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Asongu, Simplice and Kodila-Tedika, Oasis

September 2015

AFRICAN GOVERNANCE AND DEVELOPMENT INSTITUTE

A G D I Working Paper

WP/15/029

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Simplice A. Asongu
African Governance and Development Institute,
Yaoundé, Cameroon.
E-mail: asongusimplice@yahoo.com

Oasis Kodila-Tedika
Department of Economics
University of Kinshasa
B.P. 832 KIN XI
Kinshasa, Democratic Republic of Congo.
oasiskodila@yahoo.fr

AGDI Working Paper

Research Department

Simplice A. Asongu & Oasis Kodila-Tedika

September 2015

Abstract

The literature has not sufficiently engaged the emergence and expansion of the phenomenon of Slave export. This article contributes to the existing stream by examining the role of human capital or intelligence on slave exports. We postulate and justify a reasonable hypothesis that countries which were endowed with higher human capital levels were more likely to experience lower levels of slave exports probably due to relatively better abilities to organise, corporate, oversee and confront slave vendors. Our findings with alternative specifications involving varying conditioning information sets confirm the investigated hypothesis. The findings are also robust to the control of outliers.

JEL Classification: I20; I29; N30
Keywords: Intelligence; Human Capital; Slavery

1. Introduction

The econometric literature on the consequences of slavery is relatively new with the seminal work of Nunn (2008a)[1]. Other studies within the same framework have followed ever since, namely: Bezemer et al. (2014); Nunn (2008b, 2010b); Philippe (2010); Dell (2010); Nunn and Wantchekon (2011) and Whatley and Gillezeau (2010, 2011). First, Nunn (2008a) has

[1] For an introduction into the works of Nunn, the interested reader may refer to Kodila-Tedika (2011).

investigated the concern of whether Africa's current underdevelopment can be elucidated by slave trade. The author has used data from historical documents reporting slave ethnicities and shipping records to estimate the numerical value of slaves exported from African countries during the slave trade era. He has established a negative nexus between the number of exported slaves and contemporary economic performance. Hence, slave trade has had a negative effect of Africa's economic development.

Second, in another study, Nunn (2008b) has positioned an inquiry by building on some well established arguments in the literature, notably, that: (i) a nation's past reliance on slave labor was a crucial determinant of its subsequent economic development, among former New World colonies and (ii) plantation agriculture specialisation with its use of slave labor, led to economic inequality which resulted in a concentration of power among a small elite, therefore deteriorating economic institutions that were imperative for sustained economic development. After testing the underlying arguments across: (i) counties and states in the United States (US) and (ii) former New World Economies, the author has concluded that the use of slaves is negatively linked to subsequent economic development. Nonetheless, there is no evidence sustaining that the nexus: (i) works via slavery's impact on economic inequality or (ii) driven by plantation slavery of large scale.

Third, Dell (2010) has used regression discontinuity to assess the long-term effect of the mita: a form of extensive forced labour system of mining in Bolivia and Peru between 1573 and 1812. The findings have shown that the mita effect: (i) decreases consumption in households by about 25% and (ii) positively influences the stunted growth prevalence in children by about 6% contemporarily in subjected districts. The author has used data from the Republic and the Spanish Empire to trace mechanisms of institutional persistence in order to establish that Mita's influence has endured via its effects on public goods provision and land tenure. Accordingly, while historically Mita districts were characterised by lower educational

attainment and low levels of large-land-ownership, today the economic situation is still relatively poorer because: (i) their residents are considerably more likely to be farmers of subsistence and (ii) the underlying districts are less integrated into networks of roads.

Fourth, Whatley and Gillezeau (2010, 2011a) have argued that trading of slaves emphasised the incentive to distinguish outsider from insider and constrained the geographic scope of political authority. They established a positive nexus between restricted geographic scope of 20th century ethnic groupings and the number of slaves leaving the African West coast. Fifth, in a later study, Whatley and Gillezeau (2011b) have investigated the evolutionary processes facilitated by encounters of the indigenous African population with colonial powers. They investigate the main effect of slave trade in African economies to argue that trade can be perceived as a perverse instance of the resource curse. The impact of slave trade on Africa is assessed by looking into the nexus between slave exports and slave demand. The line of inquiry also describes circumstances under which the trade in slaves reduced state sizes and increase ethnic and social stratification, ultimately creating the reign of terror.

