Chapter 5. Shackled to the Past: The Causes and Consequences of Africa's Slave Trades

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Abstract

This chapter uses statistical techniques to assess whether there is evidence that Africa's slave trades had a detrimental impact on long-term economic development. This is done by first constructing estimates of the number of slaves taken from each region of Africa between 1400 and 1900. The estimates are constructed by combining data on the number of slaves shipped from African ports with data from historical records reporting the ethnic identities of slaves taken from Africa. Using the constructed data, it shown that the parts of the continent from which the largest number of slaves were taken in the past are the parts of the continent that are the poorest today. This relationship is found to be extremely robust. It remains even when other important determinants of economic development are taken into account.

This relationship can be interpreted a number of ways. One interpretation is that it shows that the slave trades had an adverse effect on Africa's long-term economic development. An alternative interpretation, however, is that the parts of Africa from which the largest number of slaves were taken in the past were initially the least developed. And because these characteristics persist today, these parts of Africa continue to be the least developed. Therefore, we observe that the parts of Africa that exported many slaves in the past are also poor today, even though the slave trades did not *cause* these areas to become underdeveloped. This alternative explanation is tested in the data by examining

whether it was in fact the initially least developed parts of Africa that exported the greatest number of slave. Consistent with the historical evidence, the data suggest that the parts of Africa that were initially the most developed, not the least developed, supplied the largest number of slaves. This evidence provide strong evidence against the second interpretation, and instead supports the first interpretation. It is also shown that additional statistical tests, using instrumental variables, also provides additional support for the slave trades having a causal adverse effect on economic development within Africa.

Introduction

Africa's history is intimately connected with slavery. The continent has experience four large slave trades, all of which date back at least to the mid-fifteenth century. The oldest of the slave trades, the trans-Saharan, Red Sea, and Indian Ocean slave trades, all date back to at least 800 AD. During these trades, slaves were taken from land south of the Saharan desert, inland of the Red Sea, and inland of the coast of Eastern Africa, and were shipped to Northern Africa and the Middle East. The largest and most studied of the slave trades is the trans-Atlantic trade slave trade, where beginning in the fifteenth century slaves were shipped from West Africa, West Central Africa, and Eastern Africa to the European colonies in the New World. Although the Atlantic slave trade was the shortest in duration, it was the largest and most penetrating of the four slave trades. Between the fifteenth and eighteenth centuries, upwards of 12 million slaves were taken from the continent of Africa. The total number of slaves shipped during this same time period in the other three slave trades is somewhere around 6 million. In total, nearly 18 million slaves were shipped in the four slave trade over this four hundred year period.[2]

Given the sheer magnitude of the slave trades it is natural to ask what effect, if any, the slave trades had on African societies. This is an old and much debated question in the African history literature. A number of authors, dating back to at least the writings of Basil Davidson and Walter Rodney, argue that the slave trades had a significant adverse impact on the political, social and economic development of Africa.[3] For example, in his book *Slavery and African Life*, Patrick Manning argues that: "Slavery was corruption: it involved theft, bribery, and exercise of brute force as well as ruses. Slavery thus may be seen as one source of precolonial origins for modern corruption."[4] Along similar lines, Joseph Inikori argues that the long-term consequences of Africa's slave trades was to "alter the direction of the economic process in Africa away from development and towards underdevelopment and dependence."[5]

Recent research has examined the impact of the slave trades on specific ethnic groups.

These studies have begun to uncover and document the detrimental effects that the slave trades had on the institutional and social structures of African societies. They show how the external demand for slaves caused political instability, weakened states, promoted political and social fragmentation, and resulted in a deterioration of domestic legal institutions.[6]

The view of others, such as John Fage and David Northrup, is that the slave trades had little affect on the subsequent socio-economic development of Africa.[7] David Northrup, examining the effects of the slave trade in Southeastern Nigeria, concludes that "while it is true that the slave trade was cruel and produced a climate of fear and suspicion, its social and economic effects which can be measured were surprisingly benign."[8] These differences in opinion are not surprising. Even direct observers of the slave trades had very different views of the effects that the slave trades were having on African societies at the time. For example, while the English slave trader, Archibald Dalzel felt that African societies were unaffected by the slave trade, the explorer and missionary, David Livingstone argued that the slave trade had a devastating impact on African societies.[9]

This chapter attempts to shed light on this issue by using statistical analysis to examine the relationship between the severity of the slave trades and subsequent economic performance for different parts of Africa. This is done by first constructing estimates of the number of slaves taken from each region of Africa between 1400 and 1900. The estimates are constructed by combining data of the number of slaves shipped from each African port or coastal region with data from historical documents reporting the ethnic identities of slaves shipped from Africa. The construction of the slave export estimates builds on the vast empirical literature that has evolved from the research of African historians over the past four decades. Because data on current economic performance, such as per capita Gross Domestic Product (GDP), are only available at the national level, the statistical tests performed in the chapter use current countries as the unit of observation. Because of this, when estimates of the number of slaves taken from different parts of Africa are constructed, a 'part' is defined as the portion

of the continent that today is a country. Although, current political boundaries are completely arbitrary, particularly from a historical perspective, the limited availability of current economic data necessitates the use of the modern nation state as the unit of analysis.

An issue that arises when using modern countries as the unit of analysis is that they are different sizes. Therefore, variation in the number of slaves taken from different countries will reflect, and least to some degree, differences in country size. Because of this, the constructed country-level slave export measures are 'normalized' to take into account differences in country size.

The logic of the statistical tests is as follows. If the slave trades are partly responsible for Africa's current underdevelopment, then one should observe that the parts of the continent from which the largest number of slaves were taken in the past are also the parts of the continent that are the poorest today. The tests performed in this chapter examine whether this pattern is observed in the data. The results confirm that the areas from which the most slaves were taken are indeed the parts of Africa that are the poorest today. As will be shown, this relationship is extremely strong, and it remains even when other important determinants of economic development, such as climate, geography, natural resource endowments, and past colonial experience, are taken into account. Although these statistical correlations provide evidence that the slave trades adversely affected Africa's economic development, this evidence is still not conclusive. The reason is that it may have been the case that the parts of Africa from which the largest number of slaves were taken were initially the most underdeveloped. Because these characteristics persist today, these parts of Africa continue to be relatively underdeveloped. Therefore, one would observe that the parts of Africa that exported many slaves in the past are also poor today, even if the slave trades did not *cause* these areas to become underdeveloped. This alternative explanation is tested in the data by examining whether it was in fact the initially least developed parts of Africa that engaged most heavily in the slave trades. Consistent with the historical evidence, the data suggest that the parts

of Africa that were initially the most developed, not the least developed, supplied the largest number of slaves.

Although this line of inquiry is different from previous historical research that examines the impacts of Africa's slave trades, the results presented here complement the evidence from these previous studies. For example, the macro-statistical perspective of this study complements more micro-level historical case studies, such as Walter Hawthorne's analysis of the impact of the slave trade on the Balanta, or Andrew Hubbell's study of the effects of the slave trade in the region of Souroudougou.[10] If the slave trades were detrimental for subsequent social and economic development, then these effects should be observed both at the micro level, when looking at specific ethnic groups during specific time periods, and at the macro level, when looking at broad patterns across the whole African continent over a longer time horizon. It may be that the slave trades had very specific impacts in some places during certain periods of time, but that these are not general effects present across a wide cross-section of societies. Evidence from the broader, more macro perspective presented here can shed light on how generalizable specific examples are. The use of macro-statistical analysis also complements broad historical studies that also take a macro perspective and examine the larger impacts of the slave trades within Africa. Examples of studies of this type include Paul Lovejoy's *Transformations in Slavery* and Patrick Manning's *Slavery and Occidental Life*.[11] This study can be seen as an extension of this line of research that simply applies more formal statistical techniques to examine the economic impacts of Africa's slave trades.

Estimates of the Number of Slaves from African Countries

Construction Procedure

The analysis of this chapter builds on a long empirical tradition in the African history literature. The seminal work is Philip Curtin's (1969) *The Atlantic Slave Trade: A Census*, which used data available at the time to provide a detailed description and comprehensive analysis

of the origins and destinations of slaves shipped during the trans-Atlantic slave trade.[12] Since Curtin's publication in 1969, a very impressive amount of additional information has been collected and analyzed by African historians. The most recent and most extensive efforts are the *Trans-Atlantic Slave Trade Database*, which was developed by David Eltis, Stephen Behrendt, David Richardson, and Herbert Klein (1999), as well as the *Louisiana Slave Database* and the *Louisiana Free Database*, constructed by Gwendolyn Midlo Hall (2005).[13] Another notable contribution to this literature is Patrick Manning's of computer models to generate simulations of the estimated demographic impacts of Africa's slave trades. The results were presented in a series of journal articles and in his book *Slavery and African Life*, which was published in 1990.[14]

The present analysis extends this line research by using the wealth of available data to construct estimates of the number of slaves that were taken from the different parts of Africa. Then, the statistical relationship between the number of slaves taken in the past and current economic performance is examined.

The data used to construct the slave export estimates can be grouped into two categories. The first category includes data that report the total number of slaves exported from each port or region in Africa. For the trans-Atlantic slave trade, the data are from the updated version of the *Trans-Atlantic Slave Trade Database*, which records 34,584 voyages from 1514 to 1866. These data are gathered from documents and records located around the world. In most European ports, merchants were required to register their ships, declare the volume and value of goods transported, pay duties, and obtain formal permission to leave the port. Therefore, for each ship and voyage, typically, there exists a number of different registers and documents. In the database, 77% of the trans-Atlantic slave voyages after 1700 have shipping information from more than one source. Specific voyages are documented in as many as sixteen different sources. The average number of sources of data for each voyage is six. According to the authors' estimates, the database contains 82% of all trans-Atlantic

slaving voyages ever attempted.[15] The first purchase of slaves recorded in the *Trans-Atlantic Slave Trade Database* is in 1526, decades after the beginning of the trans-Atlantic slave trade. For this reason, Ivana Elbl's estimates of the number and locations of slaves shipped during the early period of the Atlantic slave trade are also used. Ivana Elbl's estimates, which cover the period from 1450 to 1521, are primarily based on volume estimates recorded by observers at the time, as well as direct numerical data from surviving records.[16] For the Indian Ocean, Red Sea, and trans-Saharan slave trades, estimates published by Ralph Austen are used. The estimates are constructed using all available documents, records and accounts by observers and government officials on the location and volume of slave exports.[17]

Using these data alone, one could construct estimates of the number of slaves that were shipped from the ports of each coastal country. However, the data do not provide information on where the slaves were originally captured. Slaves shipped from the ports of a coastal country may have come from a country located further inland. To construct estimates of the proportion of slaves shipped from the coast that came from inland countries, a second source of data that reports the ethnic identity of slaves shipped from Africa is also used. This information comes from a wide variety of different sources, including records of sale, plantation inventories, slave registers, slave runaway notices, court records, prison records, marriage records, death certificates, baptismal records, parish records, notarial records, and slave interviews.

