	Fortyfikacje stałe na polskim przedmurzu od połowy XV do końca XVII wieku	Permanent Fortifications on the Polish Outskirts from the Mid-15th to the End of the 17th Century	2004	Secondary	Polish	C15-C17	Kielce: Wydawnictwo Politechniki Świętokrzyskiej
Adzinova, Zarema U.	Черкесия и Крымское ханство: Эволюция взаимоотношений (XVI–XVIII вв.)	Circassia and the Crimean Khanate: Evolution of Relationships (XVI–XVIII centuries)	2020	Secondary	Russian	C16-C17	<i>Vestnik Maykopskogo GTU</i> 12 (4): 13–19
Alishev, Salyam H.	Болгаро-казанские и золотоордынские отношения в XIII–XVI вв	The Volga Bulgars' Relations with the Kazan Khanate and Golden Horde in the 13th-16th Centuries	2009	Secondary	Russian	C15-C16	Kazan: Tatarskoe Kniznoe Izdatelstvo
Alishev, Salyam H.	Казань и Москва: межгосударственные отношения в XV - XVI вв	Kazan and Moscow: Interstate Relations of the 15th–16th Centuries	1995	Secondary	Russian	C15-C16	Kazan: Tatarskoe knizhnoe Publ.
Alyabiev, Igor P.	Материалы по истории Шацкого уезда	Materials on the History of Shatsk District	2022	Secondary	Russian	C17-C18	Ulyanovsk
Andreev, Alexander	История Крыма: краткое описание прошлого Крымского полуострова	History of Crimea: A Brief Description of the Past of the Crimean Peninsula	1997	Secondary	Russian	C15-C18	Moscow: Interregional Center for Industrial Informatics of Gosatomnadzor of Russia
Augusiewicz, Sławomir	Najazdy tatarskie na Prusy Książęce (1656-1657) : legendy i fakty	Tatar Raids on Ducal Prussia (1656-1657): Legends and Facts	1995	Secondary	Polish	C17	<i>Komunikaty Mazursko-Warmińskie</i> 3: 233-247.
Babulin, Igor B.	Князь Семён Пожарский и Конотопская Битва	Prince Semyon Pozharsky and the Battle of Konotop	2009	Secondary	Russian	C17	St. Petersburg
Bagalei, Dmitry I.	Очерки из истории колонизации степной окраины Московского государства	Essays on the History of Colonization on the Steppe Outskirts of Muscovy	1887	Secondary	Russian	C15-C16	Moscow: Universitetskaya Tipografia (M. Katkov)
Bagalei, Dmitry I.	Історія Слободської України	History of Sloboda Ukraine	1918	Secondary	Ukrainian	C16–C18	Soiuz: Kharkiv
Baiov, Alexey K.	Русская армия в царствование императрицы Анны Иоанновны. Война России с Турцией в 1736-1739гг.	The Russian Army in the Reign of Empress Anna Ioannovna: The War between Russia and Turkey, 1736-1739	1906	Secondary	Russian	C18	St. Petersburg
Baranowski, Bohdan	Chłop polski w walce z Tatarami	Polish Peasants in the Fight against the Tatars	1952	Secondary	Polish	C15-C16	Warsaw: Ludowa Spółdzielnia Wydawnicza
Baranowski, Bohdan	Polska a Tatarszczyzna w latach 1624–1629	Poland and the Tatars in the Years 1624–1629	1948	Secondary	Polish	C17	Łódź: Łódzkie Towarzystwo Naukowe
Benningsen, Aleksander et al. (eds.)	Le Khanat de Crimée dans les Archives du Musée du Palais de Topkapı	The Crimean Khanate in the Archives of the Topkapı Palace Museum	1978	Primary: diplomatic documents	French (trans.)	C15-C18	Paris: Mouton
Berezhkov, Mikhail N.	Русские пленники и невольники в Крыму	Russian Captives and Slaves in the Crimea	1888	Secondary	Russian	C16	In: <i>Тр. VI Археол. съезда в Одессе</i> , 2: 342-372
Bialova, Tatyana U.	ВКЛ: Энциклапедыя т. 1-3	VKL Encyclopedia v. 1-3	2005–2010	Secondary	Belarusian	C15–C18	Minsk: Belaruskaya Encyklopedyia
Bielski, Marcin	Kronika polska Marcina Bielskiego	Marcin Bielski's Polish Chronicle	1597	Primary: chronicle	Polish	C15-C16	Brouki Kraków

Bielski, Marcin and Joachim Bielski	Dalszy ciąg Kroniki polskiej, zawierające dzieje od 1587 do 1598 r.	Continuation of the Polish Chronicle, Containing Stories from 1587 to 1598	1851	Primary: chronicle	Polish	C16	Warsaw: Orgelbrand S.
Bobrov, Leonid A.	Тактическое искусство крымских татар и ногаев конца XV – середины XVII вв.	Tactical Art of the Crimean Tatars and Nogais of the Late 15th - Mid-17th Centuries	2016	Secondary	Russian	C15-C17	<i>Istoria Voennogo Dela: Issledovaia i Istocniki</i> , Special Issue 5 (2): 210-388
Borisov, Nikolay Broniovius, Martinus	Иван III Opisanie Kryma	Ivan III Description of Crimea	2006 1867	Secondary Primary: travelogue	Russian Latin	C15-C16 C16	Moscow: Molodaya Gvardiya
Bylinski, Janusz	Najazd Tatarski na Wołyń w 1593 roku na tle innuch najazdów wo XVI wieku	The Tatar Invasion of Volhynia in 1593 against the Background of Other Invasions in the 16th Century	2001	Secondary	Polish	C1593	<i>Zapiski Odeskogo obščestva istorii i drevnostej</i> 6: 333-367 In: <i>Aere Perennius: Profesorowi Gerardowi Labudzie dnia 28 XII 2001 roku w hołdzie</i> , eds. Marcelli Kosman and Antoni Czubiński, Poznań, pp. 115-129
Çelebi, Evliya	Seyahatname	Travel Book	1896-1935	Primary: travelogue	Turkish	C17	Istanbul
Čerkas, Borys	Ukraina v polityčnyx vidnosynax Velykoho knjazivstva Lytovs'koho z Kryms'kym hanatom (1515-1540)	Ukraine in the Political Relations of the Grand Duchy of Lithuania with the Crimean Khanate	2006	Secondary	Ukrainian	C16	Kyiv
Chebotarev, B.V.	Борьба за Приазовье в Первой Половине XVIII Века и Первые Шаги по Пути Его Хозяйственного Освоения	The Struggle for the Sea of Azov Region in the First Half of the 18th Century and the First Steps Toward Its Economic Development	1960	Secondary	Russian	C17	In <i>Voprosy Ekonomicheskoi Istorii i Sovetskogo Prava</i> . v. 3. Rostov na Dony
Czapliński, Władysław	Sprawa najazdów tatarskich na Polskę w pierwszej połowie XVII w.	The Case of the Tatar Invasions of Poland in the First Half of the 17th century	1963	Secondary	Polish	C17	<i>Kwartalnik Historyczny</i> 70 (3): 713-720
Chepukhin, Aleksandr G.	Защита Присколья во время русско-турецкой войны 1672-1681 гг	Defense of Prioskol'e during the Russo-Turkish war 1672-1681	2016	Secondary	Russian	C17	In <i>Istoria Voennogo Dela</i> 8: 38-84
Czołowski, Aleksander	Polska a Tatarszczyzną Stan badań i dezydryaty	Poland and the Tatar Region: The State of Research and Desiderata	1925	Secondary	Polish	C15-C18	In: <i>Memoirs of the 4th Congress of Polish Historians in Poznań</i> , December 6-8, Vol. I, Lviv
Czołowski, Aleksander	Najazd Tatarów na Lwów w 1695 r.	Tatar Invasion of Lviv in 1695	1902	Secondary	Polish	C17	Lviv: Drukarnia Narodowa
Czołowski, Aleksander	Tatarzy w Karpatach w 1594 r. Epizod z Najazdów Tatarskich na Polskę	The Tatars in the Carpathians in 1594: An Episode from the Tatar Raids on Poland	1939	Secondary	Polish	C16	Stanisławów: Złoty Szlak
Davies, Brian L.	Warfare, State and Society on the Black Sea Steppe 1500-1700		2007	Secondary	English	C16-C18	Abingdon: Routledge
Davies, Brian L.	Empire and Military Revolution in Eastern Europe: Russia's Turkish Wars in the Eighteenth Century		2011	Secondary	English	C18	London: Continuum
de Beauplan, Guillaume L.V.	Description d'Ukraine	Description of Ukraine	2002 [C17]	Primary: travelogue	French	C16	L'Harmattan
de Peyssonel, Charles	An Appendix to the Memoires of Baron de Tott		1786	Primary: memoir	English (trans.)	C18	London
de Tott, François	Memoirs of Baron de Tott, Including the State of the Turkish Empire and the Crimea, during the Late War with Russia		1786	Primary: memoir	English (trans.)	C18	London: G. G. J. and J. Robinson
Deák, Farkas	Okiratok a török-tatár rabok történetéhez	Documents on the History of Turkish-Tatar Prisoners	1886	Primary: military records	Hungarian	C17	<i>Történelmi Társ</i> 3 (9): 110-126
Don Cossack Host Statistical Committee	Акты о татарских набегах на землю Войска Донского	Acts on Tatar raids on the land of the Don Host	1874	Primary	Russian	C18	In <i>Proceedings of the Don Cossack Host Statistical Committee</i> , Issue 2: 3-47

Dziubiński, Andrzej	Stosunki dyplomatyczne polsko-tureckie w latach 1500–1572 w kontekście międzynarodowym	Polish-Turkish Diplomatic Relations in the Years 1500–1572 in the International Context	2005	Secondary	Polish	C16	Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego
Dziubiński, Andrzej	Handel niewolnikami polskimi i ruskimi w Turcji w XVI wieku i jego organizacja	Trade in Polish and Russian Slaves in Turkey in the 16th Century and its Organization	1963	Secondary	Polish	C16	<i>Zeszyty Historyczne Uniwersytetu Warszawskiego</i> 3: 36-49
Ernst, Nikolaus	Die Beziehungen Moskaus zu den Tataren der Krym unter Ivan III. und Vasilij III., 1474-1519	Moscow's Relations with the Tatars of Crimea under Ivan III and Vasily III, 1474-1519	1911	Secondary	German	C15-C16	PhD Dissertation, Friedrich-Wilhelms-Universität zu Berlin
Fisher, Alan W.	Muscovy and the Black Sea Slave Trade		1972	Secondary	English	C15-C17	Canadian-American Slavic Studies 6 (4): 575-594
Galenko, Oleksandr I.	Про татарські набіги на українські землі	About Tatar Raids on Ukrainian Lands	2003	Secondary	Ukrainian	C15-C18	<i>Український історичний журнал</i> 6: 52-68
Gawęda, Marcin	Wojskowość tatarska w XVII wieku	Tatar Military in the 17th Century	2009	Secondary	Polish	C17	<i>Rocznik Przemyski</i> 45 (1): 121–44
Ghimpu, Vlad	Biserici și mănăstiri medievale în Basarabia	Medieval Churches and Monasteries in Bessarabia	2000	Secondary	Romanian	C16	Chișinău: Editura Tyragetia
Gliwa, Andrzej	Kraina upartych niepogód: Zniszczenia wojenne na obszarze ziemi przemyskiej w XVII wieku	The Land of Stubborn Weather: War Damage in the Area of Przemyśl in the 17th Century	2013	Secondary	Polish	C17	Przemyśl: Wyd. Towarzystwa Przyjaciół Nauk
Gliwa, Andrzej	How Captives Were Taken: The Making of Tatar Slaving Raids in the Early Modern Period		2022	Secondary	English	C15-C18	In: <i>Slavery in the Black Sea Region, c.900-1900</i> , ed. Felicia Roșu, Leiden: Brill
Gliwa, Andrzej	The Tatar Military Art of War in the Early Modern Period: An Example of Asymmetric Warfare		2016	Secondary	English	C15-C18	<i>Acta Poloniae Historica</i> 114: 191-229
Gliwa, Andrzej	The Tatar-Cossack Invasion of 1648: Military Actions, Material Destruction and Demographic Losses in the Land of Przemyśl		2012	Secondary	English	C17	<i>Acta Poloniae Historica</i> 105: 85-120
Gliwa, Andrzej	O wojskowości tatarskiej w epoce nowożytnej i oddziaływaniu koczowników na osiadłe społeczności Rzeczypospolitej	The Tatar Military in the Modern Era, and the Impact of Nomads on Sedentary Societies of the Polish-Lithuanian Commonwealth	2015	Secondary	Polish	C16-C17	In: <i>Spółeczeństwo a wojsko</i> , eds. Iwona Dacka-Górzyńska et al., Warszawa: Wydawnictwo DiG, 2015, pp. 89–133
Gliwa, Andrzej	Najazd tatarsko-kozacki na Ruś Czerwoną w 1648 r. Straty materialne i demograficzne na terenie ziemi przemyskiej	Tatar-Cossack Invasion of Red Ruthenia in 1648: Material and Demographic Losses in the Przemyśl Region	2009	Secondary	Polish	C17	<i>Rocznik Przemyski</i> 45 (1): 3-120
Gökbilgin, Özalp	1532-1577 yılları arasında Kırım Hanlığı'nın siyasi durumu	Political Situation of the Crimean Khanate between 1532 and 1577	1973	Secondary	Turkish	C16	Ankara: Sevinç Matbaası
Gökbilgin, Özalp	Tarih-i Sahib Giray Han	History of Sahib Giray Khan	1973	Secondary	Turkish	C16	Ankara: Baylan Matbaası
Golobutsky, Vladimir A.	Запорожское казачество	Zaporozhian Cossacks	1957	Secondary	Russian	C15-C18	Kyiv
Górka, Olgierd	Liczebność Tatarów krymskich i ich wojsk	Number of Crimean Tatars and Their Troops	1936	Secondary	Polish	C15-C18	<i>Przegląd Historyczno-Wojskowy</i> 8 (2): 185–295
Grabyanka, Grigory	Літопис гадяцького полковника Григорія Граб'янки	Chronicle of Gadyach Colonel Grigory Grabyanka	1853	Primary: chronicle	Ukrainian	C17-C18	Kyiv
Gramon, Antuan	Из истории московского похода Яна Казимира (1663-1664 гг.)	From the History of Jan Kazimierz's Moscow Campaign (1663–1664)	1929	Secondary	Polish	C17	Yur'ev: Tipografia K. Mattisena
Herbst, Stanisław	Kleck 1506		1934	Secondary	Polish	C16	<i>Przegląd Historyczno-Wojskowy</i> 7 (1): 21-38
Herbst, Stanisław	Najazd tatarski 1512	Tatar Invasion 1512	1948	Secondary	Polish	C16	<i>Przegląd Historyczny</i> 37: 218-226
Horn, Maurycy	Chronologia i zasięg najazdów tatarskich na ziemię Rzeczypospolitej Polskiej w latach 1600-1647	Chronology and Range of Tatar Raids on the Lands of the Republic of Poland in the Years 1600-1647	1963	Secondary	Polish	C17	Warsaw
Horn, Maurycy	Skutki ekonomiczne majazdow tatarskich z lat 1605-1633 na rus czerwona	The Economic Effects of the Tatar Invasions of 1605-1633 on Red Ruthenia	1964	Secondary	Polish	C17	Wrocław: National Institute of the Ossoliński Family

Hrushevsky, Mykhailo	Історія України-Руси	History of Ukraine-Rus'	1997-2014	Secondary	English (trans.)	C16-C17	Edmonton, Toronto: Canadian Institute of Ukrainian Studies Press
Ilovayskiy, Dmitry I.	История Рязанского княжества	History of Ryazan Principality	1858	Secondary	Russian	C12-C16	Moscow: Universitetskaya Tipografia
Inalcik, Halil and Donald Quataert	An Economic and Social History of the Ottoman Empire, Vol. 1: 1300-1600		1994	Secondary	English	C15-C17	Cambridge: Cambridge University Press
Ingłot, Marek	Misjonarze jezuicy na Krymie od początku XVII do połowy XVIII wieku	Jesuit Missionaries in Crimea from the Beginning of the 17th to the Mid-18th Century	2004	Secondary	Polish	C17-C18	In: <i>Polacy na Krymie</i> , ed. Edward Walewander, Lublin, pp. 177-204
Iván, Nagy	Rédei László történeti maradványai 1658-1663	Historical Remains of László Rédei of the Hungarian Historical Museum, 1658-1663	1871	Secondary	Hungarian	C17	Budapest: Magyar Tudományos Akadémia Történelmi Bizottsága
Ivanics, Mária	Enslavement, Slave Labour and the Treatment of Captives in the Crimean Khanate		2007	Secondary	English	C15-C18	In: <i>Ransom Slavery along the Ottoman Borders</i> , eds. Géza Dávid and Pál Fodor, Leiden: Brill, pp. 193-219
Ivanics, Mária	Tatár kémszolgálat az 1663-as magyarországi hadjáraton	The Tatar Intelligence Service during the Hungarian Campaign of 1663	1999	Secondary	Hungarian	C17	In: <i>Információáramlás a magyar és török végvári rendszerben</i> , eds. Tivadar Petercsák and Mátyás Berecz, Eger: Dobó, pp. 207-227
Jabłonowski, Stanisław	Diariusz napadu tatarskiego w r. 1692	Diary of the Tatar Attack of 1692	1890	Primary: diary	Polish	C17	<i>Kwartalnik Historyczny</i> 4: 287-91
Kalinina, E. V.	История города Воронежа	History of the City of Voronezh	1941	Secondary	Russian	C17	Voronezh
Karamzin, Nikolay M.	История государства Российского	History of the Russian State	1816-29	Secondary	Russian	C15-C17	St. Petersburg
Kargalov, Vadim V.	На степной границе: Оборона 'Крымской Украины' Русского государства в первой половине XVI столетия	On the Steppe Border: The Russian State's Defense of 'Crimean Ukraine' in the First Half of the 16th Century	1974	Secondary	Russian	C16	Moscow: Nauka
Karpov, Gennadij F. (ed.)	Памятники дипломатических сношений Московского государства с Крымскою и Нагайскою ордами и с Турцией	Memorabilia of Diplomatic Relations of Muscovy with the Crimean and Nogai Hordes and with Turkey	1895	Primary: diplomatic documents	Russian	C15-C16	Vol. 41, Collection of the Imperial Russian Historical Society, St. Petersburg
Kashirin, Vasily B.	Набег татарской множественным числом учинен...	The Tartar raid in great multitude was committed ...	2023	Secondary	Russian	C17	<i>Krymskoe Istoricheskoe Obozrenie</i> 10 (2): 29-65.
Kemény, János	Kemény János önéletírása	Autobiography of János Kemény	1856	Primary: autobiography	Hungarian	C17	Budapest
Khodarkovsky, Michael	Russia's Steppe Frontier: The Making of a Colonial Empire, 1500-1800		2002	Secondary	English	C16-C18	Bloomington, IN: Indiana University Press
Khotko, Samir H.	Походы Сахиб-Гирея I в Черкессию в 1539-1551 гг. по сведениям Реммал Ходжи	Campaigns of Sahib Gerey I to Circassia in 1539-1551 on information of Remmal Khoja	2016	Secondary	Russian	C16	<i>Clio</i> 11 (119): 48-58
Kireev, F.N. et al.	Казахско-русские отношения в XVI-XVIII веках	Kazakh-Russian Relations in the 16th-17th Centuries	1961	Primary: diplomatic documents	Russian	C16-C17	Alma-Ata: Akademiya nauk Kazakh SSR
Kizilov, Mikhail	Polish Slaves and Captives in the Crimea in the Seventeenth Century		2020	Secondary	English	C17	<i>Acta Orientalia Academiae Scientiarum Hungaricae</i> 73 (2): 253-267.
Kizilov, Mikhail	Slave Trade in the Early Modern Crimea from the Perspective of Christian, Muslim, and Jewish Sources		2007	Secondary	English	C15-C18	<i>Journal of Early Modern History</i> 11 (1-2): 1-31
Kocowski, Bronisław	Wyprawa Tatarów na Węgry przez Polskę w 1594 r.	The Tatar Expedition to Hungary through Poland in 1594	1948	Secondary	Polish	C16	Lublin: Towarzystwo Naukowe KUL