Sixth, Nunn and Wantchekon (2011) have shown that current disparities in levels of trust with Africa are traceable to Indian Ocean and transatlantic slave trade. The authors have combined contemporary survey data at the individual level with historical data on the shipment of slaves by ethnic groups to establish that individuals with ancestors that were substantially raided in the époque of slave trade are relatively less trusting today. Evidence from a plethora of identification strategies show that the nexus is causal, with most of the slave trade effect via internal factors to an individual, like, inter alia: beliefs, cultural norms and values.

Seventh, Bezemer et al. (2014) have assessed the long-run effect on politico-economic development from African indigenous slavery systems. From the data gathered from record of anthropology, the authors establish that indigenous slavery is negatively and robustly linked

to contemporary income levels, but not with levels of income immediately following independence. One channel via which indigenous slavery has impeded development is by deteriorating accountable and capable states in Africa.

Unfortunately, to the best our knowledge, the bulk of interesting literature has not sufficiently engaged the emergence and expansion of the phenomenon of slave export (e.g Nunn, 2008a; Nunn & Diego, 2012). This article contributes to existing literature by examining the role of human capital on slave export. In essence, we postulate a reasonable hypothesis that countries which were endowed with higher human capital were more likely to experience lower levels of slave export. The hypothesis draws from the argument that, in countries enjoying higher levels of human capital or intelligence also have people that are more organised probably due to their relatively better ability to corporate (Jones, 2008; Kodila-Tedika, 2014). Such an organisation can easily oversee and confront the activities of slave vendors. Nunn and Diego (2012) have demonstrated that ruggedness of landscape have facilitated escape from slavery by some victims of slave export. Normally, such escapes should also be facilitated by some form of intelligence. Moreover, there is some consensus on the fact that intelligent individuals easily find a solutions or compromises (Kodila-Tedika, 2014). Hence, human capital or intelligence may be postulated to be associated with lower levels of slave exports.

The rest of the study is structured as follows. The data and methodology are presented in Section 2. Section 3 covers the empirical analysis while Section 4 concludes.

2. Data and Methodology

2.1 Data

First, the dependent variable which is Slave export consists of estimating the number of exported slaves in Africa between 1400 and 1900. It is obtained from Nunn (2008ab). The

data is built by linking shipping data from a plethora of historic documents presenting the ethnicities of slaves that are shipped from Africa during the underlying interval of time. After combining them, the author is able to estimate country-specific number of slaves that were shipped from the African continent during the period 1400 and 1900, which entails Africa's four slave trades. As explained above, we proceed by normalizing export figures by the land surface area of a country. Since, a certain number of countries do not have slave exports, the natural logarithm of 1 plus the number of exported slaves per thousand square kilometres is considered. We invite the interested reader to see Nunn (2008ab) for more insights into the nature of the data, including the appropriateness of employing the natural logarithm of slave exports.

Second, the independent variable of interest or human capital is measured with the Historic Intelligence Quotient (IQ). This variable has been employed in recent intelligence literature, notably: Lynn (2012) and Danielle (2013). It is measured as the '*national average intelligence quotients of populations, including estimates of indigenous populations for the colonized countries*' (Danielle, 2013, p. 31).

Third, the 'Population density in 1400' variable is constructed using estimates of historic population from Mc Evedy and Jones (1978). For countries that are grouped with other nations in Mc Evedy and Jones, population is allocated to the nations with respect to the 1950 population distribution, from the United Nations (2007). The total population in 1400 is normalised with each country's land area, computed as described above. Given that the variables are considerably left-skewed and because the area covered by a number of countries today was characterised with zero population density in 1400, a natural logarithm of one plus the population density (computed as people per square kilometer) is considered.

Fourth, Tech1500 is an index denoting the adoption of military, agricultural and communications technologies, inter alia. It is borrowed from Easterly, Comin and Gong

(2010). Fifth, 'Year since Neolithic Transition' refers to 'the number of thousand years elapsed (as of the year 2000)' since earliest date recorded of a region located within the national borders of a nation that underwent the transition to primary reliance on livestock (and cultivated crops) from primary reliance on hunting. This indicator which is compiled by Putterman (2008) was computed using a plethora of both country- and region-specific archaeological studies, in addition to encyclopaedic works of more general nature on the Neolithic transition to agriculture from gathering and hunting. We refer the interested reader to the website of the Agricultural Transition Data Set for more insights into methodological assumptions and data sources used in the construction of the variable.