Data on the ethnic identity of slaves shipped during the trans-Atlantic slave trade come from 54 samples, all from secondary sources. The sources report a total of 80,656 slaves for which their ethnic identity could be identified and a total of 229 distinct ethnic designations. Of the 200 plus ethnic designations, the most commonly observed are the Kongo, Fon, Yoruba, Malinke, Wolof, Bambara, and Hausa. Table 5.1 summarizes information about the ethnicity samples from the trans-Atlantic slave trade. Some of the largest samples are from British Caribbean slave censuses taken in the early 19th century. These data have been collected and

published by Barry Higman in his book *Slave Populations of the British Carribbean, 1807–1834*. The data from this source include the samples from Anguilla, Berbice, Trinidad, St. Lucia, and St. Kitts listed in table 5.1.[18] Another large sample is from Mary Karasch's book *Slave Life in Rio de Janeiro*, which provides information on a number of sample of slaves from Rio de Janeiro. The samples are from prison records, death certificates, and Free Africans' records.[19] One of the largest samples of slaves comes from Gwendolyn Midlo Hall's *Louisiana Slave Database* and *Louisiana Free Database*. For the early period of the trans-Atlantic slave trade, the largest sample, which is from Peru, is taken from Frederick Bowser's *The African Slave in Colonial Peru*.[20]

An important concern with the sample of slaves reported in table 5.1 is whether the sample is representative of the overall population of slaves shipped during the trans-Atlantic slave trade. A quick look at table 5.1 suggests that the answer is clearly no. For example, there are many more samples (and slaves) from the 19th century than from the 18th century, even though the height of the slave trade was in the 18th century. The non-representativeness of the sample is a concern. However, as described below, the slave ethnicity data are constructed in a manner that is meant to minimize the measurement error caused because the ethnicity sample is not representative of the full population of slaves.

Data on the ethnic origins of slaves are much less plentiful for the Indian Ocean, trans-Saharan, and Red Sea slave trades. For the Indian Ocean slave trade, only one article, by Abdul Sheriff published in *Slavery & Abolition* in 1988, has information on the ethnic origins of a significant sample of slaves shipped during this slave trade.[21] In this article, Sheriff reports the ethnic origins of 1,620 slaves emancipated in Zanzibar in 1860 and 1861. However, when reporting the data, Sheriff only lists the number of slaves of the six largest ethnic groups, Yao, Nyasa, Ngindo, Sagara, Mrima, Nyamwezi, with all other slaves grouped under the heading 'Others'. Because of this shortcoming, the primary documents, which are housed in the Zanzibar National Archives, were examined. Two additional slave list were also

Table 5.1: Slave ethnicity data for the trans-Atlantic slave trade

Location	Time Period	Number of Ethnic Groups	Number of Slaves	Type of Document
Valencia, Spain	1482–1516	77	2,675	Crown Records
Puebla, Mexico	1540–1556	14	115	Notarial Records
Dominican Republic	1547–1591	26	22	Records of Sale
Peru	1548–1560	16	202	Records of Sale
Mexico	1549	12	80	Plantation Accounts
Peru	1560–1650	30	6,754	Notarial Records
Lima, Peru	1583–1589	15	288	Baptism Records
Colombia	1589–1607	9	19	Various Records
Mexico	1600–1699	28	102	Records of Sale
Dominican Republic	1610–1696	33	55	Government Records
Chile	1615	6	141	Sales Records
Lima, Peru	1630–1702	33	409	Parish Records
Rural Peru	1632	25	307	Parish Records
Lima, Peru	1640–1680	33	936	Marriage Records
Colombia	1635–1695	6	17	Slave Inventories
Guyane	1690	12	69	Plantation Records
Colombia	1716–1725	33	59	Government Records
French Louisiana	1717–1769	23	223	Notarial Records
Dominican Republic	1717–1827	11	15	Government Records
South Carolina	1732–1775	35	681	Runaway Notices
Colombia	1738–1778	11	100	Various Records
Spanish Louisiana	1770–1803	79	6,615	Notarial Records
St. Dominique	1771–1791	25	5,413	Sugar Plantations
Bahia, Brazil	1775–1815	14	581	Slave Lists
St. Dominique	1778–1791	36	1,280	Coffee Plantations
Guadeloupe	1788	8	45	Newspaper Reports
St. Dominique	1788–1790	21	1,297	Fugitive Slave Lists
Cuba	1791–1840	59	3,093	Slave Registers
St. Dominique	1796–1797	56	5,632	Plantation Inventories
American Louisiana	1804–1820	62	223	Notarial Records
Salvador, Brazil	1808–1842	6	456	Records of Manumission
Trinidad	1813	100	12,460	Slave Registers
St. Lucia	1815	62	2,333	Slave Registers
Bahia, Brazil	1816–1850	27	2,666	Slave Lists
St. Kitts	1817	48	2,887	Slave Registers
Senegal	1818	17	80	Captured Slave Ship
Berbice	1819	66	1,127	Slave Registers
Salvador, Brazil	1819–1836	12	871	Manumission Certificates
Salvador, Brazil	1820–1835	11	1,106	Probate Records
Sierra Leone	1821–1824	68	605	Child Registers
Rio de Janeiro, Brazil	1826–1837	31	772	Prison Records
Anguilla	1827	7	51	Slave Registers
Rio de Janeiro, Brazil	1830–1852	190	2,921	Free Africans' Records
Rio de Janeiro, Brazil	1833–1849	35	476	Death Certificates
Salvador, Brazil	1835	13	275	Court Records
Salvador, Brazil	1838–1848	7	202	Slave Registers
St. Louis/Goree, Senegal	1843–1848	21	189	Emancipated Slaves
Bakel, Senegal	1846	16	73	Sales Records
d'Agoué, Benin	1846–1885	11	70	Church Records
Sierra Leone	1848	132	12,425	Linguistic and British Census
Salvador, Brazil	1851–1884	8	363	Records of Manumission
Salvador, Brazil	1852–1888	7	269	Slave Registers
Cape Verde	1856	32	314	Slave Census
Kikoneh Island, Sierra Leone	1896–1897	11	185	Fugitive Slave Records

discovered at the archives. These were lists of slaves that were emancipated in 1884–1885 and in 1874–1908. The list recorded the slave's name, age, ethnic identity, date freed, and former master's name.[22] Together, the three samples include 9,774 slaves with 80 different ethnicities. Two additional samples of slaves shipped to Mauritius in the 19th century are also available. However, these samples only distinguish between slaves that were originally from the island of Madagascar and slaves from mainland Africa.[23] The data from the Mauritius samples are used to distinguish between slaves who were originally from mainland Africa and those from Madagascar. The number of slaves from mainland Africa are then disaggregated using the sample of slaves from the Zanzibar National Archive documents, as well as a small sample of nine slaves from Harris' *The African Presence in Asia*. In total, the Indian Ocean ethnicity data include 21,048 slaves with 80 different ethnicities.

Ethnicity data for the Red Sea and the trans-Saharan slave trades are much less abundant. The Red Sea data are from two samples: a sample of five slaves from Bombay, India and a sample of 62 slaves from Jedda, Saudi Arabia. The sample from India is from Harris' *The African Presence in Asia*, and the sample from Saudi Arabia which is from two British reports submitted to the League of Nations, and published in the League of Nations' *Council Documents* in 1936 and 1937.[24] In total, the samples provide information for 67 slaves, with 32 different ethnicities recorded. For the trans-Saharan slave trade, two samples are available: one from Central Sudan and the other from Western Sudan. The samples provide information on the origins of 5,385 slaves, with 23 different ethnicities recorded.[25] The main shortcoming of the Saharan ethnicity data is that they do not provide samples from all regions from which slaves were taken during the Saharan slave trade. However, the shipping data from Ralph Austen not only provide information on the volume of trade, but also information on which caravan slaves were shipped on, the city or town that the caravan originated in, the destination of the caravan, and in some cases, the ethnic identity of the slaves being shipped. Because only six main trade routes crossed the desert, the information on the volume, origins, and

destinations of the slave caravans allows one to produce rough estimates of the origins of slaves shipped during this trade. Admittedly, the final estimates for the Saharan slave trade are very poor. This is also true for the Red Sea slave trade. However, it will be shown that all of the statistical results are completely robust with or without the estimates of slaves shipped during these two slave trades. That is, the statistical findings remain even if the Red Sea and Saharan slave trades are completely ignored because of the poor quality of their data.

Combining the ethnicity data with the shipping data, estimates of the number of slaves taken from each country in Africa are constructed.[26] The construction procedure follows the following logic. Using the shipping data, the number of slaves shipped from each coastal country in Africa is first calculated. As mentioned, the problem with these numbers is that slaves shipped from the ports of a coastal country may not have come from that country, but from inland countries that lie landlocked behind the coastal country. To estimate the number of slaves shipped from the coast that would have come from these inland countries, the sample of slaves from the ethnicity data is used. Each ethnicity is first mapped to modern country boundaries. This step relies on a great amount of past research by African historians. The authors of the secondary sources, from which the data were taken, generally also provide a detailed analysis of the meaning and locations of the ethnicities appearing in the historical records. In many of the publications, the authors created maps showing the locations of the ethnic groups recorded in the documents. For example, detailed maps are provided in Higman's samples from the British Caribbean, Koelle's linguistic inventory of free slaves in Sierra Leone, Mary Karasch's samples from Rio de Janeiro, Aguirre Beltran's sample from plantation and sales records from Mexico, Adam Jones' sample of liberated child slaves from Sierra Leone, and David Pavy's sample of slaves from Colombia.[27] Other sources also provide excellent summaries of the most common ethnic designations used during the slave trades. These include Philip Curtin's *The Atlantic Slave Trade: A Census*, ethnographer George Peter Murdock's *Africa: Its Peoples and Their Cultural History*, and Gwendolyn Midlo Hall's

Slavery and African Ethnicities in the Americas: Restoring the Links.[28]

Many of the ethnic groups in the ethnicity sample do not map cleanly into one country. The quantitatively most important ethnic groups that fall into this category include: the Ana, Ewe, Fon, Kabre, and Popo, who occupied land in modern Benin and Togo; the Kongo, who resided in what is now the Democratic Republic of Congo and Angola; the Makonde, localized within Mozambique and Tanzania; the Malinke, who occupied lived within Senegal, Gambia, Mali, Guinea, Ivory Coast, and Guinea Bissau; the Nalu, from Guinea Bissau and Guinea; the Teke, living in land within Gabon, Congo, and Democratic Republic of Congo; and the Yao from Malawi, Mozambique, and Tanzania. In cases such as these, the total number of slaves from each ethnic group was divided between the countries using information from George Peter Murdock's *Africa: Its Peoples and Their Cultural History*. Ethnic groups were first mapped to his classification of over 800 ethnic groups for Africa. Using a digitized version of a map provided in his book and GIS software, the proportion of land area in each country occupied by the ethnic group was calculated. These proportions were then used as weights to disaggregate the total number of slaves of an ethnicity between the countries.