Kolankowski, Ludwik	Dzieje Wielkiego Księstwa Litewskiego za Jagiellonów, Tom 1, 1377–1499	History of the Lithuanian Grand Principality under the Jagiellons, Vol. 1, 1377–1499	1930	Secondary	Polish	C15	Warsaw: Kasa im. Mianowskiego
Kolankowski, Ludwik	Obrona Rusi za Jagiellonów na przełomie XV i XVI wieku	Defense of Ruthenia under the Jagiellons at the Turn of the 15th and 16th Centuries	1916	Secondary	Polish	C15-C16	In: <i>Memorial Book in Honor of Bolesław Orzechowicz</i> , Vol. 1, Lviv: pp. 466-480
Kolankowski, Ludwik	Roty koronne na Rusi i Podolu: 1492-1572	Crown Troops in Ruthenia and Podolia, 1492–1572	1935	Secondary	Polish	C15-C16	<i>Ziemia Czerwieńska</i> 1: 141–174
Kołodziejczyk, Dariusz	The Crimean Khanate and Poland-Lithuania: International Diplomacy on the European Periphery (15-18th Century)		2011	Primary: diplomatic documents	English	C15-C18	Leiden: Brill
Kołodziejczyk, Dariusz	Ottoman-Polish Diplomatic Relations (15th-18th Century): An Annotated Edition of 'Ahdnames and Other Documents		2000	Primary: diplomatic documents	English (trans.)	C16-C18	Leiden: Brill
Kolovrat-Butenko, Yuriy A.	Оснoвание Змиевской крепости в контексте освоения Подонцовья Русским государством	The Founding of the Zmiev Fortress in the Context of the Russian State's Expansion into the Donets Region	2020	Secondary	Russian	C17	<i>Istoricheskie Nauki</i> 1: 80-104
Koneczny, Feliks	Sprawy z Mengli-Girejem 1473–1504	Relations with Mengli-Giraj, 1473–1504	1927	Secondary	Polish	C15-C16	<i>Ateneum Wileńskie</i> 4: 138-189
Konissky, Gregory I.	История Русов или Малой России	History of the Rus' or Little Russia	1846	Secondary	Russian	C15-C18	Moscow: University Printing House
Konopczyński, Władysław	Polska a Turcja 1683-1792	Poland and Türkiye 1683-1792	1936	Secondary	Polish	C17-C18	Warsaw: Instytut Wschodni w Warszawie
Komarov, Oleg V.	Хронология Набегов Казанцев в 1521-1549 гг	Chronology of Kazan Raids in 1521–1549	2022	Secondary	Russian	C16	<i>Novogardia</i> 1: 55-96
Korzon, Tadeusz	Dzieje wojen i wojskowości w Polsce	History of Wars and Military in Poland	1923	Secondary	Polish	C16	Warsaw: Wyd. Zakładu nar. im. Ossolińskich
Kraus, Georg	Erdélyi krónika 1608–1665	Transylvanian Chronicle 1608–1665	1994	Primary: chronicle	Hungarian	C17	Budapest: OKTK
Król, Kazimierz	Tatarzy a Polska	Tatars and Poland	1919	Secondary	Polish	C15-C18	Warsaw: Wyd. im Brzezinskiego
Krypiakievych, Ivan	Velyka istoriia Ukrainy	Great History of Ukraine	1948	Secondary	Ukrainian	C17	Lviv-Winnipeg: Ivan Tyktor
Kuczyński, Stefan M.	Ziemie czernihowsko-siewierskie pod rządami Litwy	The Chernigov-Severa Provinces under the Rule of Lithuania	1936	Secondary	Polish	C15	Warsaw: Fundusz Kultury Narodowej
Kuczyński, Stefan M.	Tatarzy pod Zbarażem	Tatars near Zbarazh	1936	Secondary	Polish	C16	<i>Przegląd Historyczno-Wojskowy</i> 8 (2): 121–144
Lashchurzhinskii, Khrisanf P.	Южнорусские пленники в Крыму	South Russian Captives in the Crimea	1912	Secondary	Russian	C15-C16	<i>ИТЯК</i> 47
Lep'yavko, Serhiy A.	Проблема захисту українських земель від татарських нападів і становлення козацтва	The Problem of Protecting Ukrainian Lands from Tatar Attacks and the Formation of Cossacks	2009	Secondary	Ukrainian	C16	<i>Наукові праці історичного факультету Запорізького національного університету</i> 1 (26): 147-153
Lewicki, Kazimierz	Ks. Ostrogscy w służbie Rzeczypospolitej	The Princes Ostrogski in the Service of the Commonwealth	1938	Secondary	Polish	C16	<i>Rocznik Wołyński</i> 7: 1-67
Majewski, Ryszard	Z problematyki walk z Tatarami w pierwszej połowie XVII wieku	The Problems of Fighting with the Tatars in the First Half of the 17th Century	1975	Secondary	Polish	C17	<i>Śląski Kwartalnik Historyczny</i> Sobótka 30 (2): 231-241
Majewski, Wiesław	Najazd Tatarów w lutym 1695 r.	The Tatar Invasion in February 1695	1964	Secondary	Polish	C17	<i>Studia i materiały do historii wojskowości</i> 9 (1): 151-164
Malbakhov, Boris	Кабарда на этапах политической истории: (середина XVI — первая четверть XIX века)	Kabarda in the Stages of Political History: (Mid-16th to First Quarter of the 19th Century)	2002	Secondary	Russian	C16–C19	Nalchik: Kniga
Majewski, Wiesław	Podhajce - letnia i jesienna kampania 1667 r.	Pidhaisi - Summer and Autumn Campaigns of 1667	1960	Secondary	Polish	C17	<i>Studia i Materiały do Historii Wojskowości</i> 6 (1): 47–99

Malakov, Dmitry V.	По Брацлавщине	In the Bratslav Region	1982	Secondary	Russian	C17-C18	Moscow: Iskusstvo
Mandzy, Adrian	Entrepot of the Ukrainian Steppe Frontier: An Urban History of Early Modern Karnianets-Podilsky, Origins to 1672		1998	Secondary	English	C16-C17	PhD thesis, Department of History, York University
Maslovsky, Dmitry F.	Материалы к истории военного искусства в России	Materials for the History of Military Art in Russia	1889	Primary: military records	Russian	C18	Moscow
Massa, Isaak	Краткое известие о Московии в начале XVII в	A Brief Notice of Muscovy at the Beginning of the 17th Century	1937 [C17]	Primary: travelogue	Russian (trans.)	C17	Moscow
Matsyuk, Orestes	Замки і фортеці Західної України	Castles and Fortresses of Western Ukraine	1997	Secondary	Ukrainian	C15-C18	Lviv: Center for Europe
Miechowita, Maciej	Chronica Polonorum	Chronicle of the Poles	1521	Primary: chronicle	Latin	C16	Kraków: Hieronim Wietor
Milewski, Dariusz	Konstanty Ostrogski as An Opponent of the Tatars in the Eyes of Polish Historians of the 16th Century		2019	Secondary	English	C15-C16	<i>Codrul Cosminului</i> 25 (1): 127-142
Mokhov, Nikolai A.	Молдавия Эпохи Феодализма	Moldavia in the Feudal Era	1964	Secondary	Russian	C15-C18	Kishinev: Karta Moldovanske
Motylewicz, Jerzy	Miasta w drugiej ziemi przemyskiej i sanockiej polowie XVII i w XVIII wieku	Cities in the Second Land of Przemyśl and Sanok in the Mid-17th and 18th Centuries	1993	Secondary	Polish	C17-C18	Przemyśl: Południowo-Wschodni Instytut Naukowy w Przemyślu
Myszkowski, Piotr	Listy i akta Piotra Myszkowskiego generalnego starosty ziem ruskich króla Jana Olbrachta	Letters and Files of Piotr Myszkowski, the General Starost of the Ruthenian Lands of King Jan Olbracht	1898	Primary: letters, files	Polish	C15-C16	Kraków
Nagy, Rezs	A krimi tatár rabok történetéről	On the History of Prisoners Kept by the Crimean Tatars	1918	Secondary	Hungarian	C17	Losoncz
Nekrasov, Aleksandr M.	Международные отношения и народы Западного Кавказа: последняя четверть XV – первая половина XVI	The International Relations and Peoples of the North Caucasus: Last Quarter of 15th Century – First Half of 16th Century	1990	Secondary	Russian	C16-C17	Moscow: Nauka
Novoselsky, Aleksey A.	Борьба Московского государства с татарами в первой половине XVII века	The Struggle of the Muscovite State against the Tatars in the First Half of the 17th Century	1948	Secondary	Russian	C17	Moscow-Leningrad: Publishing House of the Academy of Sciences of the USSR
Obetkó, Dezso	Az 1717-i tatárbetörés	The Tatar Incursion of 1717	1941	Secondary	Hungarian	C18	<i>Hadtör-ténelmi Közlemények</i> 42: 193–210
Ochmański, Jerzy	Organizacja obrony w Wielkim Księstwie Litewskim przed napadami Tatarów krymskich w XV–XVI wieku	Organization of Defense in the Grand Duchy of Lithuania against Attacks by the Crimean Tatars in the 15th–16th centuries	1960	Secondary	Polish	C15-C16	<i>Studia i Materiały do Historii Wojskowości</i> 5: 349–398
Oleksa, Gayvoronsky	Повелители двух материков, Том 1, Крымские ханы XV-XVI веков и борьба за наследство Великой Орды	The Lords of Two Continents, Vol. 1: Crimean Khans of the 15th-16th Centuries and the Struggle for the Great Horde's Legacy	2007	Secondary	Russian	C15-C16	Kyiv: Oranta–Maysternya
Ostapchuk, Victor	Crimean Tatar Long Range Campaigns: The View from Remmal Khoja's History of Sahib Gerey Khan		2012	Secondary	English	C16	In: <i>Warfare in Eastern Europe, 1500-1800</i> , ed. Brian J. Davies, Leiden: Brill, pp. 147-172
Penskoy, Vitaly V.	Военный потенциал Крымского ханства в конце XV-начале XVII в.	The Military Potential of the Crimean Khanate at the End of the 15th Century - Beginning of the 17th Century	2010	Secondary	Russian	C15-C17	<i>Vostok</i> 2: 56–66
Penskoy, Vitaly V.	Сражение при Молодах 28 июля - 3 августа 1572 г	The Battle of Molodi on July 28 - August 3, 1572	2012	Secondary	Russian	C16	<i>История военного дела: исслед и источники</i> 2, July-October: 127-236
Penskoy, Vitaly V.	Численность и развёртывание московского и татарского войска в кампанию 1521 года	The Number and Deployment of the Moscow and Tatar Troops in the Campaign of 1521	2011	Secondary	Russian	C16	<i>VIMAIViVS</i> 2: 194-209

Penskoy, Vitaly V.	Военное дело Московского государства. От Василия Темного до Михаила Романова. Вторая половина XV – начало XVII в.	Military Affairs of the Muscovite State: From Vasily the Dark to Mikhail Romanov. Second Half of the 15th – Early 17th Century.	2018	Secondary	Russian	C15-C17	Centrpoligraph
Papkov, Andrey	Боевые действия на Белгородской черте во второй половине XVII века	Hostility on the Belgorod fortification line in the second half of the 17th century	2021	Secondary	Russian	C17	<i>Via in tempore. History and political science:</i> 48 (3): 643–652
Petrushevich, Anthony S.	Сводная галицко-русская летопись с 1600 по 1700 год	Consolidated Galician-Russian Chronicle from 1600 to 1700	1874	Primary: chronicle	Russian	C17	Lviv
Pęckowski, Jan	Dzieje miasta Rzeszowa do końca XVIII wieku	The History of the City of Rzeszów until the End of the 18th Century	1913	Secondary	Polish	C17–C18	Rzeszów: Drikarnia Ed. Arvaya
Pilipchuk, Yaroslav V.	Татары и Киевская земля, 1362-1471	Tatars and the Kyiv Province, 1362–1471	2015	Secondary	Russian	C15	<i>Крымское историческое обозрение</i> 1 (3): 91–119
Pilipchuk, Yaroslav V.	Пилипчук Я.В. Татарская политика Казимира IV, 1480-1492	Tatar Policy of Casimir IV, 1480–1492	2015	Secondary	Russian	C15	<i>Золотоордынская Цивилизация</i> 8: 312–320
Pilipchuk, Yaroslav V. and Mikhail A. Nesin	Пилипчук Я.В., Несин М.А. Великое Княжество Литовское и татары в период правления Александра Казимировича (1492-1506 гг.)	The Grand Duchy of Lithuania and the Tatars during the reign of Alexander Kazimirovich (1492-1506)	2016	Secondary	Russian	C15-C16	<i>История военного дела: исследования и источники</i> Special Issue 5 (2): 402-412
Pilipchuk, Yaroslav V.	Лев Лехистана против Гиреев. Противостояние между Крымским ханством и Речью Посполитой в эпоху Яна III Собесского	Lion of Lechistan against Gherays. Relationships between Crimean Khanate and Rzecz Pospolita in Epoch of Jan III Sobieski	2019	Secondary	Russian	C17	<i>Türkologi</i> 5 (97): 68-105
Piotrowski, Józef	Zamek w Łancucie. Zwiąły Opis Dziejów i Zbiorów	The Castle in Łańcut: A Concise Description of Its History and Collections	1933	Secondary	Polish	C14-C20	Lwów
Plewczyński, Marek	Wojny Jagiellonów z wschodnimi i południowymi sąsiadami Królestwa Polskiego w XV wieku	The Wars of the Jagiellons with the Eastern and Southern Neighbors of the Polish Kingdom in the 15th Century	2014	Secondary	Polish	C16	Oświęcim: Napoleon V
Plewczyński, Marek	Wojny i wojskowość polska w XVI wieku, Tom I: Lata 1500–1548	Wars and the Polish Army in the 16th Century, Vol. 1: Years 1500-1548	2011	Secondary	Polish	C16	Zabrze: Inforteditions
Pochekaev, Roman Y.	Дары или дань? К вопросу о "золотоордынском наследии" в отношениях Московского царства с тюрко-татарскими ханствами	Gifts or Tribute? On the Question of the "Golden Horde Heritage" in the Relations of the Muscovy with the Turkic-Tatar Khanates	2012	Secondary	Russian	C15-C16	<i>Средневековые тюрко-татарские государства [Medieval Turko-Tatar States]</i> 4: 200-203
Pochekayev, Roman Y.	Цари ордынские: Биографии ханов и правителей Золотой Орды	Tsars of the Horde: The Biographies of the Khans and Rulers of the Golden Horde	2009	Secondary	Russian	C16	St. Petersburg: Eurasia
Podhorodecki, Leszek	Tatarzy	Tatars	1971	Secondary	Polish	C15-C18	Warsaw: Książka i Wiedza
Podhorodecki, Leszek	Chanat Krymski i jego stosunki z Polską w XV-XVIII w.	The Crimean Khanate and Its Relations with Poland in the 15th-18th Centuries	1987	Secondary	Polish	C15-C18	Warsaw: Książka i Wiedza
Pólewartek, Józef	Zniszczenia ostatniego najazdu tatarskiego w 1672 .r na obszarze ziemi sanockiej	The Destruction of the Last Tatar Invasion of Sanok in 1672	1994	Secondary	Polish	C17	<i>Rocznik Historyczno-Archiwalny</i> 6-8: 17-37
Pulaski, Kazimierz	Stosunki z Mendli-Girejem - chanem Tatarów perekopskich (1469-1515): akta i listy	Relations with Mendli-Girej - Khan of the Perekop Tatars (1469-1515): Files and Letters	1881	Primary: diplomatic documents	Polish	C15-C16	Cracow-Warsaw
Richmond, Walter	The Northwest Caucasus: Past, Present, Future		2008	Secondary	English	C15-C18	Abingdon: Routledge
Rolle, Antoni J.	Zameczki podolskie na kresach multanśkich	Podolian Castles in the Multansch Borderlands	1880	Secondary	Polish	C15-C18	Warsaw: G. Gebethner i Spółka
Rudnytskyi, Stepan	Руські землі польської корони при кінці XV в. Ворожі напади й організація пограничної оборони	Russian Lands of the Polish Crown at the End of the 15th Century: Enemy Attacks and Organization of Border Defense	1899	Secondary	Ukrainian	C15	Lviv: Notes of the National Academy of Sciences