Fifth, 'biographic conditions' refers to the first principal component of the number of prehistoric: (i) domesticable animal species and (ii) plant species, computed with the help of a methodology proposed by Olsson and Hibbs (2005). It is interesting to note that Angeles (2011) has insisted on the crucial role that technology and biogeography play in the elucidation of slavery.

Sixth, 'Statehist' is an index denoting the presence of supra-tribal government on territory representing the present-day country, entailing years 1CE to 1500 CE. In a particular year, the value of the index is the product of three indices embodying the unit interval, notably, an index for: (i) territorial extent and unity (states governing meagre shares of the nation's contemporary territory and a plethora of simultaneously extant states are consigned lower values); (ii) territorial unit and extent and (iii) existence of a state. Corresponding values are aggregated into periods of 50-years, the period x half centuries prior to 1500 is discounted by $(1.05)x$, the ensuing numbers are added and the sum is finally normalized to the interval of between 0 and 1, after dividing by the (hypothetical) maximum value. This data is from Putterman (2004, revised 2012).

Seventh, 'mean ruggedness' is the mean value of an index on landscape ruggedness (relative to hundreds of meters above the sea level) for a nation, calculated using geospatial surface undulation indicators based on a one degree resolution form the Geographically based Economic data (G-Econ) project (Nordhaus, 2006), which depends on more spatially disaggregated elevation variables from New et al. (2002) at a ten-minute resolution. The grid-cell-level appreciation of ruggedness is consolidated up to national level by averaging across the grid cells which are located within the borders of a country. We invite the interested reader to gain more insights into the computation on the website of the G-Econ project. This variable has been employed in Nunn and Puga (2012) in the stream of literature on the trade of slaves.

Eight, the landlocked dummy is a measurement of if a country is landlocked and it is determined by the Central Intelligence Agency (CIA) World Factbook using the coastline length of a country. This indicator has been substantially employed to control for the unobserved heterogeneity in African development literature (Asongu, 2012, 2014).

Ninth, 'absolute latitude' represents the measurement of latitude (in terms of degrees) of a country's approximate geodestic centroid as shown by the CIA World Fackbook. Acemoglu et al. (2001) have articulated the role of geography in the African development literature. It is notably for this underlying reason that we are also accounting for other geographic variables in this line of inquiry.

2.2 Methodology

Consistent with recent development (Asongu, 2013) and intelligence or human capital (Kodila-Tedika & Asongu, 2015ab) literature, the specification in Eq. (1) examines the correlation between human capital and slave export.

$$SE_i = \alpha_1 + \alpha_2 HC_i + \alpha_3 C_i + \varepsilon_i \quad (1)$$

Where: SE_i (HC_i) represents a Slave export (Human Capital) indicator for country i , α_1 is a constant, C is the vector of control variables, and ε_i the error term. HC is the *Human Capital* variable while C entails: *Population Density in 1400*; *Tech1500; Biographic Conditions; Statehist; Mean ruggedness, Landlocked dummy, Absolute latitude* and '*Year since Neolithic Transition'*. In accordance with the underlying human capital literature, the interest of Eq. (1) is to estimate if human capital affects Slave exports by Ordinary Least Squares (OLS) with standard errors that are corrected for heteroscedasticity.

3. Empirical Results

Table 1 presents the empirical results based on OLS. The following findings can be established. First, the investigated hypothesis is confirmed because Historic IQ is negatively correlated with the dependent variable (or slave export). This negative nexus is robust to alternative specifications, employing varying conditioning information set to control for a plethora of historical, cultural and geographic variables. Second, most of the significant control variables have the expected signs. (i) Population density in 1400 is negatively correlated, essentially because the area covered by a number of countries today was characterised with zero population density in 1400 (Mc Evedy & Jones, 1978; United Nations, 2007). (ii) The European descent variable is positively correlated because Europeans significantly contributed to slave trade (Acemoglu et al., 2005). (iii) The Tech1500 index is intuitively supposed to be positively correlated with slave exports because it denotes the adoption of military, agricultural and communication technologies which are most likely to positively influence openness and trade activities (Easterly and Gong, 2010).