Using the ethnicity sample, an estimate of the number of slaves shipped from each coastal country that would have come from each inland country is calculated. Using these figures, the number of slaves that came from all countries in Africa, both coastal and inland, is then calculated. Because over time, slaves were increasingly being taken from further inland, the estimation procedure is performed separately for each of the following four time periods: 1400-1599, 1600-1699, 1700-1799, 1800-1900. In other words, for each time period, the shipping data and ethnicity data from that time period only is used in the calculations. In the end, the procedure yields estimates of the number of slaves taken from each country in each of the four slave trades for each of the four time periods listed above.

Potential Issues and Concerns

Constructing estimates using both the ethnicity data and the shipping data, rather than using just the ethnicity data alone, helps to minimize measurement error that may arise because the ethnicity samples are not fully representative of the entire population of slave shipped during the slave trades. Because the procedure only uses the ethnicity samples to disaggregate slaves between coastal and inland areas, their non-representativeness will not produced biased estimates unless this somehow causes an over- or under-sampling of inland or coastal ethnic groups. (This latter bias is considered explicitly below.)

There are many potential sources of measurement error in the construction of the slave export estimates. One potential source arises from possible inaccuracies in the historic documents that recorded slave ethnicities. However, it is likely that a reasonable amount of care was taken when slave ethnicities were documented. Because slaves were legally defined as property, those engaged in the buying and selling of slaves had a strong incentive to correctly identify the birthplace or 'nation' of slaves.[29] The ethnicity of slaves also mattered to their owners because the skills of slaves varied by their ethnicity, and because of perceived differences in physical strength, frequencies of suicide, and rebeliousness.[30] Manuel Moreno Fraginals writes about the importance of slave ethnicities to slave owners and the care taken to correctly identify and record the ethnic identity of slaves: "The slave trade was the business that involved the greatest amount of capital investment in the world during the eighteenth and nineteenth centuries. And a business of this size would never have kept up a classificatory scheme had it not been meaningful (in overall general terms, in keeping with reality) in designating in a *very precise* way the merchandise that was being traded."[31] There were many ways of identifying the ethnicity or 'nation' of a slave. The easiest was often by a slave's name. Slaves were sometimes given a Christian first name and a surname that identified their ethnicity.[32] A slave's ethnicity could often be determined from ethnic markings, such as cuts, scars, the filing of teeth, and hairstyles.[33]

An important issue is whether Europeans had the knowledge and ability to correctly understand the true ethnicities of African slaves. This issue has been at the core of an important debate about the creation of artificial ethnic designations by the Europeans during the slave trades. A number of studies argue that 'Igbo' was not a term used by people from the Biafran interior to identify themselves, but instead was constructed by Europeans.[34] Others have argued that 'Igbo' is an indigenous term that reflected a true collective identity.[35] Although this is a very important issue, whether ethnic designations are artificial constructs is not a concern for the data construction procedure used here. Because the recorded ethnicities are only used to link slaves to a geographic location, the origins of the terms used are not important. Whether the term 'Igbo' was artificially constructed by Europeans or was a term used by Africans to identify themselves does not change the constructed slave export figures. All that is important, is that the term 'Igbo' refers to slaves that originated from an area that today is part of Nigeria.

The most significant form of measurement error likely arises because only slaves that survived the voyage outside of Africa appear in the records. This fact results in a biased sample that under-represents slaves from the interior. This is because the further inland a slave originated, the longer the journey was, and the more likely it was that he or she died along the way. Because of the high rates of mortality during the slave trades, this form of measurement error may be significant. Estimates of cross-Atlantic mortality rates ranged from 7 to 20% depending on the time period and the length of the voyage.[36] Death rates during the trek to the coast are known with less certainty, but estimates range from 10 to 50%.[37] Similarly, slaves from the interior will also be under-represented in the ethnicity data if they were more likely to enter into domestic slavery than slaves captured closer to the coast. As well, the mis-classification of slave ethnicities will tend to be biased against slaves from further inland. For example, Russell Lohse finds evidence that Spanish slave masters sometimes substituted a middleman slave-trading state for the specific ethnic origins of individuals, and at other times

classified slaves based on their port of embarkation rather than their true ethnic identity.[38] The important question is how this form of measurement error affects the statistical tests of a relationship between slave exports and economic development. Doing the necessary statistical calculations, one can show this form of measurement error causes the estimated relationship between slave exports and current income to be biased towards zero.[39] That is, the dominant form of measurement error will tend to hide any relationship that may exist in the data, and it will not cause us to observe a strong relationship if one does not really exist. Therefore, if a relationship is found in the data, then we can be reasonably certain that it is in spite of measurement error, and not because of the measurement error. In fact, because of the measurement error, the relationship found in the data is likely an underestimate of the true relationship between the slave trade and economic development today.

A final source of measurement error may arise because of the assumption that slaves shipped from the coast of a country are either from that country or from directly inland of that country. In reality, slaves from a country may have come from a neighboring coastal country or from an adjacent country. There are two samples of slaves that can be used to test the validity of this assumption. In the two samples, both the ethnicity of the slaves and the port that they were shipped from are known. One is a sample of 886 slaves shipped from the Cameroons estuary, which have been examined by David Eltis and G. Ugo Nwokeji. The second is a sample of 54 slaves shipped from the coast of Nigeria examined by Paul Lovejoy.[40] Because the origin and port of shipment are known for the slaves in the samples, they can be used to test the precision and accuracy of the estimation procedure. The results of the tests show that in the Eltis and Nwokeji sample of 886 slaves, 98% are correctly identified, and in the Lovejoy sample of 54 slaves, 83% of the slaves are correctly identified. Overall, in the two samples as a whole, 97% of the slaves are correctly identified.

The slave export estimates are reported in table 5.2. The table shows the total number of slaves taken from different parts of Africa, defined by current nation states, between

Table 5.2: Estimated slave exports from 1400 to 1900 by country.

Country name	Trans-Atlantic	Indian Ocean	Trans-Saharan	Red Sea	Total in all slave trades
Angola	3,607,402	0	0	0	3,607,402
Nigeria	1,410,970	0	555,796	59,337	2,026,102
Ghana	1,603,392	0	0	0	1,603,392
Ethiopia	0	200	813,899	633,357	1,447,455
Mali	524,031	0	509,950	0	1,033,981
Sudan	615	174	408,261	454,913	863,962
Dem. Rep. of Congo	759,270	7,047	0	0	766,317
Mozambique	382,378	243,484	0	0	625,862
Tanzania	10,834	523,992	0	0	534,826
Chad	823	0	409,368	118,673	528,862
Benin	454,099	0	0	0	454,099
Senegal	221,723	0	98,731	0	320,454
Togo	287,675	0	0	0	287,675
Guinea	242,529	0	0	0	242,529
Burkina Faso	183,101	0	0	0	183,101
Mauritania	419	0	164,017	0	164,436
Guinea-Bissau	156,084	0	0	0	156,084
Malawi	88,061	37,370	0	0	125,431
Madagascar	36,349	88,927	0	0	125,275
Republic of Congo	94,486	0	0	0	94,486
Kenya	303	12,306	60,351	13,490	86,448
Sierra Leone	69,377	0	0	0	69,377
Cameroon	62,405	0	0	0	62,405
Algeria	0	0	61,835	0	61,835
Ivory Coast	52,602	0	0	0	52,602
Somalia	0	229	26,194	5,855	32,277
Zambia	6,552	21,406	0	0	27,958
Gabon	27,393	0	0	0	27,393
Niger	150	0	0	19,779	19,929
Gambia	12,783	0	5,693	0	18,476
Libya	0	0	8,848	0	8,848
Liberia	6,794	0	0	0	6,794
Uganda	900	3,654	0	0	4,554
South Africa	1,944	87	0	0	2,031
Central African Rep.	2,010	0	0	0	2,010
Egypt	0	0	1,492	0	1,492
Zimbabwe	554	536	0	0	1,089
Namibia	194	0	0	0	194
Burundi	0	87	0	0	87
Equatorial Guinea	11	0	0	0	11
Djibouti	0	5	0	0	5
Botswana	0	0	0	0	0
Seychelles	0	0	0	0	0
Comoros	0	0	0	0	0
Swaziland	0	0	0	0	0
Rwanda	0	0	0	0	0
Sao Tome & Principe	0	0	0	0	0
Cape Verde Islands	0	0	0	0	0
Lesotho	0	0	0	0	0
Morocco	0	0	0	0	0
Mauritius	0	0	0	0	0
Tunisia	0	0	0	0	0

1400 and 1900. Totals disaggregated by slave trade are reported, as well as a total for all slave trades. The constructed estimates appear to be consistent with the general evidence of where the primary slaving areas were. During the trans-Atlantic slave trade, slaves were taken in the greatest numbers from the Slave Coast (Togo, Benin and Nigeria), West Central Africa (Democratic Republic of Congo and Angola), and the Gold Coast (Ghana). All of the countries that today are located in these parts of Africa appear amongst the top exporting countries on the list. Ethiopia and Sudan, which were the primary sources of slaves shipped during the Red Sea and Saharan slave trades, also appear among the top exporting countries. The low number of slave exports from South Africa and Namibia is consistent with the general view that these areas exported "virtually no slaves". Even the finer differences between geographically close countries are consistent with the qualitative evidence from the African history literature. Patrick Manning writes that "some adjoining regions were quite dissimilar: Togo exported few slaves and the Gold Coast many; Gabon exported few slaves, and the Congo exported many." The estimates are consistent with Manning's observation. Exports from Togo are far less than from Ghana, and exports from Gabon are less than from the Republic of Congo.[41]

Overall, the slave export estimates appear to provide a reasonable measure of the true number of slaves taken from the different parts of Africa. Because the dominant form of measurement error present in the data will cause a statistical bias against a relationship being found, if a relationship is found, then we can be reasonably certain that the relationship is in spite of the measurement error and not because of it.

The Relationship Between Historic Slave Exports and Income Today

If the slave trades are part of the explanation for why Africa is significantly poorer than the rest of the world today, then by looking within Africa, one should observe a pattern of

development today that mirrors the past intensity of the slave trades. The poorest African countries should be the countries that had the greatest number of slaves taken during the slave trades. A way of examining whether this relationship exists is to look at a graph that shows the relationship between each country's current level of income per capita and its past slave exports. The first issue that arises is that one needs to account for differences in country size. Some countries may have had more slaves exported because they are large. For this reason, the number of slaves exported is divided (i.e. normalized) by the size of the country measured by its land area. One could also use other measures of country size. The results shown below are essentially identical when the current population or the average estimated population between 1400 and 1900 or the current arable land are used instead. The advantage of using land area is that it is much more accurately measured than historic population and arable land, and it is not endogenously affected by the slave trades like current population.