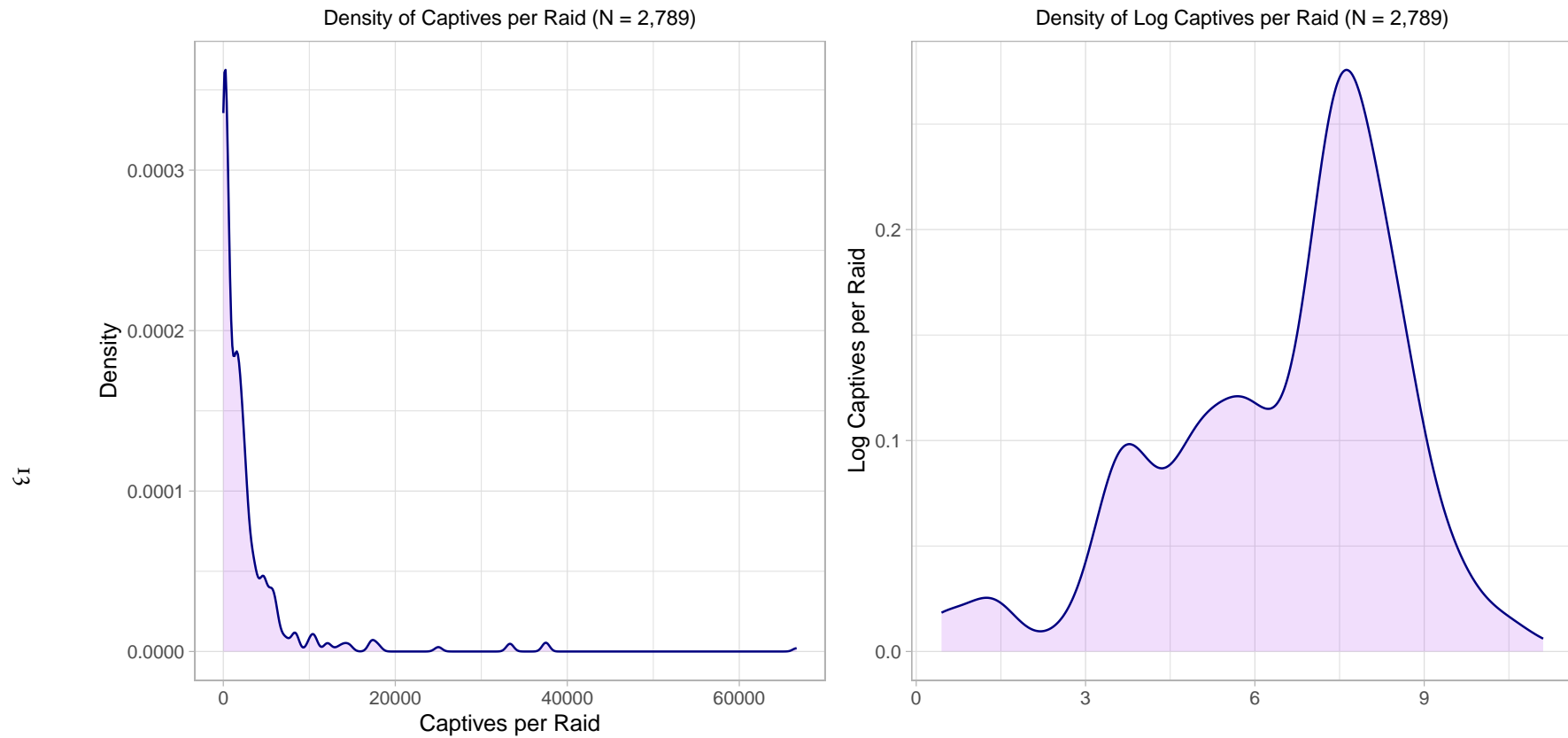
Salikhov, R. R. and Iskhakov R.R.	Роль служилых татар Мещеры в отражении набегов ногайских кочевников и заселении южного Предволжья Горной стороны	The Role of the Service Tatars of Meshchera in Repelling the Raids of the Nogai Nomads and Settling the Southern Trans-Volga Region of the Highland Side	2020	Secondary	Russian	C16-C17	<i>Zolotoordynskoe Obozrenie</i>
Safargaliev, Magamet G.	Распад Золотой Орды	The Collapse of the Golden Horde	1960	Secondary	Russian	C15-C16	Saransk: Mordov
Sanin, Gennady A.	Отношения России и Украины с Крымским ханством в середине XVII века	Relations of Russia and Ukraine with the Crimean Khanate in the Middle of the 17th Century	1987	Secondary	Russian	C17	Moscow: Nauka
Schmidt, Sigurd O.	К характеристике русско-крымских отношений второй четверти XVI в.	On the Characteristics of Russian-Crimean Relations in the Second Quarter of the 16th Century	1961	Secondary	Russian	C16	In: <i>Международные связи России до XVII в.: Сборник статей</i> , eds. Aleksandr A. Zimin and Vladimir T. Pashuto, Moscow
Senai, Kırımlı H.M.	Historia chana Islam Gereja III	History of Khan Islam Gerei III	1971 [C17]	Primary: chronicle	Turkish, Polish	C17	Warsaw
Senai, Kırımlı H.M.	Книга походов: история хана Ислям-Гирая III	Book of Campaigns: The History of Khan Islam Giray III	1998	Primary: chronicle	Russian	C17	Simferopol
Shirogorov, Vladimir	War on the Eve of Nations: Conflicts and Militaries in Eastern Europe, 1450-1500		2021	Secondary	English	C15-C16	Lanham, MD: Lexington Books
Simonov, E. V	Археология и история тульского края с древнейших времен до XVII века	Archaeology and History of the Tula Region from the Earliest Times to the 17th Century	2018	Secondary	Russian	o-C17	In <i>Tulskaya Istoriko-Kulturnaya Encyclopediya</i> : 10-23
Sitsinsky, Efim	Подилля під Владою Литвы	Podolia under the Rule of Lithuania	2009	Secondary	Ukranian	C15-C16	Kamianets-Podilsky: Medobory
Skorupa, Dariusz	Poselstwo na Krym Nikodema Kossakowskiego. Przyczynek do stosunków polsko-tatarskich w ostatnich latach XVI wieku	Mission to the Crimea by Nikodem Kossakowski: A Contribution to Polish-Tatar Relations in the Last Years of the 16th Century	2001	Secondary	Polish	C16	<i>Kwartalnik Historyczny</i> 108, No. 2: 24-42.
Skorupa, Dariusz	Stosunki polsko-tatarskie 1595–1623	Polish-Tatar Relations, 1595–1623	2004	Secondary	Polish	C16-C17	Warsaw: Neriton
Smirnov, Aleksej P.	Проблемы истории северного Причерноморья в античную эпоху	Problems of the History of the Northern Black Sea Region in Antiquity	1959	Secondary	Russian	C15-C18	Moscow: Izdatel'stvo Akademii Nauk SSSR
Smirnov, Vasily D.	Крымское ханство под верховенством Османской Порты до начала XVIII века	Crimean Khanate under the Rule of the Ottoman Port until the Beginning of the 17th Century	1887	Secondary	Russian	C16-C17	St. Petersburg: University Printing House
Sofonovych, Feodosii	Khronika z litopysstiv starodavnikh	Chronicle of Ancient Chroniclers	1992 [C17]	Primary: chronicle	Ukranian	C16-C17	Kiev: Naukova dumka
Spuler, Bertold	Die Goldene Horde: die Mongolen in Russland, 1203-1502	The Golden Horde: The Mongols in Russia, 1203-1502	1965	Secondary	German	C15-C16	Wiesbaden: Otto Harrassowitz
Stolecki, Kazimierz	Tatarskie najazdy - obrazy zapisane w starych księgach	Tatar Invasions: Images Recorded in Old Books	2010	Secondary	Polish	C16	<i>Nestor: Czasopismo Artystyczne</i> 2 (12): 9-14
Storozhenko, Andrei V.	Стефан Баторий и днепровские казаки	Stefan Batory and the Dnieper Cossacks	1904	Secondary	Russian	C16	Kyiv: Printing house of G.L. Frontskevich
Strykowski, Maciej	Kronika polska, litewska, żmódzka i wszystkiej Rusi	Chronicle of Poland, Lithuania, Samogitia, and all of Ruthenia	1582	Primary: chronicle	Polish	C15-C16	Königsberg
Strykowski, Maciej	O początkach, wywodach, dzielnościach, sprawach rycerskich i domowych sławnego narodu litewskiego, żemojdzkiego i ruskiego	About the Beginnings, Arguments, Bravery, Knightly, and Domestic Matters of the Famous Lithuanian, Zemojdy, and Ruthenian Nation	1978 [C16]	Primary: chronicle	Polish	C15-C16	Warsaw
Sulimierski, Filip et al.	Słownik Geograficzny Królestwa Polskiego and innych dżący słowiańskich	Geographical Dictionary of the Kingdom of Poland and Other Slavic Nations	1880-1902	Secondary	Polish	C15-C18	Warsaw
Tafur, Pero	Andanças É Viajes De Pero Tafur Por Diversas Partes Del Mundo Avidos (1435-1439)	Adventures and Travels of Pero Tafur through Various Parts of the World (1435-1439)	1874 [C15]	Primary: travelogue	Ukranian	C15	Madrid
Tankov, Anatoly A.	Историческая летопись курского дворянства	Historical Chronicle of the Kursk Nobility	1913	Secondary	Russian	C16-C17	Moscow

Tarasau, Kastus'	Крыж памяці, меч лёсу. Кароткі спіс войнаў, стратаў, рэпрэсіяў, якія зведала Беларусь за тысячагоддзе	The Cross of Memory, the Sword of Fate: A Brief List of Wars, Losses, and Repressions Experienced by Belarus Over a Millennium	2001	Secondary	Belarusian	o-C2o	Minsk: Lekcyia
Terkeev, Vladimir T.	Взаимоотношения калмыцкого ханства и кубанской орды в 1712–1715 гг.	Relations between the Kalmyk Khanate and the Kuban Horde in 1712-1715	2018	Secondary	Russian	C18	<i>Magna Adsurgit: Historia Studiorum</i> 2: 15-34.
Timov, Ivan	Хронологія перших татарських і турецьких набігів на землі Руського воєводства у XV ст.	Chronology of the First Tatar and Turkish Raids on the Lands of the Russian Voivodeship in the 15th Century	2013	Secondary	Russian	C15	<i>Чорноморський літопис</i> 7: 60-71
Toropitsyn, Ilya V.	Набеги кубанских татар на Россию в 1715 г	The Raids of the Kuban Tatars on Russia in 1715	2008	Secondary	Russian	C18	<i>Kozats'ka Spadshchyna</i> 4: 72-78
Unknown	Chronologia Miasta Lwowa	Chronology of the City of Lviv	1881	Secondary	Polish	C13-C19	<i>In Rok 1881. Kalendarz Powszechny Rocznik VII</i>
Unknown	Akty, odnosyashchiesya k istorii Yuzhnoy i Zapadnoy Rossii	Acts Relating to the History of Southern and Western Russia	1863-1892	Primary: diplomatic, legal documents	Russian	C15-C16	St. Petersburg: Archaeographic Commission
Unknown	Skarbiec diplomatów papieskich, cesarskich, królewskich, książęcych, uchwał narodowych, postanowień różnych władz i urzędów do wyjaśnienia dziejów Litwy, Rusi Litewskiej i ościennych krajów	Treasury of Papal, Imperial, Royal, and Ducal Diplomats, National Resolutions, Decisions of Various Authorities and Offices To Explain the History of Lithuania, Lithuanian Ruthenia, and Neighboring Countries	1862	Primary: diplomatic documents	Polish	C15-C16	Wilno: Drukarnia A.H.Kirkora
Unknown	Густынская летопись	Gustyn Chronicle	2003	Primary: chronicle	Russian	C15-C16	Vol. 40, Complete Collection of Russian Chronicles, St. Petersburg
Unknown	Жерела до історії України-Руси	Sources for the History of Ukraine-Russia	1895-1924	Primary: chronicle	Ukrainian	C16-C18	Lviv
Unknown	Летопись Рачинского	Chronicle of Rachinsky	1980	Primary: chronicle	Russian	C15-C16	Vol. 35, Complete Collection of Russian Chronicles, Moscow
Unknown	Летописец, или Описание краткое знатнейших действ и случаев, что в котором году деялось в Украине малороссийской обеих сторон Днепра ...	Chronicle, or a Brief Description of the Most Notable Deeds and Events That Took Place in Which Year in Little Russian Ukraine on Both Sides of the Dnipro ...	1888	Primary	Ukrainian	C16-C18	<i>In Collection of Chronicles related to the history of South and West Rus</i>
Unknown	Львовская летопись	Lviv Chronicle	1910-1914	Primary: chronicle	Russian	C15-C17	Vol. 20, Complete Collection of Russian Chronicles, St. Petersburg
Unknown	Межигорская летопись	Mezhigorsk Chronicle	1888	Primary: chronicle	Ukrainian	C17	Kyiv
Unknown	Молдавско-немецкая летопись 1457-1499 гг.	Moldavian-German Chronicle 1457-1499.	1976	Primary: chronicle	Russian	C15	<i>In Slaviano-Moldavskie Letopisi XV-XVI vv</i> (Moscow: Nauka): 36-54
Unknown	Молдавско-польская летопись 1352-1564 гг.	Moldavian-Polish Chronicle 1352-1564	1976	Primary: chronicle	Russian	C15-C16	<i>In Slaviano-Moldavskie Letopisi XV-XVI vv</i> (Moscow: Nauka): 105-124
Unknown	Никоновская летопись	Nikon Chronicle	1904-06	Primary: chronicle	Russian	C15-C16	Vol. 13, Complete Collection of Russian Chronicles, St. Petersburg
Unknown	Новгородская четвёртая летопись	Novgorod fourth chronicle	1848	Primary: chronicle	Russian	C15-C16	Vol. 4, Complete Collection of Russian Chronicles, St. Petersburg
Unknown	Псковская первая летопись	Pskov first chronicle	1848	Primary: chronicle	Russian	C17	Vol. 4, Complete Collection of Russian Chronicles, St. Petersburg

Unknown	Переписка львовского граждавина Доминика Вильчка съ королемъ Иоанномъ	Correspondence of the Lviv citizen Dominik Vilczek with King John	1888	Primary	Polish	C17	In <i>Collection of Chronicles related to the history of South and West Rus</i>
Unknown	Славяно-Молдавская Летопись Макария 1504-1551 гг.	Slavonic-Moldavian Chronicle of Makary 1504-1551	1976	Primary: chronicle	Russian	C16	In <i>Slaviano-Moldavskie Letopisi XV-XVI vv</i> (Moscow: Nauka): 75-93.
Unknown	Софийская вторая летопись	Second Sofia Chronicle	1853	Primary: chronicle	Russian	C17-C18	Vol. 6, Complete Collection of Russian Chronicles, St. Petersburg
Unknown	Холмогорская летопись	Kholmogory Chronicle	1977	Primary: chronicle	Russian	C15-C16	Vol. 33, Complete Collection of Russian Chronicles, Leningrad
Unknown	Хроника Быховца	Bykhovets Chronicle	1975	Primary: chronicle	Russian	C15-C16	Vol. 17, Complete Collection of Russian Chronicles, St. Petersburg
Unknown	Черниговская летопись	Chernigov Chronicle	1856	Primary: chronicle	Ukranian	C16-C18	Kiev
Various	Акты Западной России	Acts of Western Russia	1846-1853	Primary: legal documents	Russian	C15-C17	St. Petersburg
Various	Сборник летописей, относящихся к истории Южной и Западной Руси	Collection of Chronicles Relating to the History of Southern and Western Rus'	1888	Primary: chronicle	Ukranian	C15-C16	Kyiv
Various	Kniga posol'skaya Metriki Velikogo knyazhestva Litovskogo	The Ambassador's Book of Metrics of the Grand Duchy of Lithuania	1843	Primary: diplomatic documents	Russian	C15-C16	Moscow
Various	Archiwum książąt Lubartowiczów Sanguszków w Sławucie	Archives of the Lubartowicz Sanguszeko Princes in Sławuta	1887	Primary: diplomatic documents	Polish	C15-C16	Lviv
Various	Źródła dziejowe	Historical Sources	1876-1915	Primary	Polish	C16-C17	Warsaw
Various	Katalog dokumentów tureckich : dokumenty do dziejów Polski i krajów ościennych w latach 1455-1672	Catalog of Turkish Documents: Documents on the History of Poland and Neighboring Countries in the Years 1455-1672	1959	Primary: miscellaneous documents	Polish	C15-C17	Warsaw: National Scientific Publishing House
Various	Listy polskie XVI wieku, T. 1: Listy z lat 1525-1548	Polish Letters of the 16th Century, Vol. 1: Letters from the Years 1525-1548	1998	Primary: letters	Polish	C16	Kraków: Polskiej Akademii Umiejętności
Various	Сборник Императорского Русского Исторического Общества	Collection of the Imperial Russian Historical Society	1867-1916	Primary: diplomatic documents	Russian	C15-C18	St. Petersburg
Vinogradov, Aleksandr V.	Русско-крымские отношения: 50-е – вторая половина 70-х годов XVI века	Russian-Crimean Relations: 1650s-Second Half of the 1670s	2007	Secondary	Russian	C17	Moscow: Institute of Russian History
Volkov, Vladimir A.	Войны и войска Московского государства (конец XV — первая половина XVII вв.).	Wars and Troops of the Muscovite State (End of the 15th - First Half of the 17th Centuries)	2004	Secondary	Russian	C15-C17	Moscow: Eksmo
Volodymyrsky-Budanov, Mikhail F.	Население Юго-Западной России от половины XV в. до Люблинской унии	The Population of Southwestern Russia from the Second Half of the 15th Century to the Union of Lublin	1891	Secondary	Russian	C15-C16	Kyiv
von Engel, Johann Christian	Geschichte der Ukraine und der ukrainischen Cosaken: wie auch der Königreiche Halitsch und Wladimir	History of Ukraine and the Ukrainian Cossacks As Well As the Kingdoms of Halych and Vladimir	1796	Secondary	German	C15-C18	Halle: Johann Jacob Gebauer
von Herberstein, Sigismund	Rerum Moscoviticarum Commentarii	Notes on Muscovite Affairs	1851-1852	Primary: travelogue	English (trans.)	C15-C16	London: Hakluite Society
Von Manstein, Christof H.	Contemporary Memoirs of Russia from the Year 1727 to 1744		1856	Primary: memoir	English (trans.)	C18	London: Longman, Brown, Green, and Longmans

Voronchuk, Iryna O.	Населення Волині в XVI – першій половині XVII ст.: родина, домогосподарство, демографічні чинники	The Population of Volyn from the 16th Century to the First Half of the 19th Century: Family, Household, Demographic Factors	2012	Secondary	Ukrainian	C15-C17	Kyiv
Wagner, Marek	W cieniu szukamy jasności chwały : studia z dziejów panowania Jana III Sobieskiego (1684-1696)	In the Shadow We Seek the Brightness of Glory: Studies of the History of the Reign of John III Sobieski (1684-1696)	2002	Secondary	Polish	C17	Siedlce: Wydawnictwo Akademii Podlaskiej
Walawender, Antoni	Kronika klęsk elementarnych w Polsce i w krajach sąsiednich w latach 1450-1586	A Chronicle of Elemental Disasters in Poland and Neighboring Countries in the Years 1450-1586	1932	Primary	Polish	C15-C16	Lviv
Wapowski, Bernard	Kroniki Bernarda Wapowskiego z Radochoniec	Chronicles of Bernard Wapowski from Radochoniec	1874	Primary: chronicle	Polish	C15-C16	Kraków
Wapowski, Bernard	Dzieje Korony Polskiej i Wielkiego Księstwa Litewskiego od roku 1380 do 1535	The History of the Polish Crown and the Grand Duchy of Lithuania from 1380 to 1535	1848	Secondary	Polish	C15-C16	Wilno: T. Glücksberg
Winiarz, Alojzy	Ziemia sanocka w latach 1463-1552	Sanok in the Years 1463-1552	1896	Secondary	Polish	C15-C16	<i>Kwartalnik Historyczny</i> 10 (2): 286-306
Witsen, Nicolaes	Noord en Oost Tartarye	North and East Tartary	1705	Primary: memoir	Dutch	C17	Amsterdam
Wójcik, Zbigniew	Mediacja tatarska między Polską a Turcją w roku 1672	Tatar Mediation between Poland and Turkey in 1672	1962	Secondary	Polish	C17	<i>Przegląd Historyczny</i> 53 (1): 32–50.
Yağcı, Zübeyde G.	Yüzyilda Kırım'da Köle Ticareti	Slave Trade in Crimea During the 16th Century	2006	Secondary	Turkish	C16	<i>Karadeniz Araştırmaları</i> 8: 12-30
Yakobson, Anatoly L.	Средневековой Крым: Очерки истории и истории материальной культуры	Medieval Crimea: Essays on History and the History of Material Culture	1964	Secondary	Russian	C15-C18	Moscow-Leningrad
Yavornitsky, Dmitry I.	История запорожских казаков	History of the Zaporozhian Cossacks	1990	Secondary	Russian	C15-C18	Kyiv: Naukova Dumka
Yavorskiy, G.I.	Тернопільський Енциклопедичний Словник	Ternopil Encyclopedia Dictionary	2010	Secondary	Ukrainian		Ternopil
Zagorovskiy, V. P.	Изюмская Черта	Izum Defense Line	1980	Secondary	Russian	C17	Voronezh: Voronezh University
Zenchenko, Yury P.	Южное российское порубежье в конце XVI-начале XVII в	Southern Russian Border at the End of the 16th Century - Beginning of the 17th Century	2008	Secondary	Russian	C16-C17	Moscow: Pamyatniki istoricheskoy mysli
Zgorniak, Marian	Wojskowość polska w dobie wojen tureckich drugiej połowy XVII wieku	Polish Military in the Era of Turkish Wars, Second Half of the Seventeenth Century	1985	Secondary	Polish	C17	Wrocław: Zakład Narodowy im. Ossolińskich
Zhukov, E. M.	Советская историческая энциклопедия	Soviet Historical Encyclopedia	1966	Secondary	Russian		Moscow: Sovetskaya Istoricheskaya Encyclopedia
Zubrytsky, Denis	Критико-историческая повесть временных лет Червонной или Галицкой Руси	Critical-Historical Tale of the Bygone Years of Red or Galician Rus	1845	Secondary	Russian	C15	Moscow
Zubrytsky, Denis	Kronika miasta Lwowa	Chronicle of the City of Lviv	1844	Primary: chronicle	Polish	C15-C18	Lviv