(iv) The variable 'Statehist' denoting the presence of supra-tribal government is positive, most likely because chiefs and kings played a critical role in aiding slave exporters to capturing and putting natives at their disposal (Smith, 2009). (v) Logically, the sign of

latitude is expectedly negative because trading in slaves was for the most part centred on the Equator of Africa. Hence, export intensity decreases as one move either North towards the Arctic Circle or South towards the Antarctic Circle. (vi) While landlocked countries were most likely to be negatively correlated with the dependent variable because the predominant means of transportation was shipping, the expected signs are not significant.

(vii) Consistent with Nunn and Wantchekon (2011), 'terrain ruggedness' was a negative factor in slave trade, because it facilitated escapes and local resistance. (viii) African biographic conditions have been documented to have severely handicapped its economic development (Angeles, 2011, p. 37). These include: trade, inter alia. (ix). The number of years since the 'Neolithic transition' is negatively related to slave trade probably because, with growing civilisation human beings become increasingly aware of the need to treat people equally, irrespective of the colour of their skin.

Table 1: Ordinary Least Squares Estimations

	Eq1	Eq2	Eq3	Eq4	Eq5	Eq6	Eq7
Historic IQ	-12 329.208***	-12 144.687***	-19 428.821***	-17 388.560***	-19 371.190***	-18 879.537***	-19 458.819***
	(3 853.880)	(4 238.942)	(6 200.370)	(5 978.300)	(5 640.256)	(5 90.467)	(5 678.357)
Pop density in1400		0.001	-0.000	-0.001	-0.003**	0.001	-0.003*
		(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.,002)
European descent		-179.151	463.179	1 584.886	2 341.701**	2 062.648**	2 364.201**
		(405.109)	(695.937)	(1 007.122)	(921.011)	(995.179)	(933.766)
Tech 1500			-106 202.883	84 029.950	517 338.769***	248 205.128*	521 403.838***
			(145 871.757)	(109 465.374)	(175 835.759)	(143 787.695)	(177 765.641)
Statehist			513 587.664**	581 818.607**	694 758.338***	671 648.946***	700 306.866***
			(237 031.057)	(252 274.285)	(213 621.846)	(251 925.137)	(213 373.270)
Absolute latitude				-3 866.905	2 527.059	-4 239.555*	2 321.952
				(2 389.677)	(2 147.431)	(2 398.137)	(2 316.762)
Landlock				-35 930.383	-82 649.978	-54 865.393	-83 216.052
				(62 410.261)	(61 787.073)	(63 134.802)	(62 750.493)
Mean ruggedness				-43 137.873**	-35 042.774**	-32 727.732**	-34 283.703**
				(17 902.984)	(15 295.125)	(16 161.882)	(16 219.357)
Biogeographic Conditions					-194 193.510***		-188 791.737***
					(48 911.697)		(53 318.498)
Neolithic Transition						-44.310**	-4.407
						(16.933)	(14.875)
Constant	1 149 473.422***	1 139 176.724***	1 558 807,001***	1 336 578,775***	1 076 495.655***	1 521 889.654***	1 101 845.106***
	(356 619.334)	(381 692.025)	(498 729,738)	(431 217,584)	(337 259.569)	(451 158.725)	(352 088.658)
Number of observations	139	133	102	78	73	78	73
R^2	0.108	0.109	0.146	0.331	0.454	0.370	0.455

Notes: .01 - ***; .05 - **; .1 - *; () : Standard errors in parentheses. Pop: Population. Tech 1500: index on adoption of military, agricultural and communication technologies.
Statehist: index denoting the presence of supra-tribal government on territory representing the present-day country. IQ: Intelligence Quotient.

Table 2: Controlling for outliers

	Eq8 Huber (1973)	Eq9 Hadi (1992)
Historic IQ	-5 502.065*	-20 312.660***
	(2 815.586)	(6 132.664)
European_descent	479.808	2 422.178**
	(368.847)	(996.065)
Pop density in1400	-0.001	-0.019**
	(0.001)	(0.009)
Absolute latitude	1 096.870	1 926.767
	(852.546)	(2 354.763)
Biogeographic Conditions	-50 975.228*	-186 024.845***
	(30 494.220)	(52 505.641)
Mean ruggedness	-10 387.873	-36 226.367**
	(6 488.046)	(16 619.527)
Tech 1500	153 037.140*	531 404.943***
	(85 582.573)	(176 418.930)
Landlock	-16 009.642	-95 907.254
	(14 617.587)	(64 990.264)
Neolithic Transition	-0.976	1.835
	(3.281)	(14.303)
Statehist	136 116.726	747 407.655***
	(96 665.112)	(216 957.361)
Constant	335 906.590**	1 156 993.440***
	(149 672.096)	(390 077.084)
Number of observations	73	70
R^2		0.468

Notes: .01 - ***; .05 - **; .1 - *; () : Standard errors in parentheses. Pop: Population. Tech 1500: index on adoption of military, agricultural and communication technologies. Statehist: index denoting the presence of supra-tribal government on territory representing the present-day country.