Figure 5.1 shows the relationship between current income and slave exports normalized by land area. In the graph, the horizontal axis measures the normalized number of slaves exported, while the vertical axis measures the average income per person in 2000.[42] Each country is represented by a point on the graph, and each point is also labeled with the country name. The graph shows an interesting pattern. If a country has a high value of slave exports (it is located on the eastern portion of the graph), then it also tends to have a low value of income (it is located on the southern portion of the graph). Countries that had *more* slaves taken in the past, have *lower* incomes in 2000. Or equivalently, countries that had *less* slaves taken in the past have *higher* incomes today. Another way of expressing the relationship between the two variables is to say that there is a *negative relationship* between slave exports and income. The figure also reports a straight line which shows the line that best fits the data. The line is calculated using a statistical technique called *Ordinary Least Squares* or *OLS* for short.[43] As shown, the best fitting line slopes downwards, confirming statistically the negative relationship between income and slave exports that is apparent in

the scatter of country observations.

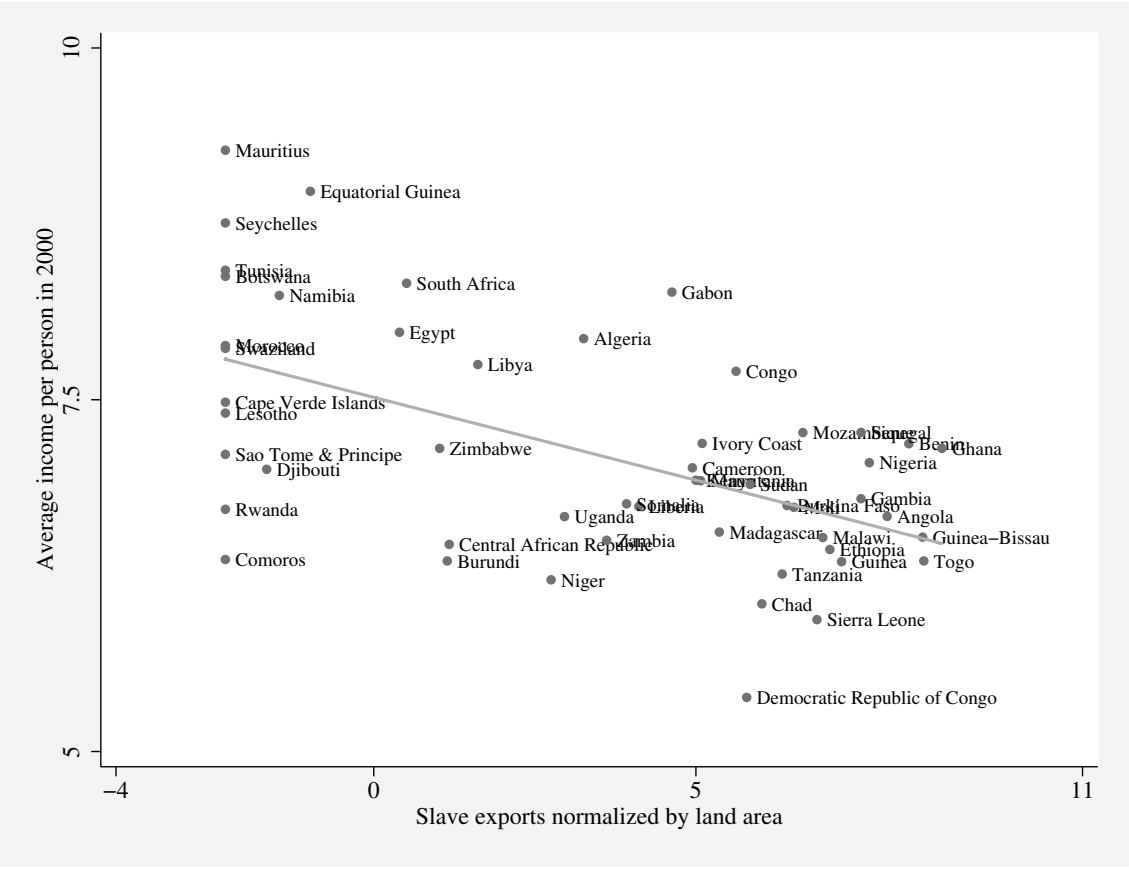

Figure 5.1: The relationship between slave exports (normalized by land area) and income per capita in 2000.

Although, the relationship shown in figure 5.1 is suggestive, there are a numbers of concerns with this evidence. First, many of the countries that have the lowest slave exports are either small islands or North African countries, both of which tend to be richer than the other countries in Africa. If these countries are rich for reasons unrelated to the slave trades, then the relationship in figure 5.1 is potentially misleading. One strategy to account for the potential problem posed by islands and North African countries is to remove these countries from the sample. Doing this does not change the results. If one removes the ten North African

and island countries in the sample, there remains a strong negative relationship between slave exports and income.[44]

A second strategy is to try and take into account the differences between these countries and the rest of Africa. Using a statistical technique called *Multivariate Regression Analysis*, any measurable differences between countries can be taken into account. Important country characteristics include: their location, which can be measured by the latitude and longitude of the country's centroid; climate, which can be measured by rainfall, humidity, and temperature; and the natural openness of the country, which can be captured by the total amount of coastline of each country relative to its land area. This last characteristic accounts for the main difference between islands and mainland countries. To account for the specific characteristics of North African countries, one can account for the fraction of each country's population that is islamic and the origin of each country's legal system.[45] Other factors that are potentially important determinants of income is countries' endowments of natural resources, such as oil, gold, and diamonds. The final factor, which like the slave trades is also a historic factor, is a country's history of colonial rule, particularly the identity of its colonizer. Using multivariate regression analysis, one finds that even after taking all of these factors into account, a strong negative relationship between slave exports and current income remains. Remarkably, the strength of the relationship barely diminishes even when all of these other factors are taken into account.[46] Figure 5.2 is a graph that is analogous to figure 5.1 except that it plots the values of slave exports, after the impact of the other factors on slave exports has been taken into account, and the values of income after the impact of the other factors on income has been controlled for.[47] Like figure 5.1, figure 5.2 also shows a clear negative relationship between slave exports and income.

An additional concern with the estimated relationship between slave exports and income arises because of inaccuracies and mis-measurements in the constructed slave export estimates. Certainly, the data are measured with error. The issue is whether this error is causing the

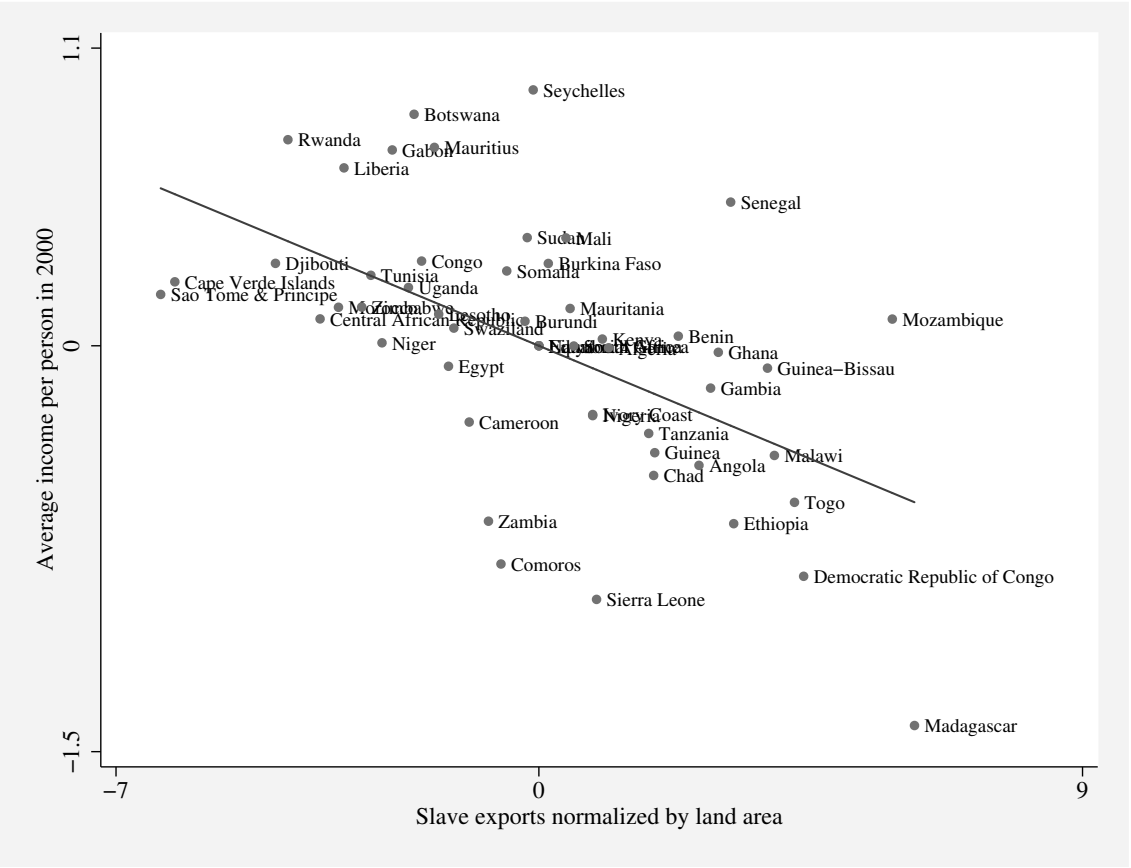

Figure 5.2: The relationship between slave exports (normalized by land area) and income per capita in 2000, after taking into account other country characteristics.

negative relationship between slave exports and income observed in figures 5.1 and 5.2. As discussed above, the effect of the dominant form of measurement error in the data is that even if a relationship exists, it will be less likely to be observed. It is very unlikely that measurement error alone would induce a relationship between slave exports and income when one really does not exist. There are also strategies that can be employed to check how the measurement errors present in the data affect the statistical results. The lowest quality ethnicity and shipping data are from the earlier time periods, and from the Red Sea and trans-Saharan slave trades. One can exclude the Red Sea and trans-Saharan slave trades, or

exclude the early time periods from the total slave export figures. Looking at only total slave exports from the trans-Atlantic and Indian Ocean slave trades, a strong negative relationship between slave exports and contemporary income is still found. This is even true even if the slave export totals are restricted to include only the trans-Atlantic slave trade, which has the best quality data.[48] Similarly, restricting the total slave exports to include only slaves shipped during the eighteenth and nineteenth centuries, the centuries for which data are most abundant, also yields a strong negative relationship between slave exports and income.[49]

The Causes of the Slave Trades

Initial Prosperity

Despite the robustness of the negative relationship between slave exports and current income, the interpretation of the relationship remains uncertain. This is because the statistical results reported to this point does not *prove* that the slave trades *caused* lower levels of income today. An alternative explanation for the relationship is that societies that were initially underdeveloped may have been more likely to engage in the slave trades, and these same societies are still relatively underdeveloped today. To assess which explanation is most likely, it is important to test the initially least developed societies tended to export more slaves. Examining the historical evidence, one does not find strong evidence that less advanced societies exported more slaves during the slave trades. To the contrary, the evidence suggests that if any differences existed, it may have been the more advanced societies from which more slaves were taken.