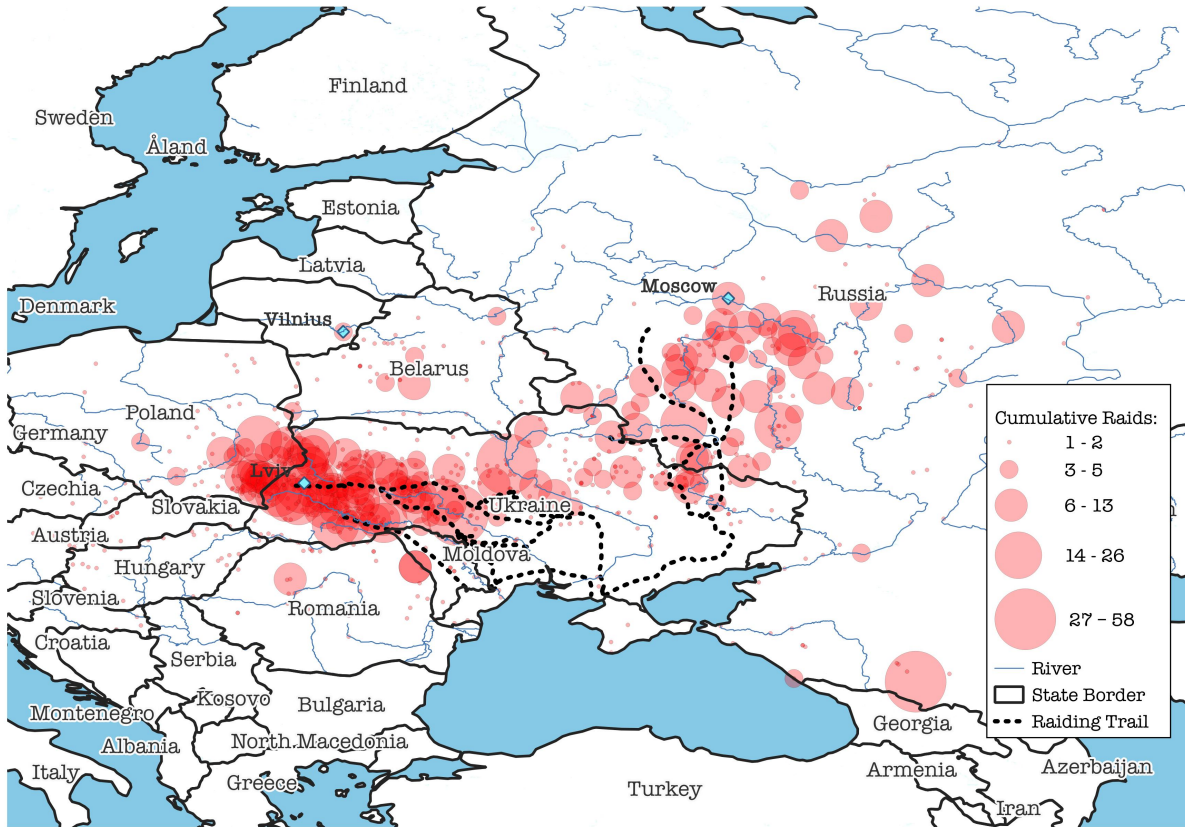
FIGURE A1. DISTRIBUTION OF CAPTIVES PER SLAVE RAID



Notes: This figure plots the density of captives — absolute (left panel) and logged (right panel) — per slave raid in early modern Eastern Europe. Between 1453 and 1774, 2,511 raids were carried out in 882 unique locations (mostly villages, towns, cities, and fortress areas) across the region.

A.2 Additional Maps

FIGURE A2. GEOGRAPHICAL DISTRIBUTION OF SLAVE RAIDS WITH MODERN STATE BORDERS



Notes: This map displays the location of slave raids in the Black Sea region between 1453 and 1777 with current state borders. The raids span 13 contemporary countries: Austria, Belarus, Croatia, Czech Republic, Hungary, Lithuania, Moldova, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, and Ukraine.

FIGURE A3. STATE BORDERS IN EASTERN EUROPE, 1490



Notes: This map displays state borders in Eastern Europe circa 1490 based on maps printed in *Ocherki Istorii SSSR: Konets XV-Nachalo XVII vv.* (Kopanev 1957), digitized and georeferenced by the authors. Major cities are also indicated. For the Kazan Khanate, Astrakhan Khanate, Nogai Horde, and Great Horde, borders were fluid and cannot be precisely delineated. Border between Lithuania and Crimean Khanate was contested.

B Estimating Total Captives

This appendix describes our imputation-based strategy for estimating the total number of people enslaved during the early modern Black Sea slave trade. We impute missing captives data for all observations in our raids dataset — 53% of which lack such information — using the machine learning-based method of multiple imputation with denoising autoencoders (MIDAS) (Lall and Robinson 2022, 2023).¹ MIDAS makes use of denoising autoencoders, a type of unsupervised neural network designed to reduce dimensionality by corrupting a random subset of observed values and attempting to reconstruct them via a series of nested nonlinear transformations. These networks are repurposed to treat missing values as an additional portion of corrupted data and to draw imputations from a model trained to minimize the reconstruction error on the originally observed portion. MIDAS offers two advantages over related approaches. First, as a form of multiple — rather than single — imputation, it preserves relationships within the observed data while representing uncertainty about the correct imputation model (Lall 2016). Second, by leveraging the ability of deep neural networks to learn highly complex relationships between variables, it delivers state-of-the-art imputation performance in terms of accuracy and speed.

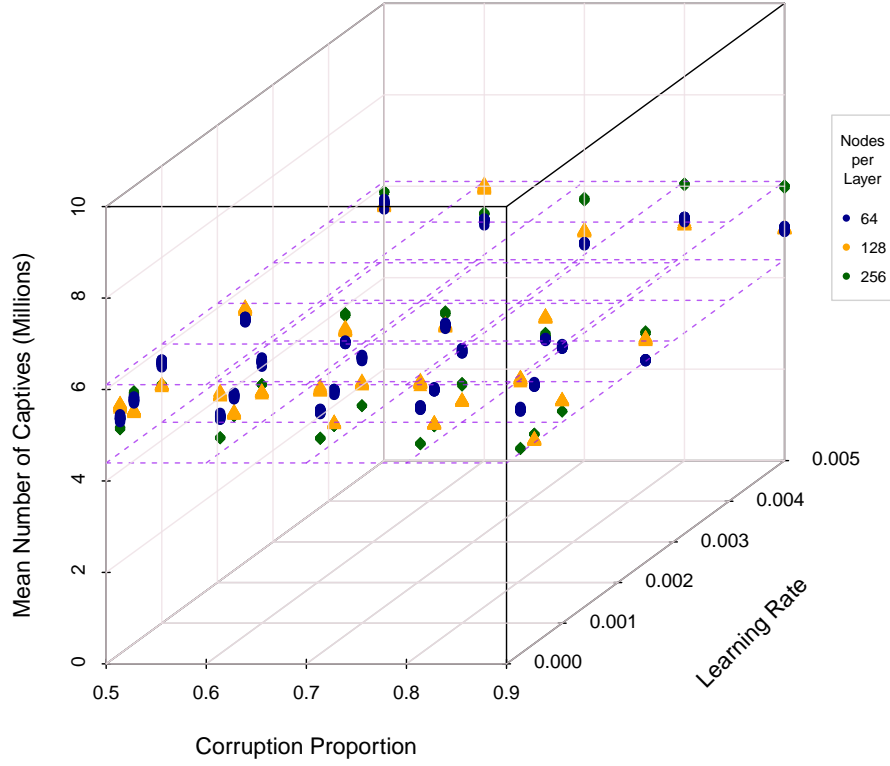
The MIDAS workflow comprises four steps:

1. *Preprocessing*. We prepare the raids dataset for imputation by removing nonessential indices and other variables that provide no new information, logging skewed variables to improve their predictive power, and “one-hot encoding” categorical variables (i.e., converting them to separate indicator variables for each unique class). The preprocessed dataset includes the following raid-year-level variables: year, number of captives (the variable of interest), raiding party size, logged raiding party size, location longitude, location latitude, and one-hot-encoded versions of location, location country, and location type (e.g., village, town, city).
2. *Initialization*. We initialize a MIDAS neural network, which requires specifying three key “hyperparameters”:² the layer structure, that is, the number of hidden network layers and the number of nodes in each layer; the proportion of observed values in the input dataset that are corrupted; and the learning rate, which controls the size of the adjustment made to weights and biases during training. As there is no way of knowing the optimal imputation model, we experiment with a variety of hyperparameter choices suggested by Lall and Robinson (2023): two-layer networks with 256, 128, and 64 nodes per layer; corruption proportions of 0.5, 0.6, 0.7,

¹We implement MIDAS using the Python package **MIDASpy**, which allows for greater flexibility in customizing parameters than its R counterpart, **rMIDAS** (Lall and Robinson 2023, 17).

²Hyperparameters are features of neural networks that are manually specified by the analyst rather than learned during training.

FIGURE A4. ESTIMATED TOTAL SLAVES WITH VARYING IMPUTATION MODELS



Notes: This figure plots the number of captives (y -axis) in 1,500 completed versions of our raids dataset generated by the **MIDASpy** package in Python, which implements the neural network-based method of multiple imputation with denoising autoencoders (MIDAS). Following [Lall and Robinson’s \(2023\)](#) guidelines, we vary three key hyperparameters in the **MIDASpy** algorithm: (1) the number of nodes in the neural network’s two hidden layers (distinguished by color); (2) the proportion of input values that are stochastically corrupted (x -axis); and (3) the size of the adjustment made to weights during training (z -axis). The dotted horizontal planes indicate the minimum and maximum number of captives in the completed datasets. The imputation model includes raid date, location, location type, and raiding party size.

0.8 and 0.9; and learning rates of 0.0005, 0.0025, 0.001, 0.0025, and 0.005.³

3. *Building and training.* We build and train the MIDAS model. To determine the length of the training process, we employ the diagnostic tool of “overimputation” ([Lall and Robinson 2023](#), 23-26), which involves omitting random observed values, generating multiple imputations for each one, and assessing the accuracy of these imputations. Regardless of our hyperparameter choices, imputation error declines sharply over the first 25 training “epochs” — complete passes through the MIDAS network — but little thereafter. Accordingly, we train the imputation

³As the preprocessed dataset is medium-sized, a larger number of hidden layers is not necessary (and could result in overfitting).

model for 25 epochs.

4. *Imputation*. Finally, we draw imputed values from the trained imputation model, producing 20 “completed” versions of the raids dataset (in which all values are observed) with each combination of hyperparameters.

Figure A4 displays the number of captives in all 1,500 completed datasets yielded by the 75 combinations of layer structures, corruption proportions, and learning rates discussed earlier. The estimates range from 4.41 million to 6.27 million (indicated by the dotted horizontal planes), with 65% exceeding 5 million and 98% exceeding 4.5 million. The overall mean is 5.23 million; the standard deviation is 0.44 million. Consistent with a roughly normal distribution, 62% of estimates lie within one standard deviation of the overall mean and 97% within two standard deviations. Using a 95% confidence standard, the range of estimates is 4.35-6.11 million. As noted in the main text, mean imputation yields a significantly higher — and, in our view, less plausible — figure of 8.3 million.

In general, captive estimates are larger when the number of nodes per hidden layer is smaller, the corruption proportion is lower, and the learning rate is higher. However, these differences are modest in size. The gap between the estimates produced by the highest and lowest numbers of nodes, corruption proportions, and learning rates is 0.16 million, 0.41 million, and 0.41 million, respectively, which represent 0.37, 0.93, and 0.93 standard deviations. In other words, the imputation results do not exhibit high levels of sensitivity to MIDAS network hyperparameters, giving us greater confidence in their robustness.

C Urban Population Analysis

C.1 Summary Statistics

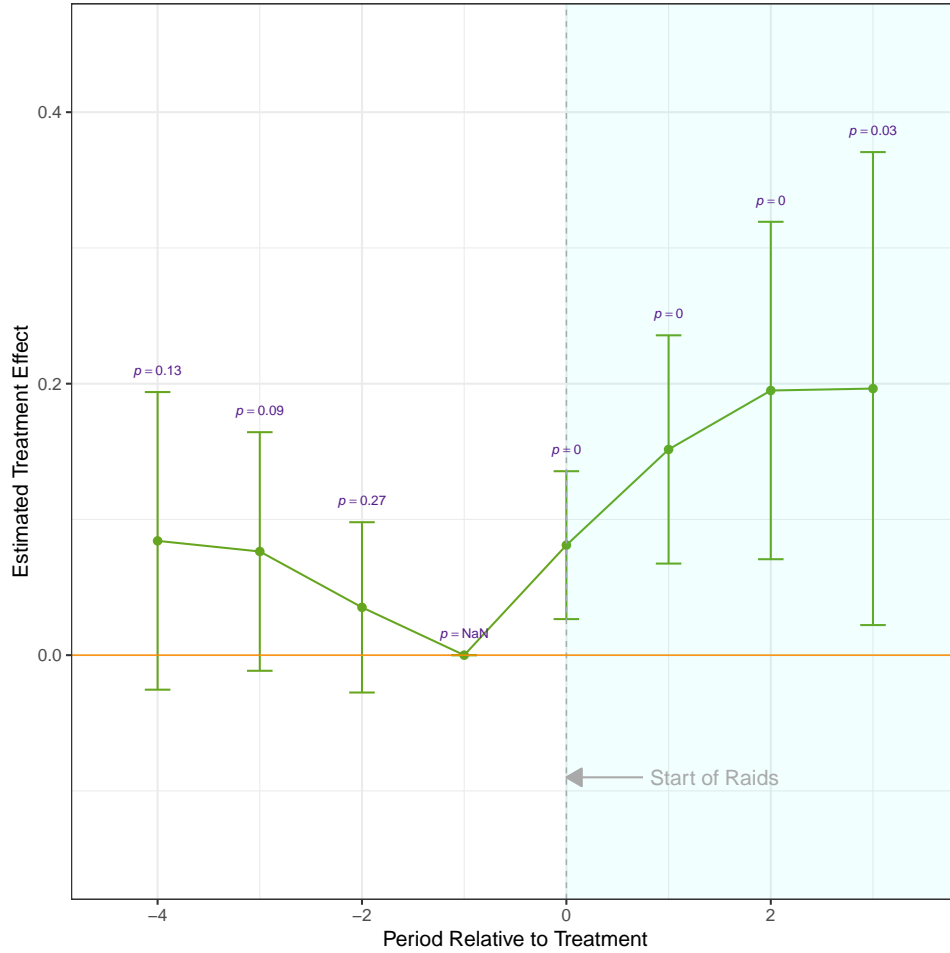
TABLE A2. SUMMARY STATISTICS FOR URBAN POPULATION ANALYSIS

	N	Mean	St. Dev.	Min	Max
<i>Panel A: 1100-1900 Sample</i>					
Log Settlement Population (P_{st})	7,149	1.243	1.074	0.000	7.258
Exposure to Raids (R_{st})	7,150	0.129	0.335	0	1
Log Cumulative Raids	7,150	0.193	0.569	0.000	4.078
Log Cumulative Captives	7,150	0.709	2.389	0.000	11.516
Raided Once	7,150	0.041	0.197	0	1
Raided 2-5 Times	7,150	0.052	0.222	0	1
Raided 6-10 Times	7,150	0.025	0.155	0	1
Raided > 10 Times	7,150	0.011	0.106	0	1
<i>Panel B: 1100-1777 Sample</i>					
Log Settlement Population (P_{st})	5,500	0.907	0.815	0.000	4.875
Raids Indicator (R_{st})	5,500	0.097	0.295	0	1

Notes: This table reports summary statistics for the samples used in our baseline and continuous difference-in-differences analyses of the impact of slave raids on the population of European urban settlements between 1100 and 1900 (Tables 1 and 2). Population is recorded in thousands prior to logarithmic transformation.

C.2 Robustness

FIGURE A5. EVENT STUDY ANALYSIS WITH MATCHING ESTIMATOR



Notes: This figure presents event study estimates of the impact of slave raids on the population of Eastern European urban settlements between 1100 and 1900 (at the settlement-period level) computed with Imai, Kim, and Wang's (2023) matching estimator, which matches treated units to untreated units with similar treatment and outcome histories. The outcome variable is the logarithm of a settlement's population in thousands; the treatment variable is an indicator for the period relative to the first raid on a settlement. The sample comprises 550 settlements observed over 13 periods of 50 or 100 years. Bars represent 95% confidence intervals based on weighted bootstrapped standard errors clustered by settlement.