Consistent with Kodila-Tedika and Asongu (2015c), we check for the consistency and robustness of our findings by controlling for outliers. To this end, two main empirical approaches are employed from Huber (1973) and Hadi (1992). The first empirical approach approach from Huber consists of using Iteratively Reweighted Least Squares (IRWLS). Midi and Talib (2008) have emphasized that relative to OLS, this estimation technique has the advantage of supplying robust estimators, essentially because it simultaneously fix any issues arising from the presence of outliers and heteroskedasticity (non-constant error variances).

The findings are presented in the first column of Table 2. In the second column, the technique by Hadi is employed to detect outliers. Hence, outlier countries are detected and excluded accordingly, notably: China, India and Japan. The negative relationship between human capital and slave export is confirmed. Moreover, the significant control variables have the expected signs.

4. Conclusion

The literature has not sufficiently engaged the emergence and expansion of the phenomenon of slave export. To the best of our knowledge, the bulk of interesting literature has not sufficiently engaged the emergence and expansion of the phenomenon of slave export (e.g Nunn, 2008a; Nunn & Diego, 2012). This article contributes to the existing stream by examining the role of human capital on slave export. We postulate and justify a reasonable hypothesis that countries which are endowed with higher human capital are more likely to experience lower levels of slave export probably due to relatively better abilities to organise, corporate, oversee and confront slave vendors. Our findings with alternative specifications involving varying conditioning information sets confirm the investigated hypothesis. The findings are also robust to the control of outliers.

The findings are broadly consistent with Jones (2008) and Kodila-Tedika (2014) on the postulation that countries enjoying higher human capital levels within the framework of intelligence are relatively more organised by virtue of their abilities to corporate more effectively. According to the strand of studies, such an organisation can: (i) easily oversee and tackle the activities of slave vendors; (ii) find solutions and compromises and (iii) facilitate escapes from slavery. The extant literature on the subject can be improved by empirically investigating channels via which intelligence or human capital reduces slave export. These are beyond the scope the present inquiry and thus are evidently ample room for future research.

References

Acemoglu, D., Johnson, S. and Robinson. J. (2005). "The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth". *American Economic Review*, 95(3), pp. 546-579.

Acemoglu, D., Johnson, S. and Robinson. J. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review* 91(5): 1369–1401.

Angeles, L. (2011), On the Causes of the African Slave Trade and African Underdevelopment, mimeo.

Asongu, S. A. (2012). "Government Quality Determinant of Stock Market Performance in African Countries", *Journal of African Business*, 13 (3), pp.183-199.

Asongu, S. A. (2013). How has mobile phone penetration stimulated financial development in Africa? *Journal of African Business*, 14(1), 7-18.

Asongu, S. A., (2014). "On Taxation, Political Accountability and Foreign Aid: Empirics to a Celebrated Literature", *South African Journal of Economics*, 83(2), pp. 180-198.

Bezemer, D., Bolt, J. and Lensink, R. (2014), Slavery, Statehood and Economic Development in Sub-Saharan Africa, *World Development* 57, pp. 148–163.

Comin, D., Easterly, W. and Gong. E. 2010. "Was the Wealth of Nations Determined in 1000 BC?" *American Economic Journal: Macroeconomics* 2 (3): 65-97.

Danielle, V., (2012). "Does the intelligence of populations determine the wealth of nations?", *The Journal of Socio-Economics*, 46(2013), pp. 27-37.

Dell, M. (2010). The persistent effects of Peru's mining Mita. *Econometrica*,78, 1863–1903.

Easterly, W., Comin, D. and Gong, E. (2010). "Was the Wealth of Nations Determined in 1000 BC?," *American Economic Journal: Macroeconomics*, vol. 2(3), 65-9.

Hadi, Ali S, (1992). "Identifying multiple outliers in multivariate data". *Journal of the Royal Statistical Society,* 54, pp. 761–771.

Huber, P.J. (1973). Robust Regression: Asymptotics, Conjectures and Monte Carlo, *The Annals of Statistics*, 1: 799-821.