Initial trade between Africans and Europeans was primarily in legitimate commodities, not slaves. During this time, only societies that were sufficiently developed were able to facilitate trade with the Europeans. As an example, consider the early Portuguese trade in West Central Africa. Between 1472 and 1483, the Portuguese sailed south along the West coast of Central Africa, testing various points of entry to look for trading partners. They were unable to find any societies north of the Zaire river that could support trade. Jan

Vansina writes that "the local coastal societies were just too small in terms of people and territory; their economic and social institutions were too undifferentiated to facilitate foreign trade."[50] Sustained trade did not occur until the Portuguese found the Kongo Kingdom, located just south of the Zaire river. Because the Kingdom had a centralized government, national currency, and well-developed markets and trading networks, it was able to support trade with the Europeans. When European demand later turned to slaves, the established preference to trade with the most developed parts of Africa continued. Because the more prosperous areas were also the most densely populated, large numbers of slaves could be efficiently obtained if civil wars or conflicts could be instigated.[51]

Using data on initial population densities, one can test statistically whether it was the more prosperous or less prosperous areas that selected into the slave trades. Estimates of the initial populations of the different parts of Africa are available from Colin McEvedy and Richard Jones' *Atlas of World Population History*.[52] Although the data are estimates, they can be used to construct rough measures of the average population density of different parts of Africa prior to the slave trade. Since the societies at the time were in a Malthusian state, any material advances manifested themselves as increased populations rather than increased incomes, and therefore population density can be used as an indicator of pre-slave trade economic prosperity. Figure 5.3 shows the relationship between initial prosperity, measured by population density in 1400, and slave exports normalized by land area. The figure shows that there is a *positive relationship* between initial population density and slave exports.[53] Countries that were initially the most prosperous and most densely populated tend to be the countries that subsequently exported the largest number of slaves. According to the figure, many parts of Africa that were more developed in 1400, such as the parts of Africa that today include Ghana, Nigeria, Democratic Republic of Congo, Togo, Benin, and Gambia, exported very large numbers of slaves. Conversely, many parts of Africa that were comparatively less developed in 1400, such as Namibia, Botswana, and South Africa, exported few slaves.

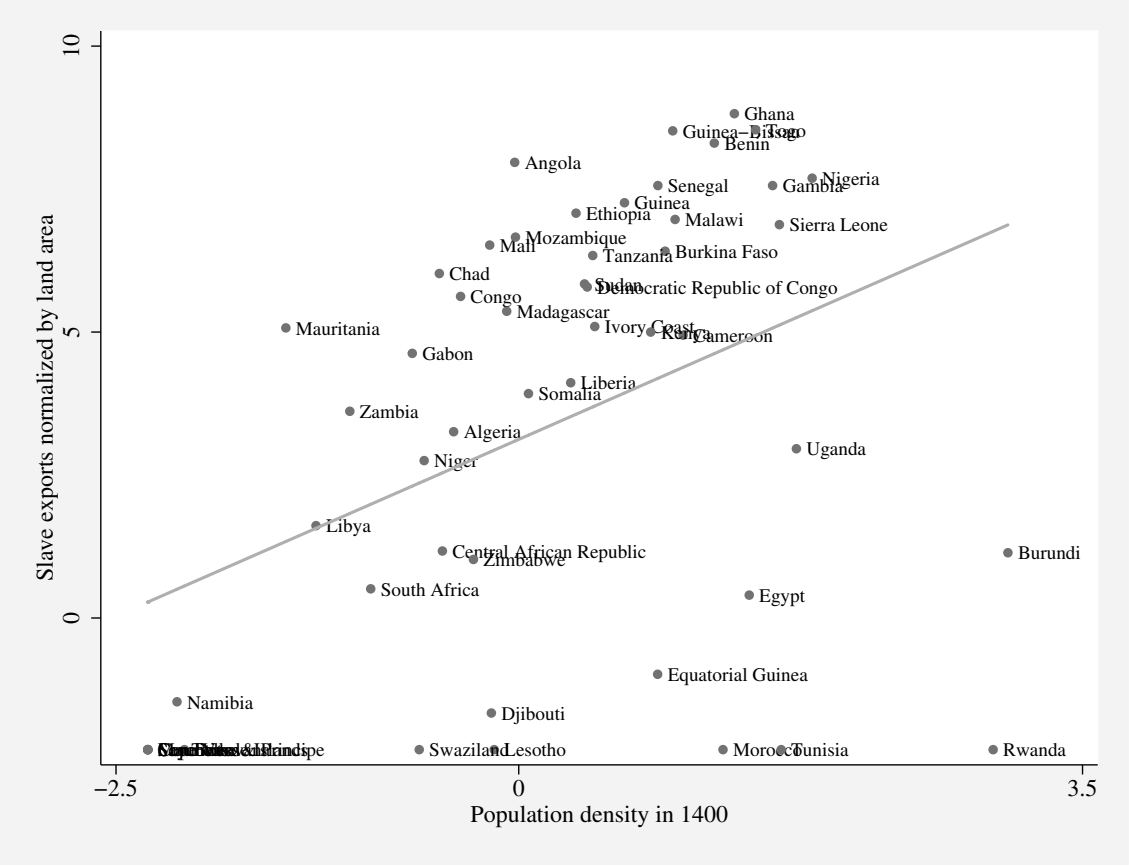

Figure 5.3: The relationship between population density in 1400 and slave exports (normalized by land area).

One concern with the statistical evidence reported in figure 5.3 is the quality of the historic population data used in calculating population density. The concern here with the measurement error is whether it may be causing the positive relationship shown in the figure. This would be occur if past population estimates were over-estimated in the parts of Africa from which large numbers of slaves were taken. To see this more clearly, consider the two variables being compared in figure 5.3: population density and slave exports. Both measures are fractions where the denominator is land area: (i) population in 1400 $\div$ land area, and (ii) slave exports $\div$ land area. If the construction of historic population estimates was influenced by

a general understanding of which parts of Africa the most slaves were taken from, then the estimated historic population figures will be artificially higher in areas where larger numbers of slaves were taken. This would then induce a positive relationship between initial population density and slave exports, even if one does not exist. Because of this concern, it is useful to also examine the relationship between initial population density and slave exports normalized by historic population, rather than slave exports normalized by land area.[54] The two measures being compared are now: (*i*) population in 1400 ÷ land area, and (*ii*) slave exports ÷ average historic population. With the new slave export measure, measurement error of the type discussed above no longer unambiguously induces a positive relationship between population density and slave exports. (This is because as slave exports increases the denominator also increases; the change in the ratio of the two is ambiguous.) The measurement error will increase slave exports and average historic population, and therefore "slave exports ÷ average historic population" does not necessarily increase.

The relationship between initial population density and total slave exports normalized by historic population is shown in figure 5.4. As shown by the figure, even with slave exports normalized by historic population, one still observes a positive relationship between initial population density and subsequent slave exports.[55] Overall, the historic and statistical evidence do not support the notion that it was the initially least developed parts of the African continent that exported the largest numbers of slaves. Instead the data suggest the reverse. The parts of Africa that were more developed exported the largest numbers of slaves.

The Distance from External Slave Markets

A second important determinant of the number of slaves taken was the distance from the location of the external slave markets. Large numbers of slaves were taken from what today is Madagascar and Mozambique during the Indian Ocean slave trades, partly because these areas were close to the Mascarene Islands of the Indian Ocean. Similarly, many slaves were

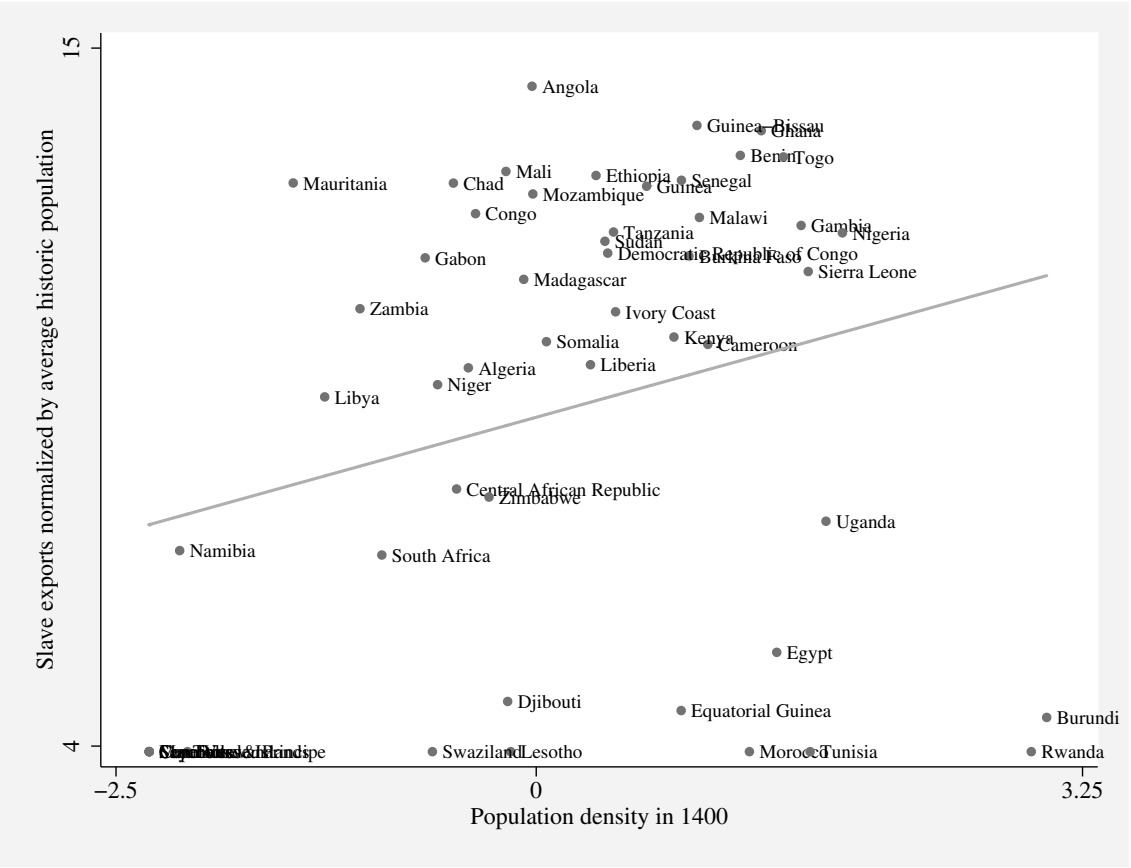

Figure 5.4: The relationship between population density in 1400 and slave exports (normalized by average historic population from 1400 to 1900).

taken from West and West-Central Africa during the Atlantic slave trade, partly because of their proximity to the plantations in the Americas. This relationship can be examined statistically by calculating the overland and sailing distance from the center of each country to the closest external market for slaves. Not surprisingly, one finds that there is a strong statistical relationship between a country's slave exports and its distance to the external slave markets. All else being equal, the further a country is from the locations of demand, the less slaves were taken during the slave trades.[56]

From a historic point of view, this finding may not be particularly surprising or even in-

teresting, but from a statistical point of view, the finding is actually very useful. It can be used as an additional test of whether the slave trades really *caused* subsequent economic underdevelopment. To see how this is accomplished, consider the following thought experiment. Assume that the variation in the number of slaves taken from different parts of Africa can be explained by two factors: (i) variation in the willingness of societies to supply slaves, which was determined by various characteristics of different societies, such as initial prosperity, and (ii) variation in the distance from the external demand for slaves. The first factor, the initial characteristics of societies, is the problematic factor when trying to establish whether the slave trades *caused* subsequent economic underdevelopment. As discussed, this is because these characteristics may have affected whether societies engaged in the slave trades and they may also persist and affect income today. The concern is that these initial characteristics could be inducing a negative relationship between slave exports and current income even if the slave trades did not have an adverse effect on subsequent economic development.