TABLE A3. URBAN POPULATION ANALYSIS WITH VARYING TIMEFRAMES

<i>Panel A: Alternative Start Dates, Outcome: Log Settlement Population</i>				
<i>Start Date:</i>	900	1000	1200	1300
	(1)	(2)	(3)	(4)
Exposure to Raids	0.279*** (0.056)	0.258*** (0.055)	0.229*** (0.053)	0.246*** (0.052)
N	8,249	7,699	6,599	6,049
R ²	0.785	0.790	0.802	0.810
Mean Outcome Variable	1.110	1.174	1.314	1.384
<i>Panel B: Alternative End Dates, Outcome: Log Settlement Population</i>				
<i>End Date:</i>	1650	1750	1850	1950
	(5)	(6)	(7)	(8)
Exposure to Raids	0.129** (0.051)	0.186*** (0.049)	0.209*** (0.052)	0.237*** (0.058)
N	4,400	5,500	6,600	7,698
R ²	0.809	0.793	0.784	0.802
Mean Outcome Variable	1.833	2.157	1.102	1.422
Settlement FEs	✓	✓	✓	✓
Year FEs	✓	✓	✓	✓

Notes: This table examines whether our baseline difference-in-differences estimate of the impact of slave raids on the population of Eastern European urban settlements is sensitive to alternative sample timeframes. Robust standard errors, clustered by settlement, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A4. URBAN POPULATION ANALYSIS CONTROLLING FOR MILITARY CONFLICTS

<i>Outcome: Log Settlement Population (Mean = 1.243)</i>					
	(1)	(2)	(3)	(4)	(5)
Exposure to Raids	0.230*** (0.055)	0.225*** (0.056)	0.232*** (0.056)	0.231*** (0.056)	0.230*** (0.056)
N	7,149	7,149	7,149	7,149	7,149
R ²	0.795	0.795	0.795	0.795	0.795
Settlement FEs	✓	✓	✓	✓	✓
Period FEs	✓	✓	✓	✓	✓

Notes: This table examines whether our baseline difference-in-differences estimate of the impact of slave raids on the population of Eastern European urban settlements is robust to controlling for the cumulative number of military conflicts since the start of the slave trade within a specified radius (indicated in the table). Data on the latter come from the Historical Conflict Event Dataset (Miller and Bakar 2023). Robust standard errors, clustered by settlement, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A5. URBAN POPULATION ANALYSIS WITH ALTERNATIVE OUTCOME, SAMPLE, STANDARD ERRORS, AND SLAVE TRADE START DATE

<i>Outcome:</i>	Settlement Population (1)	Log Settlement Population (2)	Log Settlement Population (3)	Log Settlement Population (4)
Exposure to Raids	4.099* (2.394)	0.214** (0.088)	0.263** (0.098)	0.212*** (0.048)
N	7,149	1,612	6,590	7,149
R ²	0.284	0.803	0.800	0.795
Mean Outcome Variable	6.892	1.242	1.262	1.243
Sample	Eastern Europe	Russia, Poland, Lithuania in 1400	Eastern Europe	Eastern Europe
SE Cluster	Settlement	Settlement	State in 1400	Settlement
Slave Trade Start Date	1453	1453	1453	1502
Settlement FEs	✓	✓	✓	✓
Period FEs	✓	✓	✓	✓

Notes: This table examines whether our baseline difference-in-differences estimate of the impact of slave raids on the population of Eastern European urban settlements is robust to (1) employing a non-logarithmic population scale; (2) restricting the sample to settlements within the 1400 borders of Russia, Poland, and Lithuania; (3) clustering robust standard errors by state in 1400; and (4) treating 1502 — the dissolution of the Ulus of Jochi — as the start date of the early modern Black Sea slave trade. Robust standard errors, clustered by state in 1400 or settlement, in parentheses.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A6. URBAN POPULATION ANALYSIS: HETEROGENEITY BY INITIAL SETTLEMENT POPULATION

<i>Outcome:</i> Log Settlement Pop.	(1)
Exposure to Raids	0.273*** (0.088)
Exposure to Raids × Population in 1400	-0.011 (0.116)
N	7,149
R ²	0.684
Mean Outcome Variable	1.243
Year FEs	✓

Notes: This table examines whether our baseline difference-in-differences estimate of the impact of slave raids on the population of Eastern European urban settlements varies with pre-slave trade population. Robust standard errors, clustered by settlement, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A7. URBAN POPULATION ANALYSIS: INITIAL POPULATION AND EXPOSURE TO RAIDS

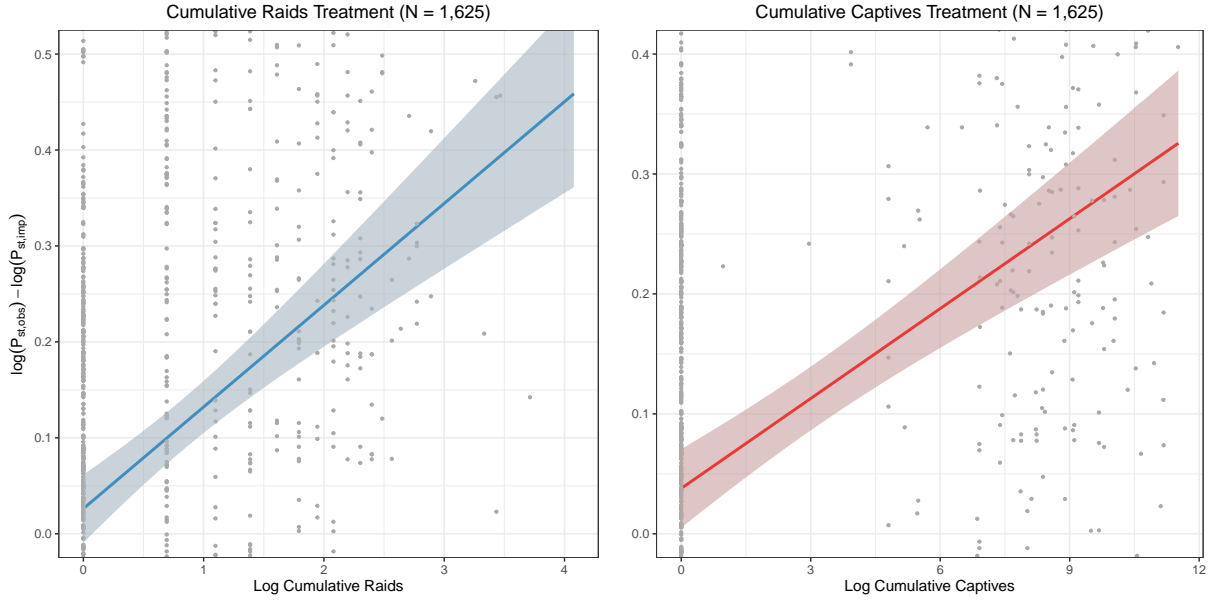
<i>Outcome:</i> Exposure to Raids	(1)	(2)
Population in 1400	0.001 (0.003)	
Log Population in 1400		0.013 (0.015)
N	7,150	7,150
R ²	0.090	0.090
Mean Outcome Variable	0.129	0.129
Year FEs	✓	✓

Notes: This table examines the relationship between the population of Eastern European urban settlements in 1400 and their subsequent exposure to slave raids over 13 periods between 1100 and 1900. The outcome variable is an indicator for whether a settlement has been raided; the treatment variable is a settlement's population in 1400 (logged in column 2). Robust standard errors, clustered by settlement, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

C.3 Extensions

C.3.1 Continuous Treatment

FIGURE A6. RELATIONSHIP BETWEEN CONTINUOUS TREATMENT VARIABLES AND OBSERVED-COUNTERFACTUAL OUTCOME DIFFERENCES



Notes: This figure probes the plausibility of the “strong parallel trends” assumption (Callaway, Goodman-Bacon, and Sant’Anna 2024) in our continuous difference-in-differences analysis of the impact of slave raids on the population of Eastern European urban settlements (at the settlement-period level). The x -axis measures the logarithm of cumulative raids on a settlement in the left panel and the logarithm of cumulative captives taken from a settlement in the right panel. The y -axis measures the difference between observed and imputed counterfactual values of the logarithm of settlement population, as computed by Liu, Wang, and Xu’s (2024) fixed effects counterfactual estimator. The sample comprises 130 raided Eastern European settlements observed over 13 periods of 50 or 100 years between 1100 and 1900 ($N = 1,690$). Each panel displays a regression line with 95% confidence intervals.

C.3.2 Grid Cell Analysis

TABLE A8. URBAN POPULATION ANALYSIS AT GRID CELL LEVEL

<i>Outcome (per Grid Cell):</i>	Log Population (1)	# Settlements (All) (2)	# Settlements with 5K Pop. (3)	# Settlements with 10K Pop. (4)
Exposure to Raids	0.388*** (0.041)	0.101*** (0.015)	0.147*** (0.016)	0.082*** (0.011)
N	50,765	50,765	50,765	50,765
R ²	0.760	0.893	0.493	0.384
Mean Outcome Variable	0.145	0.088	0.034	0.018
Grid Cell FEs	✓	✓	✓	✓
Period FEs	✓	✓	✓	✓

Notes: This table presents difference-in-differences estimates of the impact of slave raids on urban population in Eastern Europe at the grid cell level. The sample comprises 3,905 grid cells measuring $0.5^\circ \times 0.5^\circ$ (roughly $50\text{km} \times 50\text{km}$ at the equator) observed over 13 periods of 50 or 100 years between 1100 and 1900. The vector grid network comes from the PRIO-GRID dataset (Tollefsen, Strand, and Buhaug 2012). Robust standard errors, clustered by grid cell, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A9. ANALYSIS OF URBAN POPULATION SPILLOVERS AT GRID CELL LEVEL

	<i>Outcome: Log Grid Cell Population</i>		
	(1)	(2)	(3)
Exposure to Raids	0.083*** (0.016)	0.094*** (0.018)	0.053*** (0.012)
Lagged Mean Exposure in Proximate Cells (0.5°)	0.057*** (0.019)		
Lagged Mean Exposure in Proximate Cells (1°)		0.157*** (0.027)	
Lagged Mean Exposure in Proximate Cells (2°)			0.104*** (0.018)
N	50,739	50,765	50,765
R ²	0.893	0.496	0.386
Mean Outcome Variable	0.088	0.034	0.018
Grid Cell FEs	✓	✓	✓
Period FEs	✓	✓	✓

Notes: This table explores whether the impact of slave raids on urban population in Eastern Europe “spills over” to proximate areas at the grid cell level. The treatment variable is the mean value of a lagged raid exposure indicator across grid cells within 0.5° (column 1), 1° (column 2), and 2° (column 3) of a given unit’s latitude and longitude. The sample comprises 3,905 $0.5^\circ \times 0.5^\circ$ grid cells observed over 13 periods of 50 or 100 years between 1100 and 1900. The vector grid network comes from the PRIO-GRID dataset (Tollefsen, Strand, and Buhaug 2012). Robust standard errors, clustered by grid cell, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

C.3.3 Alternative Data Sources

TABLE A10. URBAN POPULATION ANALYSIS USING DATABASE OF CITY POPULATIONS

<i>Outcome: Log Settlement Population</i>		
	(1)	(2)
Exposure to Raids	1.197*** (0.463)	0.901** (0.410)
Sample Period	1100-1900	1100-1777
N	2,554	1,540
R ²	0.731	0.800
Mean Outcome Variable	7.357	6.145
City FEs	✓	✓
Period FEs	✓	✓

Notes: This table examines whether our baseline difference-in-difference estimates of the impact of slave raids on the population of Eastern European urban settlements are robust to measuring the latter using the Database of City Populations around the World over Time (Biguzzi 2020). The sample comprises 431 Eastern European settlements observed over 11 periods from 1100 to 1900. Robust standard errors, clustered by city, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A11. URBAN POPULATION ANALYSIS USING MILLER (2008) CITY POPULATION DATA

<i>Outcome: Log Settlement Population (Mean = 8.360)</i>		
	(1)	(2)
Log Cumulative Raids	0.371*** (0.101)	
Log Cumulative Captives		0.214*** (0.080)
N	213	213
R ²	0.905	0.906
City FEs	✓	✓
Period FEs	✓	✓

Notes: This table examines the relationship between exposure to slave raids and the population of East-Central European cities, as recorded by Miller (2008). The sample comprises 95 cities in the Lands of the Bohemian Crown, the Poland-Lithuanian Commonwealth, and the Kingdom of Hungary observed over four periods between 1500 and 1650. Robust standard errors, clustered by city, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

D Instrumental Variables Strategy

D.1 Watershed Boundary Instrument

As emphasized by historical sources (and illustrated in Figure A9) slave raiders typically followed the boundaries of watershed zones — elevated areas of land from which water drains to a common outlet, such as a river, lake, or ocean — to reach target destinations (Gloger 1900, 256-259). In the words of Guillaume Le Vasseur de Beauplan (1600-1673), a French engineer and cartographer who served in the Polish-Lithuanian army and built fortifications in Ukraine: “[T]he Tatars would enter the borderlands following a specific route — always traveling between two major rivers, staying on the highest ground” (Beauplan 1660, 48). Similarly, the prominent Ukrainian historian Dmitrii Bagalei noticed that raiders “tried to avoid river crossings as much as possible,” explaining why the Murawa Trail followed a ridge that “formed the watershed between the Dnieper and Don river basins. . . from the Crimean Perekop to the town of Tula, weaving between the headwaters of numerous rivers and streams of both basins — yet not crossing even a single one of them” (Bagalei 1887, 23). Figure A7 reproduces an illustration of this strategy from *Description d’Ukraine*, Beauplan’s influential 1660 account of Ukraine’s geography, history, and ethnography.

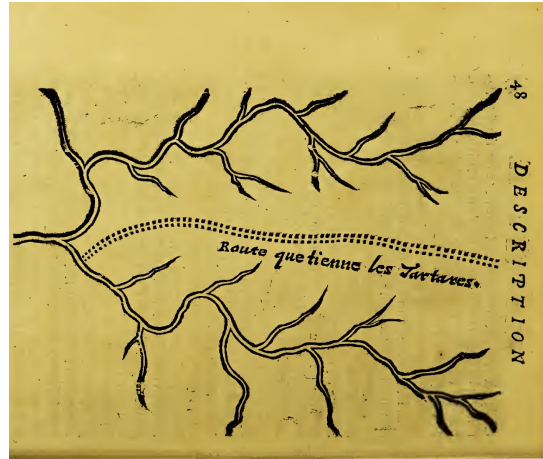
The main motivation for tracking watershed boundaries was their relatively dry and firm ground, which reduced the risk of obstruction by marshland, river crossings, deep ravines, steep slopes, and other natural barriers. In addition, these areas were less likely to be monitored by enemy watchmen — towns were usually located on river junctions for defensive and commercial reasons (Kollman 2017, 235) — and provided easily access shelter and grassland (Davies 2007, 21).

As a result of these features, both watershed boundaries and raiding trails deviated from established trade routes in the Black Sea region, which were based primarily on rivers such as the Dniepr, the Southern Bug, and the Volga (see Witzenth 2022, xi-xii) — the most efficient means of transportation in the early modern era. Similarly, overland roads initially shadowed rivers for ease and security of travel as well as proximity to ports and markets. This pattern is depicted in the right panel of Figure A8 for the Poland-Lithuanian Commonwealth, which we generated by digitizing road networks mapped by Rzepa (1963).

Raiders’ preference for traveling between watershed zones is also evident in the left panel of Figure A8, which charts the four major raiding trails — the Murawa, Kuczman, Woloski, and Czarny Trails — in relation to rivers.⁴ The Murawa Trail, the principal route used to raid Muscovy, origi-

⁴We supplement shapefiles created by Polczynski and Polczynski (2018), who rely on fifteen Beauplan maps from the mid-17th century, with additional trails (the Woloski Trail) and branches (of the Murawa and Czarny Trails) digitized from a variety of historical maps and descriptive accounts (Novoselskiy 1948; Horn 1962; Rzepa 1963; Zhukov 1966; Turchenko 2006).

FIGURE A7. CONTEMPORARY ILLUSTRATION OF TATAR INVASION ROUTE



Notes: Drawing of a typical Tatar invasion route by Guillaume Le Vasseur de Beauplan, a French cartographer employed in the Polish-Lithuanian army in the first half of the 17th century (Beauplan 1660, 48).

nated in Perekop and snaked northeast through the steppe, following the boundary of the Dnieper and Don river basins (various branches are situated between smaller tributaries of these rivers).⁵ The Czarny Trail meandered from Perekop to the outskirts of Lviv amid the Dnieper and Southern Bug river basins, tracing the rivers' tributary networks (Dziubiński 1996, 55). The Kuczman (or Podole) trail extended northwest from Akkerman between the watersheds of the Southern Bug and Dniester Rivers, crossing the former at a shallow ford before merging with the Czarny Trail. Lastly, the Woloski Trail, which extended from Perekop to near Lviv, traversed land flanked by the watersheds around the Prut and Dniester river basins.

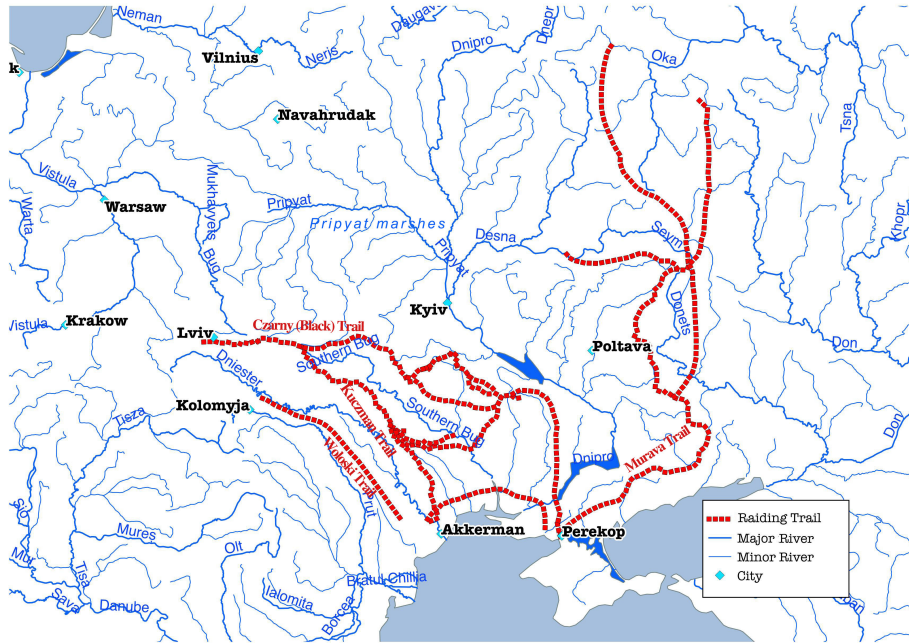
The conspicuous absence of trails north of Kyiv was likely a consequence of the dense and expansive marshland surrounding the Prypiat (Pripet) River, whose combination of peat bogs, swamps, and mixed forests significantly impeded horseback travel. In total, the Prypiat (Polesie) marshes cover an area of approximately 100,000–150,000 km², making them one of the largest wetlands in Europe. Interestingly, this terrain was more conducive to waterborne modes of travel: the Dnieper-Prypiat system served as a medieval conduit of trade between the Baltic and Black Seas (encompassing the famed historic route from the Varangians to the Greeks).

We exploit the close correspondence between raiding trails and geographical features that facilitate mounted travel to develop two related instruments for exposure to raids. Our main instrument treats all watershed boundary lines in the Black Sea region as potential raiding routes. As discussed in the main text, we instrument the cumulative number of raids on a given unit of observation (i.e., imperial

⁵For example, the Kalmius Trail, named after the river where it began, ran in parallel to the Borova River along the watershed between the Oskol and Aidar Rivers, connecting to a branch of the Murawa Trail near Livny.

FIGURE A8. RAIDING TRAILS, RIVERS, AND ROADS IN THE BLACK SEA REGION

BLACK SEA RIVER NETWORK



ROADS IN POLISH-LITHUANIAN COMMONWEALTH



Notes: The left map shows that the four principal trails used to conduct slave raids in the Black Sea region are located between the basins of large rivers and their tributaries. The right panel shows that major roads in the Polish-Lithuanian Commonwealth (1505-1648) did not significantly overlap with these trails, usually following rivers (such as the Dnieper, Daugava, Neman, and Pripyat) instead. The road network was digitized from Rzepa (1963) and geocoded by the authors.

district or urban community) with its minimum distance to Akkerman and Perekop — the starting points for raiding expeditions into Poland-Lithuania and Muscovy — along a watershed boundary line.