Kodila-Tedika, O. (2011). Esclavagisme et colonisation : quelles conséquences en Afrique ? Résumé critique des travaux de l'économiste Nathan Nunn**.** *Revue Congolaise d'Economie,* 6(1), 41-61.

Kodila-Tedika, O., & Asongu, S. A., (2015c). "Tribalism and Financial Development", *African Governance and Development Institute Working Paper* No. 15/018, Yaoundé.

Kodila-Tedika, O., & Asongu, S. A. (2015a). "The effect of intelligence on financial development: a cross-country comparison". *Intelligence*, 51(July-August), pp. 1-9.

Kodila-Tedika, O., & Asongu, S. A. (2015b). "Intelligence, Human Capital and HIV/AIDS: Fresh Exploration", *African Governance and Development Institute Working Paper*, No. 15/027, Yaoundé. Revised and Resubmitted: Intelligence.

Lynn, R., (2012). "IQs predict differences in the technological development of nations from 1000 BC through 2000 AD". *Intelligence*, 40 (5), pp. 439–444.

McEvedy, C. and Jones, R. (1978), *Atlas of World Population History,*New York: Penguin Books.

Midi, H. and Talib, B.A. (2008). The Performance of Robust Estimator on Linear Regression Model Having both Continuous and Categorical Variables with Heteroscedastic Errors, *Malaysian Journal of Mathematical Science*s, 2(1): 25-48.

New, M., Lister, D., Hulme, M. and Makin. I. 2002. .A High-Resolution Data Set of Surface Climate over Global Land Areas. *Climate Research*, 21(1): 1-25.

Nordhaus, W. D. 2006. Geography and Macroeconomics: New Data and New Findings. *Proceedings of the National Academy of Sciences*, 103(10): 3510-3517.

Nunn, N. (2008a), "The Long-Term Effects of Africa's Slave Trades," *Quarterly Journal of Economics*, Vol. 123, No. 1, February, pp. 139-176.

Nunn, N. (2008b), "Slavery, Inequality, and Economic Development in the Americas: An Examination of the Engerman-Sokoloff Hypothesis" in Helpman, E. (ed.), *Institutions and Economic Performance*, pp. 148-180. Harvard University Press.

Nunn, N. (2010b), "Shackled to the Past: The Causes and Consequences of Africa's SlaveTrades," DIAMOND, J.and ROBINSON, J. A. (eds.), *Natural Experiments of History*, pp. 142-184. Harvard University Press.

Nunn, N. and Puga, D. (2012). ''Ruggedness: The Blessing of Bad Geography in Africa,'' *Review of Economics and Statistics,* 94(1), 20–36.

Nunn, N. and Wantchekon, L. (2011).''The Slave Trade and Origins of Mistrust in Africa,'' *American Economic Review*, 101(7), 3221–3252.

Olsson, O. & Hibbs, D. Jr., (2005). "Biogeography and long-run economic development," *European Economic Review*, vol. 49(4), 909-938.

Philippe, A. (2010), "L'impact économique de l'esclavage dans les pays de l'ancienne Afrique Occidentale Française", *Mémoire de DEA*, Paris School of Economics.

Putterman, L. (2004), State Antiquity Index (Statehist), http://www.econ.brown.edu/fac/Louis_Putterman/antiquity%20index.htm

Putterman, L. 2008. "Agriculture, Diffusion and Development: Ripple Effects of the Neolithic Revolution,"*Economica*, 75(300), 729-748.

Smith, D., (2009). "African chiefs urged to apologise for slave trade", The Guardian (November , 2009). http://www.theguardian.com/world/2009/nov/18/africans-apologise-slave-trade (Accessed: 26/08/2015).

United Nations, (2007), United Nations Common Database, New York: United Nations Statistics Division.

Whatley, W. and Gillezeau, R. (2010), "The Slave Trade and Ethnic Stratification in Africa", University of Michigan Working paper.

Whatley, W. and Gillezeau, R. (2011a), "The Impact of the Transatlantic Slave Trade on Ethnic Stratification in Africa", *American Economic Review Papers and Proceedings*, pp.1-9.

Whatley, W. and Gillezeau, R. (2011b), "The Fundamental Impact of the Slave Trade on African Economies", Rhode, P., Rosenbloom, J. and Weiman, D., *Economic Evolution and Revolution in Historical Time*, Stanford, Stanford University Press.