The second cause of the variation in slave exports, the distance from the demand for slaves, is not affected by the initial characteristics of the African societies. Unlike the first cause, which is related to factors internal to Africa, the second cause is driven by factors outside of Africa. If the variability in slave exports that is caused by the second factor can be isolated, then this can be used to test for a causal relationship between slave exports and income today. This can be done using a statistical technique called *instrumental variables*, or IV for short. The technique allows one to isolate the variation in slave exports that is *unrelated* or *exogenous* to the characteristics of African societies. This is the variation in slave exports that is not being caused by the initial characteristics of societies in different parts of Africa. Because the *exogenous* variation in slave exports is unaffected by the characteristics of African societies, it can be used to generate a better estimate of the causal effect of the slave trades on economic development. The results of the *instrumental variables* technique confirm our previous findings. It shows that the negative relationship between the slave

trades and subsequent economic development found in figures 5.1 and 5.2 is in fact causal. The evidence therefore confirms that the slave trades are partly responsible for Africa's current underdevelopment.[57]

The Consequences of the Slave Trades

Given the evidence presented to this point, the natural next step is to examine the specific channels of causality underlying the relationship between the slave trades and current economic development. For this reason it is important to examine the precise manner in which slaves were captured. Based on the best available information, the most common way that slaves were taken was in wars and raids.[58] Because raids often involved villages raiding other villages, this form of slave procurement often caused relations between villages to turn hostile, even if these villages had previously formed federations, trading relations, or other ties.[59] There are numerous historical accounts that provide evidence of this detrimental effect of the slave trade.[60]

Slaves were not only taken through conflict between communities, during raids and wars, but they were also taken in large numbers as a result of conflict within communities, where individuals were kidnapped or sold into slavery by acquaintances, friends, or family. Sigismund Koelle reports numerous accounts of individuals being sold into slavery by family members, relatives, and "supposed friends". One of the more notable accounts is of a slave that was sold into slavery after being "enticed on board of a Portuguese vessel" by "a treacherous friend".[61] The most extreme example of this manner of enslavement is probably the Kabre of Northern Togo, who during the 19th century developed the custom of selling their own kin into slavery.[62]

One explanation for why individuals turned on others within their own communities is that it was a consequence of the environment of insecurity that arose from increased conflict between communities. Because of this insecurity, individuals acquired weapons from Europeans

to defend themselves. The slaves needed to trade with the Europeans were often obtained through local kidnappings and violence.[63] Europeans and slave traders also played a role in promoting internal conflict. Slave merchants and raiders formed strategic alliances with key groups inside villages and states in order to extract slaves. Typically, the alliances were with the younger men of the community who were frustrated by the control of power by their male elders.[64]

In many cases, the consequence of internal conflict was political instability and the collapse of pre-existing forms of government.[65] Pre-existing governance structures were often replaced by small bands of slave raiders, controlled by an established ruler or warlord. However, these bands were unable to develop into large, stable states. The states that were able to emerge during this period tended to be military aristocracies characterized by small size and instability.

One of the few large states that was able to emerge during this time was Asante, which began its expansion in the 1670s and grew to span an area that was four degrees in longitude and four degrees in latitude.[66] However, the timing of events suggests that the development of Asante, as well as the other states of the Gold Coast, occurred in spite of the slave trade and not because of it. Political expansion, which began in the 1670s, occurred much earlier than the slave trade and did not become important in the area until after 1700. This has led African historians, such as A.A. Boahen, to conclude that in the Gold Coast, the slave trade was the consequence and not the cause of the state-building process.[67] The other large state in Western Africa, the Ọyọ empire, began its ascension in the 1650s. However, the empire was short lived. Beginning in 1780 the empire began to weaken and disintegrate, before eventually collapsing.[68]

If, as the historic evidence suggests, the external demand for slaves weakened pre-existing ties between villages and discouraged the formation of larger communities, then this is a potentially important channel through which the slave trades may have affected subsequent

economic development. The limited formation of larger communities and states during the slave trades may explain the high levels of ethnic fragmentation in Africa today. Amongst economist, Africa's ethnic diversity has been a leading explanations for Africa's poor economic performance. The explanation and supporting statistical evidence was first proposed in a 1997 article published in the *Quarterly Journal of Economics* by William Easterly and Ross Levine.[69] The authors argue that ethnically diverse societies are less likely to agree on the specific public goods and policies the government should implement. Because of these disagreements, there will be less provision of public goods, such as schooling, health and infrastructure. Easterly and Levine show that across countries, higher ethnic diversity is associated with lower levels of education, infrastructure, financial development, and with less political stability.[70]

It is possible that part of the adverse effects of the slave trades stems from the fact that they impeded the formation of larger ethnic groups and therefore resulted in more ethnic diversity today. Using the constructed slave export data, one can examine whether the data are consistent with this by testing whether countries that had more slaves taken in the past are more ethnically diverse today. Figure 5.5 tests for this relationship. It shows the relationship between the number of slaves exported and an updated version of Easterly and Levine's original ethnic diversity measure.[71]

Figure 5.5 shows a clear positive relationship between the two measures. The more slaves a country exported during the slave trades, the more ethnically diverse the country is today. The statistical estimates of the relationship show that as much as 50% of the differences in countries' ethnic diversity within Africa can be explained by the number of slaves exported during the slave trades.[72]

Overall, the statistical evidence does support the possibility that the slave trades, by impeding the formation of large stable communities and states, resulted in countries that today are ethnically diverse. This may explain the persistent adverse effect that the slave

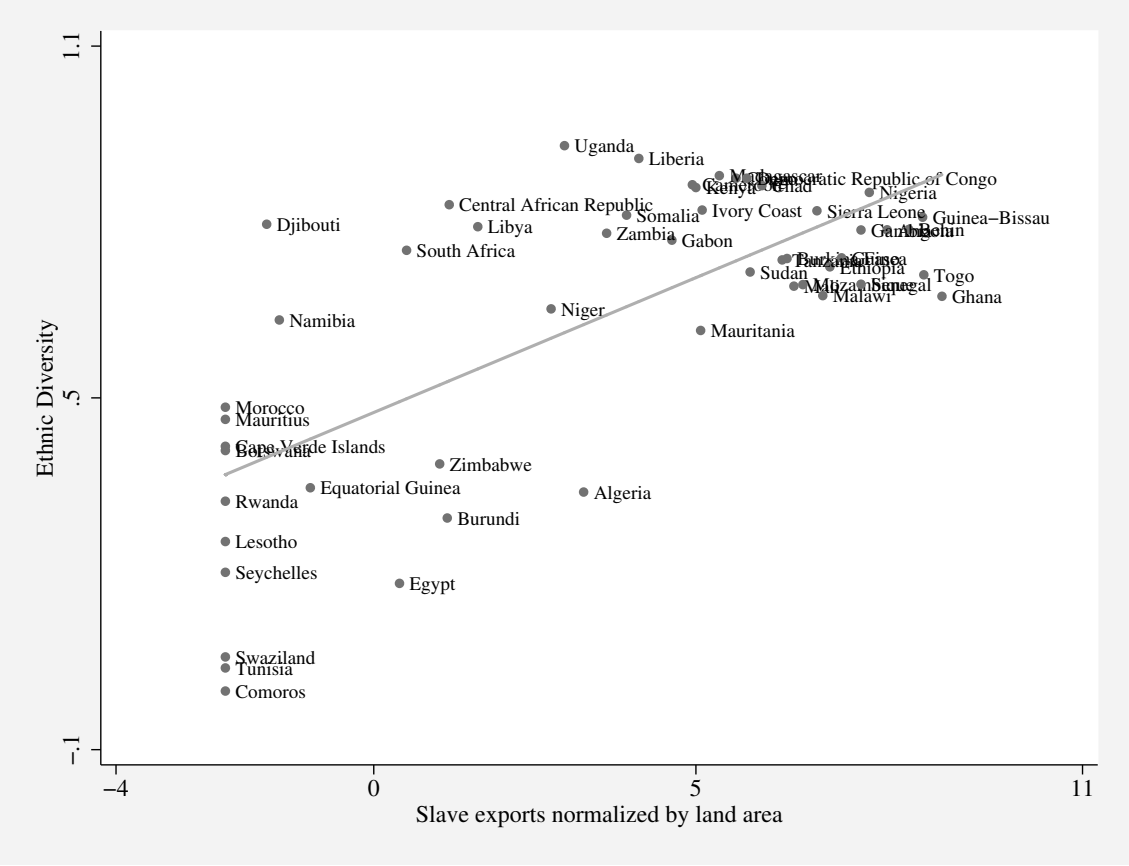

Figure 5.5: The relationship between slave exports slave exports (normalized by historic population) and current ethnic fractionalization.

trades have had on economic development.

5.1 Quantifying the Effects of the Slave Trades

To this point, the focus has been on examining whether there is a statistical relationship between slave exports and current income, and whether this relationship is causal. The statistical estimates allow one to also assess the specific magnitude of the estimated impact of the slave trades on economic development. Specifically, they can be used to provide an answer to the following question: how much better off would Africa be if the slave trades had

not taken place?

To examine this, one must first consider the average level of per capita income of African countries. Measured in the year 2000, the annual income of the typical person in Africa is $1,834. This is significantly lower than the average per capita income in the rest of the world, which is $8,809. It is even much lower than the average per capita income for the rest of the developing world, which is $4,868.[73] Thus, not only is Africa much poorer than the rest of the world, but it is even much poorer than the rest of the developing world.[74] To answer the above question, each country's predicted income had the slave trade not occurred is calculated. These "counterfactual" income levels are calculated by adding to each country's actual income the absolute value of the estimated relationship between slave exports and income multiplied by the estimated number of slaves exported from the country.[75] Because many different statistical estimates have been performed in this study, the highest and lowest estimates are used to provide a range of the estimated effects.

According to the calculations, if the slave trades had not occurred, then the average annual income per capita of African countries would be between $2,679 and $5,158. From these numbers it follows that between 28 and 100% of the income gap between Africa and the developing world would not exist if the slave trades had not occurred. Similarly, between 12 and 47% of the income gap between Africa and the rest of the world would not exist if the trades had not occurred. The magnitudes of these estimates are striking. The largest estimated effect suggests that if the slave trades had not occurred, then today's Africa would not look any different from other developing countries in the world. This is a remarkable finding. Africa's poor economic performance is one of the largest puzzles facing academics and policy makers in the world today. Even according to the lowest estimated effect, almost 30% of the income gap between Africa and other developing countries is explained by the slave trades. Even the lowest bound estimate produces a large effect. Although these results may not be the final and definitive explanation for the origins of Africa's severe underdevelopment,

they do provide very strong evidence that a significant portion of Africa's poor performance can be explained by the legacy of Africa's slave trades.