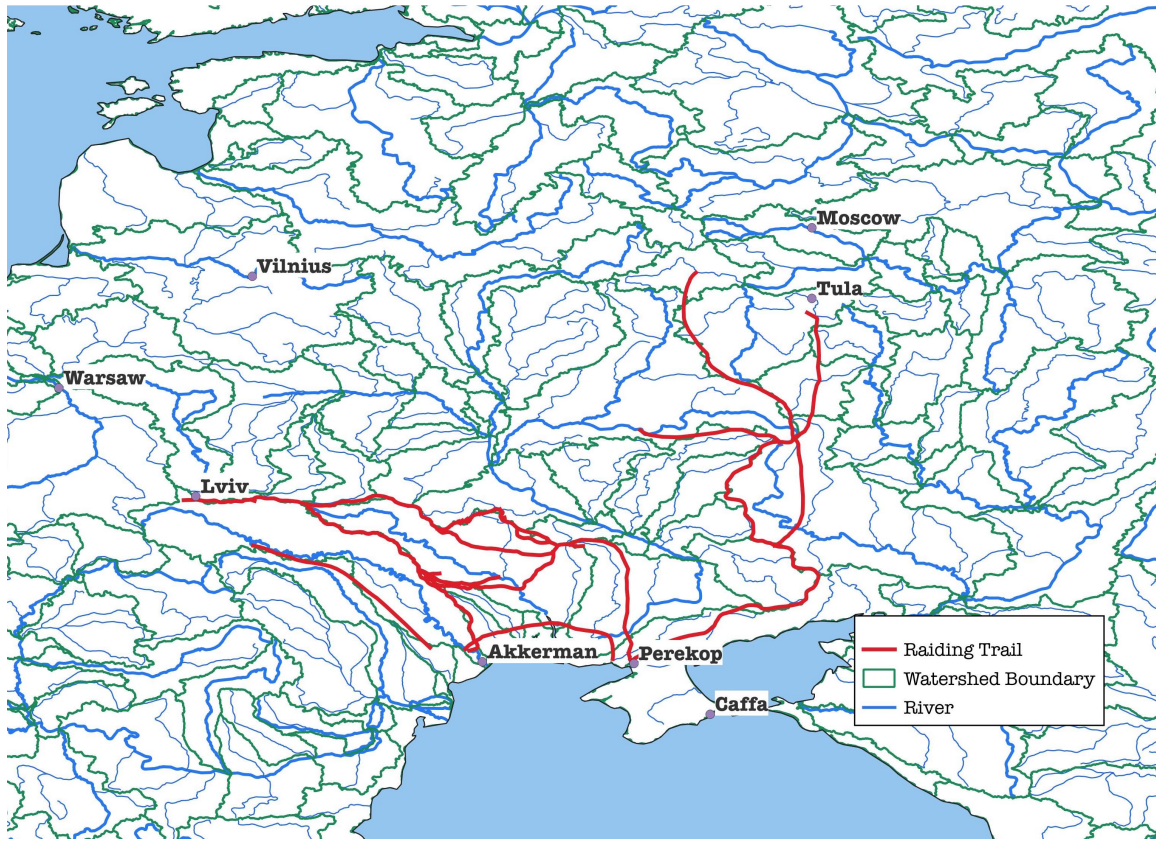
From an inferential perspective, an attractive feature of watershed boundaries is that they are defined by a landscape’s shape and surface attributes rather than by indicators or predictors of economic development. Nevertheless, their location may be correlated with topographical characteristics that influence development outcomes, posing a threat to the exclusion restriction. Controlling for these pathways is thus critical to the instrument’s validity. First, proximity to watershed boundaries may be related to distance to major rivers, which, as noted earlier, served as trade arteries in the Black Sea region. Second, watersheds are a function of elevation, variation in which (i.e., ruggedness) has been linked to development-related outcomes such as state capacity, conflict, and urbanization (Nunn and Puga 2012; Jimenez-Ayora and Ulubaşoğlu 2015; Shaver, Carter, and Shawa 2019). Third, the instrument captures distance to the Black Sea coast, where the port of Caffa was an important commercial hub during the early modern era. To enhance the plausibility of the exclusion restriction, our instrumental variables analysis accordingly controls for straight-line distance to nearest river and coastline as well as for terrain ruggedness.

We construct our instrument using a watershed shapefile provided by the HydroBASINS database (Lehner and Grill 2013), which is based on the high-resolution digital elevation model developed in 2000 by the Shuttle Radar Topography Mission (SRTM). Watersheds are delineated at different resolutions in accordance with the Pfafstetter Coding System, with Levels 1-3 distinguishing continents, continental sub-units, and the largest river basin for each continent. We select Level 5, which includes inter-basin regions and thus most closely approximates the scale of raiding trails. We begin by preprocessing the original shapefile by correcting invalid geometry, converting polygons (i.e., river basins) to lines, and merging all line segments to form a unified network of watersheds. We then convert the shapefile to the European Albers Equal Area projection with standard parallels at 49.6667° N and 67.33334° N and a central meridian of 42.5° E. Finally, we calculate the shortest paths through this network from (1) Perekop and (2) Akkerman to each unit of observation — the centroid of an imperial district or the geographic coordinates of an urban community — using the shortest path tool in the QGIS geographic information system (v3.32.1). The instrument is shorter of the two distances.

D.2 Least-Cost Paths Instrument

Our second instrument leverages an alternative strategy for identifying geographical features that facilitate horseback travel to raiding targets: calculating the geographically most efficient routes — or “least-cost paths” — between the endpoints of each raiding trail based on the flow of water across the earth’s surface. As described below, we develop an algorithm that minimizes the accumulated wa-

FIGURE A9. WATERSHED BOUNDARY LINES AND RAIDING TRAILS IN THE BLACK SEA REGION



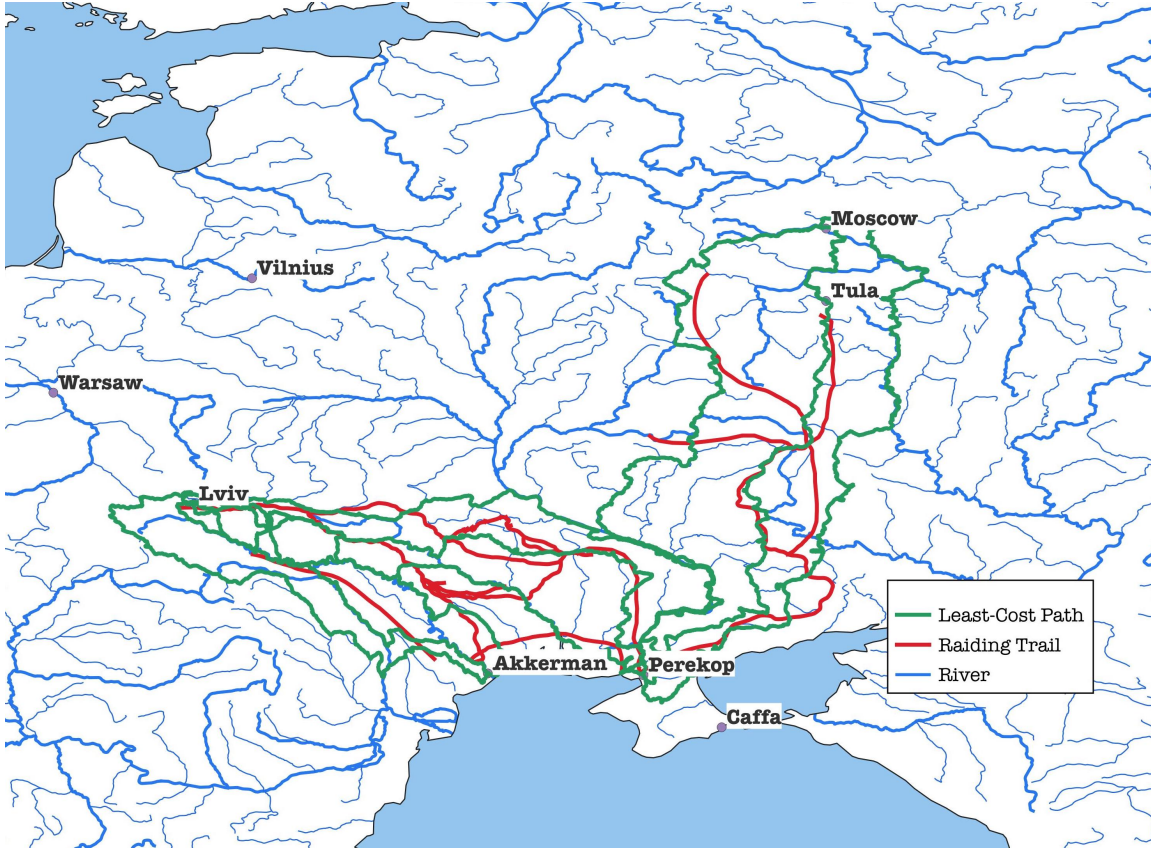
Notes: This map shows that the principal trails used to conduct slave raids in the Black Sea region closely follow the boundaries of watershed zones, an exogenous geographical feature that facilitated rapid movement across the steppe on horseback. Watershed boundaries are plotted at Level 5 (which includes inter-basin regions) with a shapefile from the HydroBASINS database (Lehner and Grill 2013).

ter flow — which generally increases with gradient and decreases with elevation — across all possible routes from the the source of each trail (i.e., Akkerman or Perekop) to the effective destination (i.e., Moscow or Lviv). The instrument measures the minimum distance from a given unit of observation to the resulting set of least-cost paths.

The principal benefit of constructing least-cost paths is that they yield a slightly better fit to raiding trails, which exhibit fewer convolutions than watershed boundaries. As a result, the instrument is a more powerful predictor of raiding activity in the first stage of our 2SLS analysis. To avoid potential bias caused by endogeneity in the location of endpoints, we exclude units containing terminal cities from this analysis. As with the first instrument, we also control for a variety of topographical characteristics that could plausibly predict the location of least-cost paths as well as development outcomes.

Table A12 presents a pseudocode summary of our four-stage algorithm for computing least-cost

FIGURE A10. LEAST-COST PATHS AND RAIDING TRAILS IN THE BLACK SEA REGION



Notes: This map shows that the four principal trails used to conduct slave raids in the Black Sea region closely track nine least-cost (i.e., maximally efficient) paths from Akkerman or Perekop to Lviv or Moscow.

paths, which we again implement using the QGIS geographic information system. The first step is preprocessing. The algorithm's input is a pre-calculated flow accumulation cost raster with a resolution of 30 arc-seconds (approximately 1km), which we acquired from the HydroSHEDS database (Lehner, Verdin, and Jarvis 2008). Raster values represent the accumulated flow in a given rectangular cell, that is, the volume of water that enters this cell from upstream areas (assuming that all cells receive the same volume of rainfall and that there is no evaporation or subsurface flow). This is a function of the size of its drainage basin, which, in turn, depends on its elevation and gradient. We start by reprojecting the raster from the WGS 84 coordinate system to the Albers equal area conic map, re-sampling values using a cubic (4×4 kernel) convolution approximation. The latter method is better able to handle areas of internal drainage than the more common nearest neighbor approach, yielding a closer approximation to the four major raiding trails.

Second, following Matranga and Natkhov (2022), we make a few small adjustments to the reprojected raster. Since flow accumulation data are skewed to the right — mainly because cells representing

TABLE A12. ALGORITHM PSEUDOCODE FOR GENERATING LEAST-COST RAIDING PATHS

	Data : Flow accumulation cost raster \mathbf{R} , source s , destination d
	Result : N least-cost paths from s to d
1	begin
2	Reproject \mathbf{R} onto Albers equal area map using cubic resampling;
3	Set oceanic null values in \mathbf{R} to maximum;
4	Clip \mathbf{R} around Eastern Europe;
5	foreach s - d pair Perekop-Moscow, Perekop-Lviv, Akkerman-Lviv do
6	Construct cost distance raster $\mathbf{R}_{sd,1}^D$;
7	Construct backlink raster $\mathbf{R}_{sd,1}^B$;
8	Combine $\mathbf{R}_{sd,1}^D$ and $\mathbf{R}_{sd,1}^B$ to generate least-cost path $p_{sd,1}$ from d to s ;
9	end
10	repeat
11	foreach $i = 2, \dots, n$ do
12	Create 15km buffer around least-cost path $p_{sd,i-1}$;
13	Assign penalty of 200 to cells within buffer zone;
14	Construct cost distance raster $\mathbf{R}_{sd,i}^D$;
15	Construct backlink raster $\mathbf{R}_{sd,i}^B$;
16	Combine $\mathbf{R}_{sd,i}^D$ and $\mathbf{R}_{sd,i}^B$ to generate least-cost path $p_{sd,i}$ from d to s ;
17	end
18	until $n + 1$ least-cost paths generated;
19	From $p_{sd,1}, \dots, p_{sd,n+1}$, select N paths that best approximate actual raiding trails
20	end

Notes: This table describes our algorithm for generating least-cost raiding paths in pseudocode form. The algorithm is executed in the QGIS geographic information system (v.3.30.3).

river mouths and estuaries receive far more water than others — we take the square root of all values. In making this transformation, we convert cells representing ocean from null values to the maximum value to prevent negative square roots and ensure that these areas are sufficiently penalized in the least-cost path calculation. To save memory and speed up the algorithm, we then clip the raster to exclude cells outside Eastern Europe (including parts of western and northern Russia).

Third, using the QGIS Least-Cost Path plugin — which implements Dijkstra's (1959) shortest path algorithm — we compute three least-cost paths between the raiding trails' sources and destination points: (1) Perekop to Moscow; (2) Perekop to Lviv, and (3) Akkerman to Lviv. This involves creating two new rasters: a "cost distance" raster that encodes the least accumulated cost of traveling from the source to all other cells in the raster; and a "backlink" raster that encodes the direction from each cell to its least-cost neighbor. By combining the two grids, a path can then be traced from the destination back to the source via the most efficient combination of least-cost neighbors.

Fourth, we compute the next three least-cost paths between each source-destination pair, generating 12 paths in total. This is achieved by constructing a 15km buffer around every more efficient path (with flat end caps); assigning a “burn-in” value (or penalty) of 200 to cells within this zone; and rerunning the Dijkstra algorithm.

Finally, among the 12 computed least-cost paths, we select the nine that most closely resemble a real trail. For the Akkerman-Lviv and Perekop-Moscow pairs, the top three least-cost paths provide the best approximation; in the Perekop-Lviv case, the third least-cost path diverges substantially from every trail, extending deep into Russia before running east toward Minsk and then bending south. We thus choose the first, second, and fourth least-cost paths, all of which have a similar shape to the Czarny Trail. The nine selected routes are mapped in Figure [A10](#).

E Long-Run Development in Imperial Russia and Austria

E.1 Summary Statistics

TABLE A13. SUMMARY STATISTICS FOR IMPERIAL RUSSIA ANALYSIS

Statistic	N	Mean	St. Dev.	Min	Max
<i>Panel A: Treatment and Instruments</i>					
Cumulative Raids	373	3.287	6.670	0	59
Log Cumulative Raids	373	0.800	1.034	0.000	4.094
Distance to Least-Cost Path (km)	373	280.418	289.760	0.288	1,533.034
Distance along Watershed Boundary	372	2,326,640	1,104,774	301,002	6,000,886
Log Distance along Watershed Boundary	372	7.624	0.539	5.707	8.700
<i>Panel B: Outcomes</i>					
Log Urban Population (1863)	357	8.751	0.918	6.349	12.770
Population Density (1863)	357	27.060	15.608	0.401	165.899
Log Total Markets (1867)	361	2.125	1.047	0.000	4.443
Markets per km ² (1867)	361	0.003	0.004	0.000	0.023
Log Total Factories (1868)	362	2.361	1.328	0.000	6.439
Factories per km ² (1868)	362	0.006	0.017	0.000	0.230
<i>Panel C: Controls</i>					
Fertile Soil (Share)	373	0.324	0.363	0.000	1.000
Mean Terrain Ruggedness	373	26.502	12.129	8.454	77.429
Distance to Moscow (km)	373	568.309	295.565	0.000	1,562.100
Log Urban Population in 1400 (k)	373	0.246	0.483	0.000	3.434
Log Area (km ²)	373	8.493	0.793	7.157	12.695
Minimum Distance to Coastline (km)	373	465.039	242.548	3.957	1,075.926
Mean Seasonality (SD×100)	373	955.501	99.403	733.383	1,215.760
Mean Precipitation (mm)	373	614.493	43.848	495.169	800.286
Minimum Distance to River (km)	373	44.616	35.434	0.050	194.392
Cumulative Military Conflicts, 1453-1777	373	0.260	0.789	0	8
Within 1490 Muscovy	373	0.381	0.486	0	1

Notes: This table presents summary statistics for variables in our district-level analysis of long-run development in Imperial Russia in the mid-19th century. We exclude districts that were (1) part of the Ottoman Empire or the Crimean Khanate during the Black Sea slave trade or (2) incorporated into Russia only after raids began (1453).

TABLE A14. SUMMARY STATISTICS FOR ANALYSIS OF AUSTRIAN GALICIA AND SILESIA

Statistic	N	Mean	St. Dev.	Min	Max
<i>Panel A: Treatment and Instruments</i>					
Log Cumulative Raids 99	1,232	1.237	0.000	3.714	
Distance to Crimea via Watershed Boundary (m)	99	1,254.531	385.827	657.732	1,925.331
Distance to Least-Cost Path (km)	99	97.986	120.828	0.000	366.738
<i>Panel B: Outcomes</i>					
Log Population	99	10.813	0.670	9.049	11.668
Population per km ²	99	191.673	874.065	28.165	8,354.780
Log Houses	99	8.930	0.743	6.775	9.823
Houses per km ²	99	15.293	24.661	4.616	236.720
Log Farm Structures	99	9.277	0.762	6.696	10.291
Farm Structures per km ²	99	20.018	22.421	6.095	217.441
<i>Panel C: Controls</i>					
Log Land Area (km ²)	99	6.445	0.990	1.941	7.830
Mean Terrain Ruggedness	99	101.369	72.770	14.885	297.071
Log Urban Population in 1400 (k)	99	0.110	0.349	0.000	2.398
Log Distance to Coastline (km)	99	6.241	0.100	5.991	6.439
Fertile Soil (Share)	99	0.214	0.360	0.000	1.000
Log Distance to River (km)	99	3.036	0.994	0.279	4.500
Cumulative Military Conflicts (1453-1777)	99	0.141	0.495	0	3

Notes: This table presents summary statistics for variables in our district-level analysis of long-run development in Austrian Galicia and Silesia in the mid-19th century.