Conclusions

Taken together, the evidence presented in this chapter shows that the slave trades had an adverse effect on the subsequent economic development of Africa. Using estimates of the number of slaves taken from different parts of Africa between 1400 and 1900, it was found that the parts of the continent from which the largest number of slaves were taken are the poorest today. The estimated magnitudes of the effects of the slave trade are remarkably large. According to the largest estimate, if Africa's slave trades had not occurred, then the countries in Africa would, on average, have the same level of income as other developing countries in the world. In other words, Africa would not have become the poorest region in the world as it is today. Overall, the results here suggest that over four centuries of intense slaving is responsible for much of Africa's current underdevelopment.

Notes

[1]I am grateful to a number of African historians who were kind enough to respond to questions as I navigated my way through the quantitative literature on Africa's slave trades. I thank Ralph Austen, David Eltis, Joseph Inikori, David Geggus, Mary Karasch, Martin Klein, Patrick Manning, G. Ugo Nwokeji, and Abdul Sheriff. This chapter has been greatly improved thanks to comments from Jared Diamond, Eva Ng, Jim Robinson, and Robert Schneider. The title of this chapter draws from the title of an April 20th, 2008 Boston Globe story written by Francie Latour. The article discuses the research described in this chapter.

[2]See for example Paul E. Lovejoy, *Transformations in Slavery: A History of Slavery in Africa, Second Edition* (Cambridge University Press, Cambridge, UK, 2000).

[3]Walter Rodney, *How Europe Underdeveloped Africa* (Bogle-L'Ouverture Publications, London, UK, 1972); Basil Davidson, *Black Mother: The Years of the African Slave Trade* (Little Brown and Company, Boston, 1961).

[4]Patrick Manning, *Slavery and African Life* (Cambridge University Press, Cambridge, UK, 1990): 124.

[5]Joseph Inikori, "Africa in World History: The Export Slave Trade from Africa and the Emergence of the Atlantic Economic Order," in B.A. Ogot, ed., *General History of Africa: Volume 5, Africa from the Sixteenth to the Eighteenth Century* (University of California Press, Berkeley, 1992): 108. See also Joseph C. Miller, *Way of Death: Merchant Capitalism and the Angolan Slave Trade, 1730–1830* (University of Wisconsin Press, Madison, 1988).

[6]On the impact of the slave trades on state formation and political stability see Mario Azevedo, "Power and Slavery in Central Africa: Chad (1890–1925)," *Journal of Negro History*, 67 (1982): 198–211; Boubacar Barry, *Senegambia and the Atlantic Slave Trade* (Cambridge University Press, Cambridge, U.K., 1998): 36–59. On the impact of the slave trades on political and social fragmentation see Andrew Hubbell, "A View of the Slave Trade from the Margin: Souroudougou in the Late Nineteenth-Century Slave Trade of the Niger Bend," *Journal of African History*, 42 (2001): 25–47. For studies that examine the impact of the slave trade on judicial institutions see Martin Klein, "The Slave Trade and Decentralized Societies," *Journal of African History*, 42 (2001): 49–65; Walter Hawthorne, "The Production of Slaves Where There was no State: The Guinea-Bissau Region, 1450–1815," *Slavery & Abolition*, 20 (1999): 97–124; Walter Hawthorne, *Planting Rice and Harvesting Slaves: Transformations along the Guinea-Bissau Coast, 1400–1900* (Heinemann, Portsmouth, NH, 2003).

[7]See John D. Fage, "Slavery and the Slave Trade in the Context of West African History," *Journal of African History*, 10: 393–404; David Northrup, *Trade Without Rulers: Pre-Colonial Economic Development in South-Eastern Nigeria* (Claredon Press, Oxford, 1978).

[8]Northrup, *Trade Without Rulers: Pre-Colonial Economic Development in South-Eastern Nigeria*: 174.

[9]Patrick Manning, "Contours of Slavery and Social Change in Africa," *American Historical Review*, 83 (1988): 835–857.

[10]Hawthorne, *Planting Rice and Harvesting Slaves*; Hubbell, "A view of the slave Trade from the Margin".

[11]Lovejoy, *Transformations in Slavery*; Patrick Manning, *Slavery and African Life* (Cambridge University Press, Cambridge, UK, 1990).

[12]Philip D. Curtin, *The Atlantic Slave Trade: A Census* (The University of Wisconsin Press, Madison, 1969).

[13]See David Eltis, Stephen D. Behrendt, David Richardson, and Herbert S. Klein, *The Trans-Atlantic Slave Trade: A Database on CD-Rom* (Cambridge University Press, New York, 1999); Gwendolyn Midlo Hall, *Slavery and African Ethnicities in the Americas: Restoring the Links* (University of North Carolina Press, Chapel Hill, 2005).

[14]Patrick Manning, *Slavery and African Life*; Patrick Manning, "The Slave Trade: The Formal Demography of a Global System," in Joseph E. Inikori and Stanley L. Engerman , eds., *The Atlantic Slave Trade: Effects on Economies, Societies, and Peoples in Africa, the Americas, and Europe* (Duke University Press, London, 1992), 117–128; Patrick Manning and W.S. Griffiths, "Divining the unprovable: Simulating the Demography of African Slavery," *Journal of Interdisciplinary History*, 19 (1988): 177–201.

[15]For documentation of the database see David Eltis, Stephen D. Behrendt, David Richardson, and Herbert S. Klein, *The Trans-Atlantic Slave Trade: A Database on CD-Rom*; David Eltis and David Richardson, "Missing Pieces and the Larger Picture: Some Implications of the New Database," Mimeo.

[16]Ivana Elbl, "Volume of the Early Atlantic Slave Trade, 1450–1521," *Journal of African History*, 38 (1997): 31–75.

[17]Ralph A. Austen, "The Trans-Saharan Slave Trade: A Tentative Census," in Henry A. Gemery and Jan S. Hogendorn, eds., *The Uncommon Market: Essays in the Economic History of the Atlantic Slave Trade* (Academic Press, New York, 1979): 23–75; Ralph A. Austen, "The 19th Century Islamic Slave Trade from East Africa (Swahili and Red Sea Coasts): A Tentative Census," *Slavery & Abolition*, 9 (1988): 21–44.; Ralph A. Austen, "The Mediterranean Islamic Slave Trade out of Africa: A Tentative Census," *Slavery & Abolition*, 13 (1992): 214–248.

[18]Barry W. Higman, *Slave Populations of the British Caribbean, 1807–1834* (The Press University of West Indies, Kingston, Jamaica, 1995).

[19]Mary C. Karasch, *Slave Life in Rio de Janeiro* (Princeton University Press, Princeton, NJ, 1987).

[20]Frederick P. Bowser, The African Slave in Colonial Peru (Stanford University Press, California, 1974).

[21]Abdul Sheriff, "Localisation and Social Composition of the East African Slave Trade, 1858–1873," *Slavery & Abolition*, 9 (1988): 131–145. There is also a small sample of nine slaves shipped to Bombay, India, which is available from Joseph E. Harris, *The African Presence in Asia* (Northwestern University Press, Evanston,

1971). As described below, these data are also included in the ethnicity sample for the Indian Ocean slave trade.

[22]The list previously examined by Abdul Sheriff are from document AA 12/3 in the Zanzibar National Archives. The two additional lists are from document AA 12/9 and document AB 71/9.

[23]The two samples are from Georges Dionne Pascal St-Amour and Désiré Vencatachellum, "Adverse Selection in the Market for Slaves in Mauritius, 1825-1835," (2005), mimeo and from Barbara Valentine, "The Dark Soul of the People: Slaves in Mauritius, 2000," Data 0102, South African Data Archive (2000).

[24]League of Nations, "U.K. Government Reports to the League," *Council Documents*, C. 187 (I). M. 145. VI. B (1936), 36–39; League of Nations, "U.K. Government Reports to the League," *Council Documents*, C. 188. M. 173. VI. B (1937), 19–20.

[25]The samples are from Jay Spaulding, "The Business of Slavery in the Central Anglo Egyptian Sudan, 19101930," *African Economic History*, 17 (1988), 23–44; Martin A. Klein, "The Slave Trade in the Western Sudan during the Nineteenth Century," *Slavery & Abolition*, 13 (1992), 39–60.

[26]The construction of the slave export estimates is briefly sketched out here. All of the details of the calculations are documented in previous research. See Nathan Nunn, "The Long-Term Effects of Africa's Slave Trades," *Quarterly Journal of Economics* (2008), 122 (2): 569–600.

[27]Barry Higman, *Slave Populations of the British Caribbean, 1807–1834*; Sigismund Wilhelm Koelle, *Polyglotta Africana; or A Comparative Vocabulary of Nearly Three Hundred Words and Phrases, in More than One Hundred Distinct African Languages* (Church Missionary House, London, 1854); Mary C. Karasch, *Slave Life in Rio de Janeiro*; Gonzalo Aguirre Beltran, *La Poblacion Negra de Mexico, 1519–1810* (Fondo de Cultura Economica, Mexico City, 1940); Adam Jones, "Recaptive Nations: Evidence Concerning the Demographic Impact of the Atlantic Slave Trade in the Early Nineteenth Century," *Slavery & Abolition*, 11 (1990), 42–57; David Pavy, "The Provenience of Colombian Negroes," *Journal of Negro History*, 52 (1967), 35-58.

[28]Curtin, *The Atlantic Slave Trade*; George Peter Murdock, *Africa: Its Peoples and Their Cultural History* (McGraw-Hill Book Company, New York, 1959); Hall, *Slavery and African Ethnicities in the Americas*.

[29]See Harold D. Wax, "Preferences for Slaves in Colonial America," *Journal of Negro History*, 58 (1973): 371–401.

[30]See Paul E. Lovejoy, "Ethnic Designations of the Slave Trade and the Reconstruction of the History of Trans-Atlantic Slavery," in Paul E. Lovejoy and David V. Trotman, eds., *Trans-Atlantic Dimensions of Ethnicity in the African Diaspora* (Continuum, New York, 2003): 32.

[31]Manuel Moreno Fraginals, "Africa in Cuba: A Quantitative Analysis of the African Population in the Island of Cuba," in Vera Rubin and Arthur Truden, eds., *Comparative Perspectives on Slavery in New World Plantation Societies* (New York Academy of Sciences, New York, 1977): 190. The emphasis is in the original.

[32]See for example Jean-Pierre Tardieu, "Origins of the Slaves in the Lima Region in Peru (Sixteenth and Seventeenth Centuries)," in Doudou Diene, ed., *From Chains to Bonds: The Slave Trade Revisited* (2001): 43–55.

[33]See the description in Karasch, *Slave Life in Rio de Janeiro*: 4–9, and in Christian Georg Andreas Oldendorp, *C.G.A. Oldendorp's History of the Mission of the Evangelical Brethren on the Caribbean Islands of St. Thomas, St. Croix, and St. John* (Reprintd by Karoma Publishers Inc. in 1987, Ann Arbor, 1777): 169.

[34]See for example David Northrup, "Igbo and Myth Igbo: Culture and Ethnicity in the Atlantic World, 1600–1850," *Slavery & Abolition*, 21 (2000): 1–20.

[35]See Douglas B. Chambers, ""My Own Nation": Igbo Exiles in the Diaspora," *Slavery & Abolition*, 18 (1997): 73–77; Douglas B. Chambers, "The Significance of Igbo in the Bight of Biafra Slave-Trade: A rejoinder to Northrup's 'Myth Igbo'," *Slavery & Abolition*, 23 (2002): 101–120.

[36]Curtin, *The Atlantic Slave Trade*, 63.

[37]See for example Lovejoy, *Transformations in Slavery*, 63–64; Jan Vansina, *Paths in the Rainforests* (The University of Wisconsin Press, Wisconsin, 1990): 218.

[38]See Russell Lohse, "Slave-Trade Nomenclature and African Ethnicities in the Americas: Evidence from Early Eighteenth-Century Costa Rica," *Slavery & Abolition*, 23 (2002): 73–92.

[39]The statistical proofs are given in Nunn, "The Long-Term Effects of Africa's Slave Trades".

[40]See G. Ugo Nwokeji and David Eltis, "Characteristics of Captives Leaving the Cameroons for the Americas, 1822–37," *Journal of African History*, 43 (2002): 191–210; Paul E. Lovejoy, "Background to Rebellion: The Origins of Muslim Slaves in Bahia," *Slavery & Abolition*, 15 (1994): 151–180

[41]Patrick Manning, "Contours of Slavery and Social Change in Africa," *American Historical Review*, 88 (1983): 839.

[42]The income measures used throughout this chapter are from Angus Maddison, *The World Economy: Historical Statistics* (Organisation for Economic Co-operation and Development, Paris, 2003). The natural log of both measures is taken. Therefore, the graph reports logarithmic scales.

[43]The line shows the OLS estimate of the following estimating equation: $\ln \text{ income}_i = \beta_0 + \beta_1 \ln \text{ slave exports}_i + \varepsilon_i$. The coefficient and standard error for β_0 are 7.52 and .123, respectively. The coefficient and standard error for β_1 are $-.118$ and .025. Both coefficients are statistically significant at the 1% level. The regression has 52 observations and the R-squared is .31.

[44]As before the estimating equation is: $\ln \text{ income}_i = \beta_0 + \beta_1 \ln \text{ slave exports}_i + \varepsilon_i$. The estimated coefficient and standard error for β_0 are 7.38 and .158. The coefficient and standard error for β_1 are $-.100$ and .029. Both coefficients are statistically significant at the 1% level. The regression has 42 observations and the R-squared is .23. The omitted countries are: Egypt, Tunisia, Algeria, Morocco, Libya, Comoros, Seychelles, Mauritius,

Cape Verde Islands, and Sao Tome & Principe.

[45]Unlike the rest of Africa, all countries in North African have legal systems that are based on civil law. In the rest of Africa some countries have legal systems based on British common law and some have legal systems based on civil law.

[46]The estimating equation is now: $\ln \text{ income}_i = \beta_0 + \beta_1 \ln \text{ slave exports}_i + \mathbf{X}'\beta + \varepsilon_i$, where $\mathbf{X}$ is a vector of control variables and β is a vector of coefficients. The coefficient and standard error for β_1 are $-.093$ and .025; The coefficient β_1 is statistically significant at the 1% level. The regression has 52 observations and the R-squared is .77.

[47]In statistical terms, the figure shows the partial correlation plot between slave exports and income.

[48]The estimated coefficient and standard error for β_1 in the two specifications are $-.076$ and .019, and $-.075$ and .026, respectively. Both coefficients are statistically significant at the 1% level.

[49]The estimated coefficient and standard error for β_1 is $-.088$ and .020. The coefficient is statistically significant at the 1% level.

[50]Vansina, *Paths in the Rainforests*, 200.

[51]See Joseph E. Inikori, "The Struggle against the Trans-Atlantic Slave Trade," in A. Diouf, ed., *Fighting the Slave Trade: West African Strategies* (Ohio University Press, Athens, Ohio, 2003): 182.

[52]Colin McEvedy and Richard Jones, *Atlas of World Population History* (Penguin Books, Harmondsworth, 1978).

[53]The estimating equation is: $\ln \text{ slave exports}_i = \beta_0 + \beta_1 \ln \text{ population density}_i + \varepsilon_i$. The estimated coefficient for β_1 is 1.23, with a standard error of .374. The coefficient is statistically significant at the 1% level.

[54]The specific measure of historic population that is used is the average between 1400 and 1900. This is calculated as the sum of the population in 1400, 1500, 1600, 1700, 1800 and 1900, all divided by 6.

[55]The estimating equation is: $\ln \text{ slave exports}_i = \beta_0 + \beta_1 \ln \text{ population density}_i + \varepsilon_i$. The estimated coefficient for β_1 is .735, with a standard error of .376. The coefficient is statistically significant at the 10% level.

[56]For the statistical results see Nunn, "The Long-Term Effects of Africa's Slave Trades".

[57] According to the IV estimates, the coefficient β_1 is $-.208$ and the standard error is .053. The coefficient is statistically significant at the 1% level.

[58]See Koelle, *Polyglotta Africana*; Lovejoy, "Background to Rebellion.".

[59]See for example Joseph E. Inikori, "Africa and the Trans-Atlantic Slave Trade," in Toyin Falola, ed., *Africa Volume I: African History Before 1885* (Carolina Academic Press, North Carolina, 2000): 389–412.

[60]See Andrew Hubbell, "A View of the Slave Trade from the Margin," 25–47; Azevedo, "Power and Slavery in Central Africa," 198–211; Martin Klein, "The Slave Trade and Decentralized Societies," 56–57.

[61]Koelle, *Polyglotta Africana*.

[62]Charles Piot, "Of Slaves and the Gift: Kabre Sale of Kin during the Era of the Slave Trade," *Journal of African History*, 37 (1996): 31–49.

[63]Abdullahi Mahadi, "The Aftermath of the Jihād in the Central Sudan as a Major Factor in the Volume of the Trans-Saharan Slave Trade in the Nineteenth Century," in Elizabeth Savage, ed., *The Uncommon Market: Essays in the Economic History of the Atlantic Slave Trade* (Frank Cass, London, 1992): 111–128; Hawthorne, "The Production of Slaves Where There was no State," 108–109.

[64]See for example the accounts in Boubacar Barry, "Senegambia from the Sixteenth to the Eighteenth Century: Evolution of the Wolof, Sereer, and 'Tukuloor'," in B.A. Ogot, ed., *General History of Africa: Volume 5, Africa from the Sixteenth to the Eighteenth Century* (University of California Press, Berkeley, 1992): 262–299; Inikori, "The Struggle against the Trans-Atlantic Slave Trade," 170–198; Martin Klein, "Defensive Strategies: Wasulu, Masina, and the Slave Trade," in Sylviane A. Diouf, ed., *Fighting the Slave Trade: West African Strategies* (Ohio University Press, Athens, Ohio, 2003): 62–78.

[65]Lovejoy, *Transformations in Slavery*, 68–70. For specific examples see Barry, *Senegambia and the Atlantic Slave Trade*, 36–59; A.A. Boahen, "The States and Cultures of the Lower Guinean Coast," in B.A. Ogot, ed., *General History of Africa: Volume 5, Africa from the Sixteenth to the Eighteenth Century* (University of California Press, Berkeley, 1992): 424; Allen F. Isaacman, "The Countries of the Zambezi Basin," in J.F.A. Ajayi, ed., *General History of Africa, VI* (Heinemann International, Paris, 1989): 179–210; I.N. Kimambo, "The East African Coast and Hinterland, 1845–1880," in J.F.A. Ajayi, ed., *General History of Africa, VI* (Heinneman International, Paris, 1989): 247; Patrick U. Mbajedwe, "Africa and the Trans-Atlantic Slave Trade," in Toyin Falola, ed., *Africa Volume I: African History Before 1885* (Carolina Academic Press, North Carolina, 2000): 341–342; Inikori, "The Struggle against the Trans-Atlantic Slave Trade," 170–198; Elizabeth Colson, "African Society at the Time of the Scramble." in L.H. Gann and Peter Duignan, eds., *Colonialism in Africa, 1870-1960. Volume 1: The History and Politics of Colonialism, 1870-1914*. (Cambridge University Press, Cambridge, 1969): 36–37.

[66]William Tordoff, "The Ashanti Confederacy," *Journal of African History*, 3 (1962), 399–417; Boahen, A.A., "The States and Cultures of the Lower Guinean Coast," in B.A. Ogot, ed., *General History of Africa: Volume 5, Africa from the Sixteenth to the Eighteenth Century* (University of California Press, Berkeley, 1992): 422.

[67]See A.A. Boahen, "The States and Cultures of the Lower Guinean Coast," in B.A. Ogot, ed., *General History of Africa: Volume 5, Africa from the Sixteenth to the Eighteenth Century* (University of California Press, Berkeley, 1992): 424.

[68]Robin Law, *The Ọyọ Empire c.1600–c.1836: A West African Imperialism in the Era of the Atlantic Slave Trade* (Claredon Press, Oxford, 1977).

[69]William Easterly and Ross Levine, "Africa's Growth Tragedy: Policies and Ethnic Divisions," *Quarterly Journal of Economics*, 112 (1997): 1203–1250.

[70]For more recent evidence confirming these initial findings see Alberto Alesina, Reza Baquir, and William Easterly, "Public Goods and Ethnic Divisions," *Quarterly Journal of Economics*, 114 (1999): 1243–1284; Edward Miguel and Mary Kay Gugerty, "Ethnic Diversity, Social Sanctions, and Public Goods in Kenya," *Journal of Public Economics*, 89 (2005): 2325–2368.

[71]The measure of ethnic diversity used in Easterly and Levine's original article is the probability that two randomly selected individuals from a country belong to different ethnic groups. The updated version of this same measure is from Alberto Alesina, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg, "Fractionalization," *Journal of Economic Growth*, 8 (2003): 155–194.

[72]The estimating equation is: ethnic diversity$_i = \beta_0 + \beta_1 \ln$ exports$_i + \varepsilon_i$. The estimated coefficient for β_1 is $-.046$, with a standard error of .007. The coefficient is statistically significant at the 1% level. The proportion of the variation in ethnic diversity explained by slave exports is given by the regression's R-squared which is .50. This indicates that 50% of the variation in ethnic diversity is explained by slave exports.

[73]Developing countries are defined to be countries with an average per capita income in 2000 of less than $14,000. According to this definition the poorest developed country is Portugal, and richest developing country is Barbados.

[74]The figures are based on data from the Penn World Tables, which is the most commonly used source for income data in economics.

[75]In practice, because the estimating equation uses log income and log slave exports, the logs of income and slave exports are used when performing the calculations.