E.2 First-Stage Results

TABLE A15. SLAVE RAIDS AND DEVELOPMENT OUTCOMES IN IMPERIAL RUSSIA AND AUSTRIA: FIRST-STAGE RESULTS

<i>Outcome:</i> Log Cumulative Raids	Russian Empire		Austrian Galicia & Silesia	
	(1)	(2)	(3)	(4)
Logged Distance to Crimea via Watershed Boundary	-0.930*** (0.164)		-0.002*** (0.000)	
Distance to Least-Cost Paths		-0.002*** (0.0003)		-0.005*** (0.001)
N	372	373	99	98
R ²	0.482	0.479	0.598	0.561
Mean Outcome Variable	0.803	0.800	1.232	1.207
District-Level Controls	✓	✓	✓	✓
Within Muscovy (1490 Borders)	✓			

Notes: This table reports first-stage estimates from our 2SLS analysis of the impact of slave raids on district-level development outcomes in mid-19th-century Russia (panel A) and Austrian Galicia and Silesia (panel B). The outcome variable is the logarithm of cumulative raids on a district. The treatment variable is a district's (1) minimum distance to Crimea along a watershed boundary line or (2) minimum distance to the nine least-cost paths from Crimea to Lviv and Moscow. All models control for urban population in 1400, land area, minimum distance to a river and to a coastline, soil fertility, terrain ruggedness, and cumulative military conflicts in 1453-1777; in column 1, temperature seasonality, precipitation, distance to Moscow, and an indicator for whether the district was within Muscovy's 1490 borders are also included. Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

E.3 OLS Estimates

TABLE A16. SLAVE RAIDS AND DEVELOPMENT OUTCOMES IN IMPERIAL RUSSIA AND AUSTRIA: OLS ESTIMATES

<i>Panel A: Russian Empire</i>						
<i>Outcomes:</i>	Population		Markets		Factories	
	Log Urban (1)	Per km ² (2)	Log Total (3)	Per km ² (4)	Log Total (5)	Per km ² (6)
Log Cumulative Raids	0.213*** (0.049)	2.12*** (0.702)	0.035 (0.068)	0.0003 (0.0002)	0.265*** (0.080)	0.002* (0.001)
N	357	357	361	361	362	362
R ²	0.379	0.662	0.097	0.290	0.217	0.189
Mean Outcome Variable	8.751	27.060	2.125	0.003	2.361	0.006
District-Level Controls	✓	✓	✓	✓	✓	✓
Within Muscovy (1490 Borders)	✓	✓	✓	✓	✓	✓
<i>Panel B: Austrian Galicia and Silesia</i>						
<i>Outcomes:</i>	Population		Houses		Farm Structures	
	Log Total (7)	Per km ² (8)	Log Total (9)	Per km ² (10)	Log Total (11)	Per km ² (12)
Log Cumulative Raids	0.095** (0.042)	155.381* (80.637)	0.073** (0.033)	4.503** (2.092)	0.008 (0.029)	3.318* (1.814)
N	99	99	99	99	99	99
R ²	0.706	0.523	0.855	0.579	0.898	0.606
Mean Outcome Variable	10.813	191.673	8.930	15.293	9.277	20.018
District-Level Controls	✓	✓	✓	✓	✓	✓

Notes: This table reports OLS estimates of the relationship between slave raids and various development outcomes (indicated in the header) in districts of Imperial Russia (panel A) and Austrian Galicia and Silesia (panel B) in the mid-19th century. The treatment variable is the logarithm of cumulative raids on a district. All models control for urban population in 1400, land area, minimum distance to a river and to a coastline, soil fertility, and terrain ruggedness; in Panel A, temperature seasonality, mean precipitation, distance to Moscow, and an indicator for whether the district was within Muscovy's 1490 borders are also included. Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

E.4 Full Regression Results

TABLE A17. SLAVE RAIDS AND LONG-RUN DEVELOPMENT OUTCOMES IN IMPERIAL RUSSIA:
FULL RESULTS

<i>Outcomes:</i>	Population		Markets		Factories	
	Log Urban (1)	Per km ² (2)	Log Total (3)	Per km ² (4)	Log Total (5)	Per km ² (6)
Log Cumulative Raids (Instrumented)	0.491** (0.192)	7.414*** (2.450)	0.795*** (0.264)	0.003*** (0.001)	0.316 (0.295)	0.007 (0.006)
Distance to Rivers	0.001 (0.001)	0.014 (0.014)	0.000 (0.002)	0.000 (0.000)	-0.001 (0.002)	0.000 (0.000)
Distance to Moscow	0.000 (0.000)	0.002 (0.004)	0.000 (0.000)	0.000 (0.000)	-0.001* (0.000)	0.000 (0.000)
Fertile Soil	-0.346 (0.323)	0.187 (4.102)	-0.748 (0.459)	-0.002 (0.002)	-0.486 (0.518)	-0.014 (0.009)
Ruggedness	0.007 (0.005)	0.194*** (0.071)	-0.007 (0.007)	0.000 (0.000)	0.017** (0.008)	0.000 (0.000)
Log Urban Population in 1400	0.549*** (0.133)	3.817 (3.634)	-0.554*** (0.167)	-0.002*** (0.001)	0.538*** (0.179)	0.008 (0.006)
Cumulative Battles (1453-1777)	0.132 (0.091)	1.155 (1.067)	0.112* (0.066)	0.000 (0.000)	0.083 (0.114)	0.000 (0.001)
Log Area	-0.149 (0.093)	-13.807*** (1.061)	0.004 (0.133)	-0.002*** (0.000)	0.207 (0.158)	-0.004*** (0.001)
Distance to Coast	-0.001 (0.001)	-0.015** (0.006)	-0.001* (0.001)	0.000*** (0.000)	0.000 (0.001)	0.000 (0.000)
Temperature Seasonality	-0.001 (0.001)	0.039** (0.016)	0.006*** (0.002)	0.000*** (0.000)	-0.003 (0.002)	0.000 (0.000)
Mean Precipitation	-0.001 (0.002)	0.004 (0.017)	0.001 (0.002)	0.000 (0.000)	-0.002 (0.002)	0.000 (0.000)
Within 1490 Muscovy	0.021 (0.135)	2.690 (1.784)	-0.213 (0.209)	0.000 (0.001)	0.820*** (0.192)	0.005* (0.002)
N	356	356	360	360	361	361
R ²	0.322	0.590	-0.233	-0.056	0.212	0.134
Mean Outcome Variable	8.753	27.082	2.129	0.003	2.368	0.006
First-Stage F-Statistic	32.131	32.131	32.735	32.735	33.076	33.076

Notes: This table reports full second-stage 2SLS estimates of the impact of slave raids on district-level development outcomes in Imperial Russia in the mid-19th century (presented in abridged form in panel A, Table 3). The treatment variable is the logarithm of cumulative raids on a district, instrumented by the minimum distance from its centroid to Crimea via a watershed boundary line. Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A18. SLAVE RAIDS AND LONG-RUN DEVELOPMENT OUTCOMES IN AUSTRIAN GALICIA AND SILESIA: FULL RESULTS

<i>Outcomes:</i>	Population		Houses		Farm Structures	
	Log Total (1)	Per km ² (2)	Log Total (3)	Per km ² (4)	Log Total (5)	Per km ² (6)
Log Cumulative Raids (Instrumented)	0.356** (0.146)	672.207** (321.436)	0.248** (0.101)	19.795** (8.306)	0.036 (0.083)	15.364** (7.031)
Log Urban Population in 1400	0.240* (0.129)	-247.152 (373.024)	0.117 (0.083)	-5.173 (9.850)	0.127** (0.058)	-2.956 (8.122)
Mean Terrain Ruggedness	-0.001 (0.001)	1.335 (1.174)	-0.001* (0.001)	0.024 (0.034)	-0.002*** (0.000)	0.003 (0.028)
Log Land Area (km ²)	0.385*** (0.108)	-712.130** (290.786)	0.614*** (0.069)	-22.118*** (7.010)	0.698*** (0.058)	-19.659*** (6.138)
Fertile Soil	-0.328* (0.189)	-707.712 (437.952)	-0.236* (0.135)	-20.689* (11.605)	0.010 (0.093)	-15.610 (9.524)
Log Distance to River	0.039 (0.044)	-50.637 (97.231)	0.031 (0.033)	-0.828 (2.574)	0.038* (0.022)	-0.441 (2.181)
Log Distance to Coastline	-0.364 (0.553)	-592.261 (1,109.944)	-0.810* (0.414)	-27.070 (30.423)	0.073 (0.304)	-14.589 (24.741)
Cumulative Battles (1453-1777)	0.036 (0.169)	81.795 (280.420)	-0.003 (0.112)	-0.825 (6.295)	0.119 (0.087)	1.303 (5.661)
N	99	99	99	99	99	99
Mean Outcome Variable	10.813	191.673	8.930	15.293	9.277	20.018
R ²	0.592	0.262	0.813	0.292	0.897	0.390
First-Stage F-Statistic	19.215	19.215	19.215	19.215	19.215	19.215

Notes: This table presents full second-stage 2SLS estimates of the impact of slave raids on district-level development outcomes in Austrian Galicia and Silesia in the mid-19th century (presented in abridged form in panel B, Table 3). The treatment variable is the logarithm of cumulative raids on a district, instrumented by the minimum distance from its centroid to nine least-cost paths from Crimea to Lviv and Moscow. Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

E.5 Alternative Instrument

TABLE A19. SLAVE RAIDS AND DEVELOPMENT IN IMPERIAL RUSSIA AND AUSTRIA:
ROBUSTNESS TO LEAST-COST-PATH INSTRUMENT

<i>Panel A: Russian Empire</i>						
<i>Outcome:</i>	Population		Markets		Factories	
	Log Urban (1)	Per km ² (2)	Log Total (3)	Per km ² (4)	Log Total (5)	Per km ² (6)
Log Cumulative Raids (Instrumented)	0.455** (0.190)	4.475** (1.824)	0.995*** (0.302)	0.004*** (0.001)	0.624** (0.283)	0.004 (0.005)
N	356	356	360	360	361	361
R ²	0.302	0.745	-0.424	-0.277	0.150	0.090
Mean Outcome Variable	8.740	26.670	2.129	0.003	2.350	0.005
First-Stage F-Statistic	30.194	30.194	31.159	31.159	31.339	31.339
District-Level Controls	✓	✓	✓	✓	✓	✓
Within Muscovy (1490 Borders)	✓	✓	✓	✓	✓	✓
<i>Panel B: Austrian Galicia and Silesia</i>						
<i>Outcome:</i>	Population		Houses		Farm Structures	
	Log Total (7)	Per km ² (8)	Log Total (9)	Per km ² (10)	Log Total (11)	Per km ² (12)
Log Cumulative Raids (Instrumented)	0.602*** (0.224)	1,095.208** (521.493)	0.500*** (0.148)	34.039*** (12.443)	0.160 (0.120)	26.573** (11.124)
N	98	98	98	98	98	98
R ²	0.276	-0.448	0.599	-0.560	0.864	-0.295
Mean Outcome Variable	10.808	165.621	8.941	14.631	9.290	19.322
First-Stage F-Statistic	12.717	12.717	12.717	12.717	12.717	12.717
District-Level Controls	✓	✓	✓	✓	✓	✓

Notes: This table shows that the results of our instrumental variables analyses of the impact of slave raids on district-level development outcomes in mid-19th century Russia (panel A) and Austrian Galicia and Silesia (panel B) are robust to the use of an alternative instrument: minimum distance to nine least-cost paths from Crimea to Lviv or Moscow. All models control for urban population in 1400, distance to a river and to a coastline, land area, soil fertility, terrain ruggedness, and cumulative military conflicts in 1453-1777; in Panel A, temperature seasonality, precipitation, distance to Moscow, and an indicator for whether the district was within Muscovy's 1490 borders are also included. Districts including the least-cost paths' terminal cities are excluded from the analysis. Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

F The Defensive State-Building Mechanism

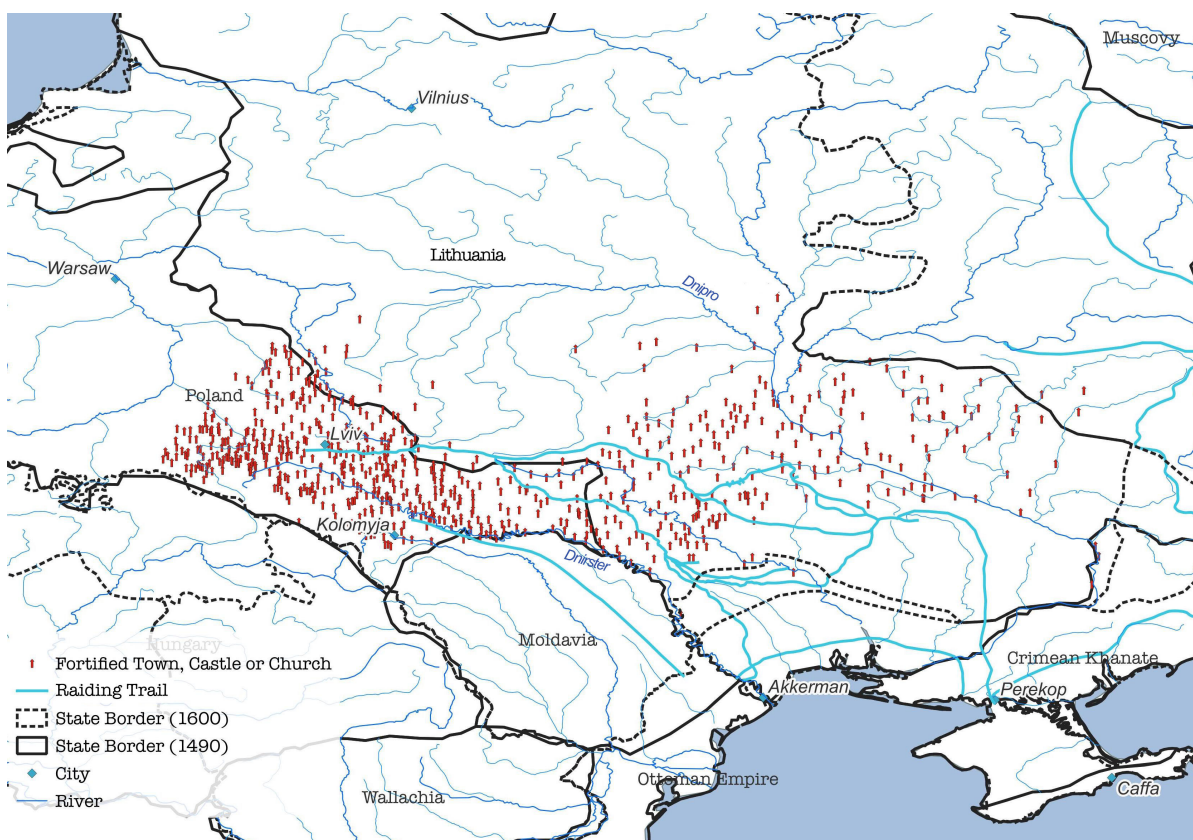
F.1 Poland-Lithuania

TABLE A20. SLAVE RAIDS, MILITARY DEPLOYMENTS, AND FISCAL CAPACITY IN POLAND-LITHUANIA

<i>Outcome:</i>	Log Soldiers in Red Ruthenia (1)	Log Fiscal Revenues (zł.) (2)
Exposure to Raids _{<i>t</i>-1} (Red Ruthenia)	0.424* (0.222)	
Exposure to Raids _{<i>t</i>-1} (Poland-Lithuania)		0.596* (0.349)
N	58	45
R ²	0.062	0.077
Mean Outcome Variable	8.145	13.908
Log Military Conflicts _{<i>t</i>-1}	✓	✓

Notes: OLS estimates of the association between lagged exposure to slave raids and (1) the logarithm of military camp population in Red Ruthenia between 1501 and 1558, as recorded by [Łopatecki and Bołdyrew \(2024\)](#) (column 1); and (2) the logarithm of annual revenues (in zlotys) collected by the Polish and Lithuanian treasuries – principally from land duties, property taxes, and tariffs — between 1588 and 1647, as measured by [Filipczak-Kocur \(2006\)](#) (column 2). Both models control for a linear time trend and the lagged number of military conflicts in the area of interest. Standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

FIGURE AII. FORTIFICATIONS IN SOUTHERN BORDERLANDS OF POLAND-LITHUANIA



Notes: This map displays the location of permanent fortifications constructed in response to slave raids in Poland-Lithuania. Raiding trails and state borders from 1490 and 1600 are also indicated. Fortifications data were digitized from Adamczyk (2004) and geocoded by the authors. Borders in 1490 are based on maps printed in *Oчерки Истории СССР: Концы XV-Nачало XVII вв.* (Kopanev 1957), digitized and georeferenced by the authors; borders in 1600 are from the EurAtlas Historical Political Boundaries of Europe database (Nüssli 2016).

TABLE A21. SLAVE RAIDS AND FORTIFICATION CONSTRUCTION IN POLAND-LITHUANIA: ROBUSTNESS CHECKS

<i>Outcomes: # per Grid Cell of. .</i>	Major Castles	Small Castles	Fortified Towns	Fortified Villages	Fortified Churches
<i>Panel A: Poland Only (1500 Borders)</i>	(1)	(2)	(3)	(4)	(5)
Exposure to Raids	2.352*** (0.340)	1.314*** (0.257)	1.345*** (0.207)	0.097*** (0.035)	0.835*** (0.154)
N	2,055	2,055	2,055	2,055	2,055
R ²	0.629	0.513	0.591	0.450	0.547
Mean Outcome Variable	0.166	0.007	0.122	0.005	0.018
<i>Panel B: Lithuania Only (1500 Borders)</i>	(6)	(7)	(8)	(9)	(10)
Exposure to Raids	0.732*** (0.110)	0.030** (0.014)	0.520*** (0.092)	0.014 (0.009)	0.057*** (0.019)
N	6,060	6,060	6,060	6,060	6,060
R ²	0.488	0.307	0.441	0.283	0.641
Mean Outcome Variable	0.166	0.007	0.122	0.005	0.018
<i>Panel C: Slave Trade (1453-1777)</i>	(11)	(12)	(13)	(14)	(15)
Exposure to Raids	1.213*** (0.139)	0.424*** (0.093)	0.757*** (0.091)	0.042*** (0.014)	0.301*** (0.057)
N	7,574	7,574	7,574	7,574	7,574
R ²	0.534	0.404	0.479	0.343	0.477
Mean Outcome Variable	0.105	0.029	0.056	0.003	0.035
<i>Panel D: 1100-1600</i>	(16)	(17)	(18)	(19)	(20)
Exposure to Raids	0.811*** (0.128)	0.240*** (0.072)	0.436*** (0.074)	0.029* (0.015)	0.243*** (0.053)
N	5,951	5,951	5,951	5,951	5,951
R ²	0.485	0.406	0.448	0.312	0.482
Mean Outcome Variable	0.105	0.029	0.056	0.003	0.035
Log Cumulative Battles	✓	✓	✓	✓	✓
Grid Cell FEs	✓	✓	✓	✓	✓
Period FEs	✓	✓	✓	✓	✓

Notes: This tables examines whether our grid cell-level difference-in-differences estimates of the impact of slave raids on the construction of permanent fortifications in southern Poland-Lithuania (panel A, Table 4) are robust to subsetting the sample to different areas and time periods. The sample comprises 137 grid cells in Poland (1500 borders) observed 17 times between 1100 and 1800 in panel A; 404 grid cells in Lithuania (1500 borders) observed 17 times between 1100 and 1800 in panel B; 541 grid cells in Poland-Lithuania (1500 borders) observed 14 times between 1100 and 1777 in panel C; and 541 grid cells in Poland-Lithuania (1500 borders) observed 11 times between 1100 and 1600 in panel D. Robust standard errors, clustered by grid cell, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

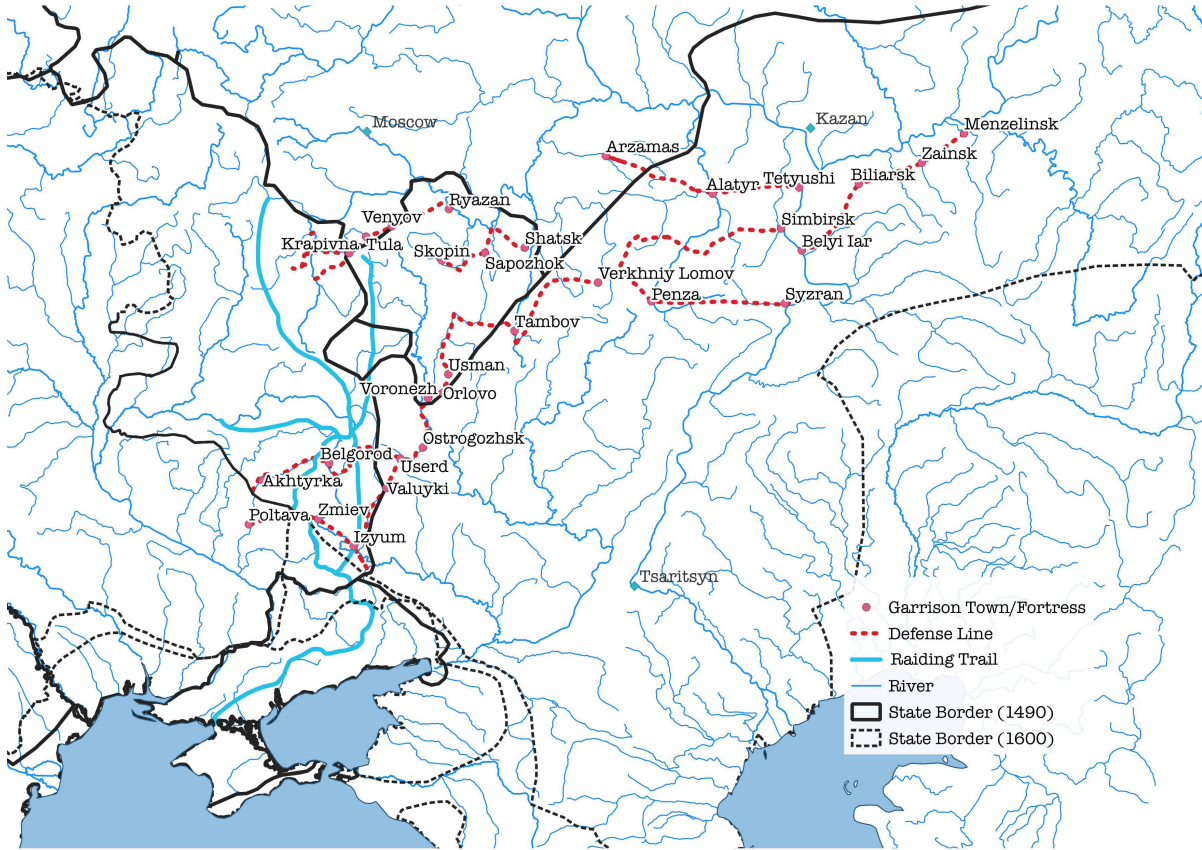
TABLE A22. SLAVE RAIDS AND CASTLE OWNERSHIP IN POLAND-LITHUANIA: ROBUSTNESS CHECKS

<i>Outcome (per Grid Cell):</i>	No. Castles Controlled by Crown	No. Castles Controlled by Crown/Reps.	No. Non- Crown Castles	Share Castles Controlled by Crown	Share Castles Controlled by Crown/Reps.
<i>Panel A: No Controls</i>	(1)	(2)	(3)	(4)	(5)
Exposure to Raids	0.031* (0.016)	0.031* (0.016)	0.017 (0.027)	0.039* (0.022)	0.038* (0.022)
N	5,951	5,951	5,951	5,951	5,951
R ²	0.700	0.730	0.764	0.464	0.528
Mean Outcome Variable	0.068	0.092	0.170	0.063	0.082
<i>Panel B: 1100-1900</i>	(6)	(7)	(8)	(9)	(10)
Exposure to Raids	0.026* (0.014)	0.025 (0.016)	0.005 (0.030)	0.065* (0.039)	0.063* (0.038)
N	8,115	8,115	8,115	6,492	6,492
R ²	0.549	0.565	0.582	0.361	0.397
Mean Outcome Variable	0.050	0.069	0.126	0.066	0.084
<i>Panel C: Poland-Lithuania in 1600</i>	(11)	(12)	(13)	(14)	(15)
Exposure to Raids	0.037** (0.018)	0.031* (0.018)	0.010 (0.030)	0.041* (0.022)	0.035 (0.021)
N	5,896	5,896	5,896	5,896	5,896
R ²	0.709	0.740	0.769	0.472	0.535
Mean Outcome Variable	0.084	0.111	0.197	0.069	0.088
<i>Panel D: All States with Castles</i>	(16)	(17)	(18)	(19)	(20)
Exposure to Raids	0.028** (0.013)	0.025* (0.013)	0.008 (0.022)	0.027* (0.015)	0.024 (0.015)
N	8,063	8,063	8,063	8,063	8,063
R ²	0.707	0.739	0.771	0.497	0.561
Mean Outcome Variable	0.063	0.083	0.147	0.050	0.064
Log Cumulative Battles	✓	✓	✓	✓	✓
Grid Cell FEs	✓	✓	✓	✓	✓
Period FEs	✓	✓	✓	✓	✓

Notes: This table examines whether our grid cell-level difference-in-differences estimates of the impact of slave raids on castle ownership in Poland-Lithuania (panel B, Table 4) are robust to subsetting the sample to different areas and time periods. The sample comprises 541 (0.5 × 0.5°) grid cells in Poland-Lithuania (1500 borders) observed 11 times between 1300 and 1800 in panel A; 541 grid cells in Poland-Lithuania (1500 borders) observed 15 times between 1100 and 1900 in panel B; 536 grid cells in Poland-Lithuania (1600 borders) observed 11 times between 1300 and 1800; and 733 grid cells in four historical states (1500 borders) within modern Poland — Poland, Lithuania, Teutonic Prussia, and Hungary-Bohemia — which are observed 11 times between 1300 and 1800. Robust standard errors, clustered by grid cell, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

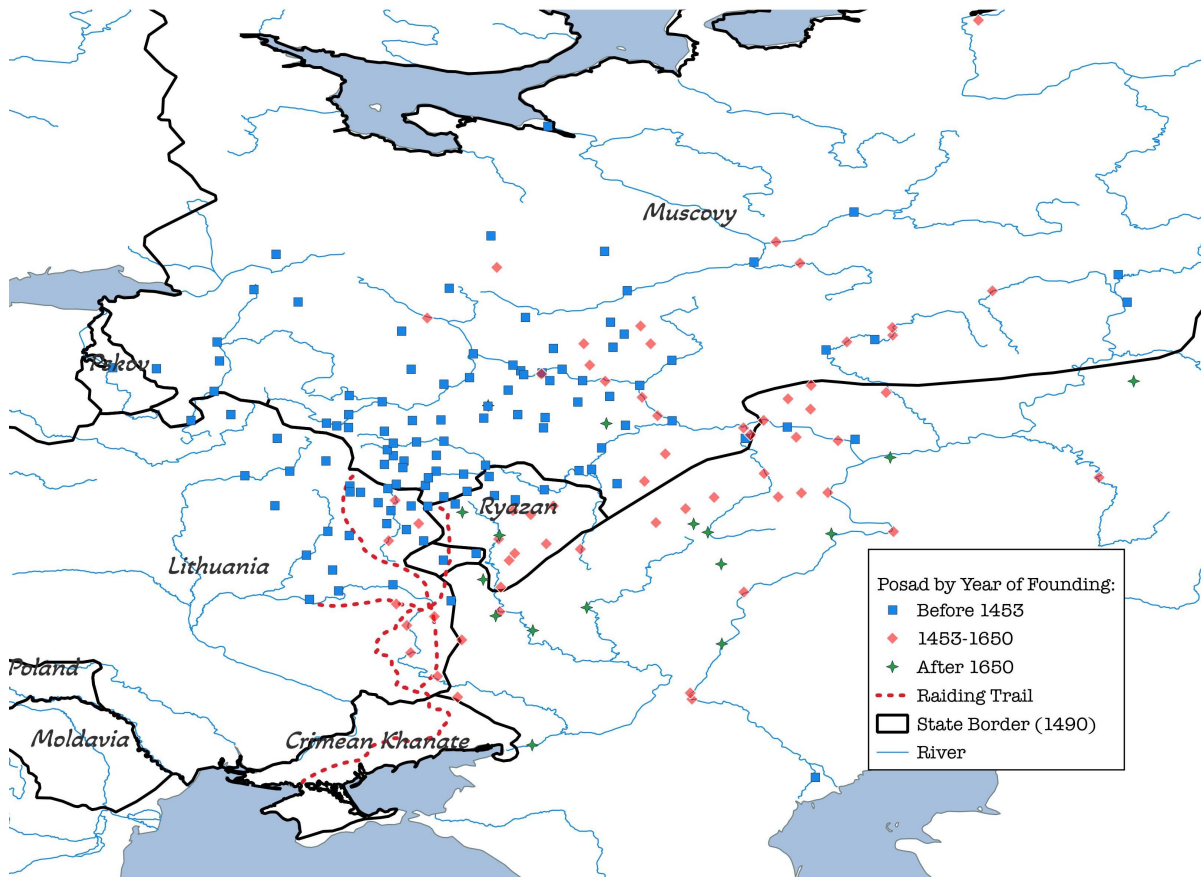
F.2 Russia

FIGURE A12. DEFENSE LINES AGAINST SLAVE RAIDS IN RUSSIA



Notes: This map displays the location of defense lines constructed in response to slave raids in the Tsardom of Russia. Raiding trails and state borders from 1490 and 1600 are also indicated. Defense lines are based on maps and lists of garrison towns provided by [Davies \(2007\)](#) and [Witzenrath \(2022\)](#). Borders in 1490 are reconstructed from maps printed in *Ocherki Istorii SSSR: Konets XV-Nachalo XVII vv.* ([Kopanev 1957](#)), digitized and georeferenced by the authors; borders in 1600 are from the EurAtlas Historical Political Boundaries of Europe database ([Nüssli 2016](#)).

FIGURE A13. RUSSIAN URBAN COMMUNITIES, 1646-1722



Notes: This map displays the location of 194 Russian urban communities with the right to engage in commerce or industry (*posady*) in the 17th and early 18th centuries, the unit of observation in Table 5. The data were compiled by [Vodarskii \(1966\)](#) and digitized and geocoded by the authors. Dates of founding (or first mention) were gathered by the authors.

TABLE A23. SUMMARY STATISTICS FOR RUSSIAN URBAN COMMUNITIES DATASET

	N	Mean	St. Dev.	Min	Max
Servicemen (<i>Sluzhilye</i>)					
Servicemen Households, 1650	108	537.667	2,013.518	1	20,000
Servicemen Individuals, 1670-80	111	652.054	2,003.714	2	20,048
Traders and Artisans (<i>Posadskie</i>)					
Trader and Artisan Households, 1646	134	245.507	368.501	2	2,871
Trader and Artisan Households, 1652	99	356.889	565.277	5	3,615
Trader and Artisan Households, 1670-80	160	281.062	615.585	1	7,043
Trader and Artisan Individuals, 1646-52	138	775.072	1,304.392	8	9,399
Trader and Artisan Individuals, 1670-80	162	780.870	1,695.748	4	19,720
Trader and Artisan Individuals, 1722	176	1,006.097	1,433.595	2	13,673
Slave Raids					
Distance to Crimea via Watershed Boundary	194	7.847	0.343	6.977	8.711
Log Cumulative Raids, 1646	194	0.571	0.851	0.000	2.565
Log Cumulative Raids, 1670	194	0.601	0.888	0.000	2.773
Control Variables					
Distance to Coastline	194	626.766	218.359	20.741	1,161.019
Minimum Distance to River	194	27.183	31.412	0.001	129.451
Fertile Soil	194	0.290	0.366	0.000	1.000
Date of Founding/First Mention	192	1362	226	753	1731
Distance to Moscow	194	439,178.500	279,367.200	0.000	1,522,273.000
Within 1490 Muscovy	194	0.675	0.469	0	1

Notes: This table reports summary statistics for variables in our analysis of Russian urban community (*posad*) population between 1646 and 1722 (Table 5). Data on the population of servicemen, traders, and artisans were compiled from Russian census statistics by [Vodarskii \(1966\)](#) and digitized and geocoded by the authors. Dates of founding were gathered by the authors.

TABLE A24. SLAVE RAIDS, DEFENSIVE STATE CAPACITY, AND COMMERCIAL ACTIVITY IN RUSSIAN URBAN COMMUNITIES: FULL RESULTS

	<i>Outcome:</i>	Log Servicemen		Log Traders & Artisans		
		Households (1650) (1)	Individuals (1670-80) (2)	Households (1646) (3)	Households (1670-80) (4)	Households (1722) (5)
Log Cumulative Raids by 1646 (Instrumented)		0.519** (0.253)		-0.630* (0.327)		
Log Cumulative Raids by 1670 (Instrumented)			1.408*** (0.365)		-0.409 (0.275)	0.074 (0.262)
Distance to Moscow		0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Distance to Coast		-0.002*** (0.001)	-0.002* (0.001)	0.002** (0.001)	0.001 (0.001)	0.000 (0.000)
Distance to River		-0.011** (0.004)	0.000 (0.006)	-0.005 (0.004)	-0.002 (0.003)	-0.001 (0.003)
Fertile Soil		1.198*** (0.383)	0.518 (0.411)	-0.288 (0.508)	-0.652* (0.389)	-1.230*** (0.392)
Year of Founding/Mention		0.000 (0.001)	0.001 (0.001)	-0.004*** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)
Within 1490 Muscovy		-1.116*** (0.344)	-0.807* (0.485)	0.510* (0.293)	0.166 (0.228)	-0.184 (0.199)
Constant		6.322*** (1.136)	2.515* (1.471)	8.942*** (1.213)	7.948*** (0.915)	9.490*** (0.744)
N		108	111	133	158	176
Mean Outcome Variable		4.857	5.045	4.638	4.809	6.209
First-Stage F-Statistic		39.729	40.274	43.574	49.605	46.318
R ²		0.353	0.167	0.084	0.082	0.285

Notes: This table reports full second-stage 2SLS estimates of the impact of slave raids on indicators of defensive state capacity (columns 1-2) and commercial activity (columns 3-5) in Russian urban communities (*posady*) between 1646 and 1722 (presented in abridged form in Table 5). The treatment variable is the logarithm of cumulative raids on a community when the outcome is measured (i.e., 1646 or 1670), instrumented by its minimum distance to Crimea along a watershed boundary. Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A25. SLAVE RAIDS, DEFENSIVE STATE CAPACITY, AND COMMERCIAL ACTIVITY IN RUSSIAN URBAN COMMUNITIES: OLS ESTIMATES

<i>Outcome:</i>	Log Servicemen		Log Traders and Artisans		
	Households (1650) (1)	Individuals (1670-80) (2)	Households (1646) (3)	Households (1670-80) (4)	Households (1722) (5)
Log Cumulative Raids by 1646	0.571*** (0.152)		0.223* (0.131)		
Log Cumulative Raids by 1670		0.559*** (0.169)		0.159 (0.126)	0.250** (0.102)
N	108	111	133	158	176
R ²	0.353	0.336	0.298	0.194	0.296
Mean Outcome Variable	4.857	5.045	4.638	4.809	6.209
Community-Level Controls	✓	✓	✓	✓	✓

Notes: This table shows that our instrumental variables estimates of the impact of slave raids on indicators of defensive state capacity and commercial activity in Russian urban communities (*posady*) between 1646 and 1722 are robust to conducting the analysis with OLS rather than 2SLS. The treatment variable is the logarithm of cumulative raids on a community when the outcome is measured (i.e., 1646 or 1679). Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A26. RELATIONSHIP BETWEEN DEFENSIVE STATE CAPACITY AND COMMERCIAL ACTIVITY IN RUSSIAN URBAN COMMUNITIES

<i>Outcome: Log Trader & Artisan...</i>	Households		Individuals	
	(1646) (1)	(1670-80) (2)	(1722) (3)	(1722) (4)
Log Servicemen Households (1650)	0.087 (0.088)	0.042 (0.056)	0.124** (0.053)	
Log Servicemen Individuals (1670-80)				0.173*** (0.038)
Log Trader/Artisan Households (1646)		0.868*** (0.075)	0.517*** (0.079)	0.491*** (0.087)
N	88	85	85	80
R ²	0.315	0.817	0.651	0.636
Mean Outcome Variable	4.749	5.112	6.684	6.684
Community-Level Controls	✓	✓	✓	✓

Notes: OLS estimates of the relationship between indicators of defensive state capacity and commercial in Russian urban communities (*posady*) between 1646 and 1722. All models control for minimum distance to a river and to a coast-line, date of founding or first mention, soil fertility, distance to Moscow, and inclusion in Muscovy's 1490 borders. Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

F.3 Wages and Prices

TABLE A27. SLAVE RAIDS AND EARNINGS IN CENTRAL AND EASTERN EUROPE, 1393-1913

<i>Outcome:</i>	Building Craftsmen		Building Laborers	
	Real Wage (1)	Welfare Ratio (2)	Real Wage (3)	Welfare Ratio (4)
Exposure to Raids	1.745** (0.559)	0.355*** (0.084)	2.020*** (0.001)	0.330*** (0.051)
N	2,636	2,744	1,848	1,955
R ²	0.737	0.734	0.747	0.677
Mean Outcome Variable	7.526	1.445	4.623	0.878
City FEs	✓	✓	✓	✓
Year FEs	✓	✓	✓	✓

Notes: Difference-in-differences estimates of the impact of exposure to slave raids on two indicators of earnings by building craftsmen and laborers in nine Central and Eastern European cities — Augsburg, Gdansk, Hamburg, Krakow, Leipzig, Lviv, Munich, Vienna, and Warsaw — over varying subsets of the period 1393-1913 (at the city-year level): (1) daily real wages in grams of silver; and (2) the welfare ratio, that is, average annual earnings divided by the cost of a poverty line consumption bundle. Earnings data come from Allen (2001). Robust standard errors, clustered by city, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE A28. SLAVE RAIDS AND CONSUMER PRICES IN POLAND, 1501-1776

<i>Outcome:</i> Consumer Price Index (Mean = 102.544)		
	(1)	(2)
Cumulative Raids	2.028*** (0.391)	
Cumulative Captives		0.001*** (0.000)
N	57	57
R ²	0.906	0.910
City FEs	✓	✓
Year FEs	✓	✓

Notes: Difference-in-differences estimates of the impact of exposure to slave raids on the price of a broad basket of consumer goods in six Polish cities — Krakow, Poznań, Lublin, Gdańsk, Warsaw, and Lviv — in grams of silver at 12 intervals between 1501 and 1776 (at the city-period level). The basket represents the amount of rye/wheat, beans, meat, butter, soap, candles, lamp oil, linen, and fuel needed to support a household for one year. Price data come from Malinowski (2016). Robust standard errors, clustered by city, in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

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