

# The Phenomenon of Slave Trades in Africa: Multiple Approaches to Historical Dynamics

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## Introduction

Among all the human phenomena that featured History and all the vast array of action of mankind, the African Slave Trades were one of the most hurting, brutal and severe.

Indeed, such phenomenon is so far from our contemporary sensibility and set of rights and duties that it quite seems impossible to have had such a blame in our past times. The African slave trades were driven by both mere utilitarianism and disrespect for any conception of the existence of any right to human *personality*. Even if they were one of the human and capitalistic bases for economic development in the New World, the slave trades were a source of dis-humanity, a form of human violence and one of the main demonstration of the lack of moral values that human being can experience in order to merely make their interests flourish.

Such importance for the phenomenon – from a human, social and an economic point of view – are the main reasons we were interested in conducting such a personal research on the topic.

Indeed, we think that having a better understanding on what the slave trade phenomenon was and how it affected and affects current societies is a *moral duty* – other than mere scientific interest. Better understanding the causes and consequences of the phenomenon – along with its underpinning dynamics – is something crucial we do owe to ourselves as human beings, in order to figure out what our History was, is and has been, and in order to know what consequences human behaviors do have, and how much human actions can eventually affect societies and economies even centuries after at the happening of a phenomenon.

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# I. The context: African people and trends

Dealing with the African Slave Trades means to deal also with both the historical and social features of Africa, its civilizations and its people. Indeed, we do have to both propose and account for a wide array of characteristics that in fact did shape African dynamics and eventually do influence what Africa is, appears to be and behaves today.

This *Chapter I* is therefore dedicated to a general presentation on the overall context of the African continent, in its multiple fashions and with respect to several parameters.

## I.I African Cultural dynamics

Africa is a huge continent that has been dwelled by human beings since 200,000 years ago. Indeed, if we rely on the *Out of Africa* model<sup>1</sup>, we have anthropological and paleoanthropological evidence that human beings (intended as *Homo sapiens*) did develop in the African continent and then spread all over the world.

Once *Homo sapiens* dispersed in all the continents, it evolved in different cultural organizations. With respect to the African frame, we can spot the two hugely diverse evolutions of the Nile region (notably Nubia and Egypt) and the one of sahelian-sub-Saharan area. Namely, the Nile-region civilizations did participate to the agricultural evolution and were included in both the cultural dynamics of the Fertile Crescent and the Euro-Mediterranean basin.

On the other hand, sahelian and sub-Saharan Africa societies did develop in a completely different way. Indeed, we can spot that, in general, the very original San<sup>2</sup> populations migrated in the continent, followed by a further series of Bantu people. The

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<sup>1</sup>The literature on the topic is vast. See, among all, *López, van Dorp and Hellenthal (2016)*.

<sup>2</sup> Made up of multiple clans speaking Khoi-khoi languages and belonging to the very first original hunter-gatherer people that inhabited Africa.

Bantu migrations<sup>3</sup> contributed to shape nowadays African population, by migrating from several hot-spots<sup>4</sup> to the whole sub-sarahan Africa. At the time of the very first European attempts to both circumnavigate and establish trade posts in Africa, Bantu civilizations were flourish and did characterize African culture, economy and people. Their presence was noticed and recorded by European sailors and basic social and market interactions started.

Africa in the Slave Trades period shew a prominent Bantu cultural imprinting, whose features were detected and exploited by both European sailors and tradesmen. In some sense, the Bantu African *substratum* made up the perfect conditions to first start some market trades between Africans and Europeans, and eventually ended up into creating the optimal market conditions to let the African Slave Trade Markets to be put into effort.

“Enslaved Africa” maintained both the optimal cultural frame and features that were favoring the slave trades; such a situation remained still until XIX, when the new European imperialistic policies made European countries opt for a better, more systematic and more direct control of Africa, its people and its resources. Indeed, even if European (and American) movements, revolutions and intellectual clashes eventually managed to make slavery illegal in Western countries<sup>5</sup>, the European approach to Africa radically changed until, in 1885, the Conference of Berlin officially clarified that European countries were aiming at some further (and also *new*) over Africa and African people<sup>6</sup>.

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<sup>3</sup> According to the most-trusted anthropological theories, since the IV millennium BCE Bantu people started migrating and spreading over the whole sub-saharan part of Africa; among the innovative features they brought in the whole sub-saharan area, we have to mention both agriculture and the use of plough. Bantu civilizations were more technologically advanced than pre-Bantu people.

That is why Bantu people managed at imposing over the pre-Bantu populations, notably on both Khoi-khoi and Pygmies.

<sup>4</sup> The two most accorded migration theories being the one theorizing a single migration from nowadays Nigeria, while the second one theorizing a two-stage migration from first Cameroon and then, most importantly, nowadays Zambia.

<sup>5</sup> The emancipation of enslaved people was a long process that endured throughout the whole XIX century. Such a liberation of enslaved people took, indeed, a lot of human effort and a huge amount of years to be put into effort. We can consider the Haitian revolution (1802) as the first attempt to block African slavery in the Modern Era; such broad freedom process passed over the liberation of African slaves in nowadays Liberia (1825), the American Civil War (1861-1865) and eventually ended up in 1889, when Brazil eventually made slavery illegal and *de facto* stopped the final last slave trades from the Guinea Gulf to the Brazilian *fazendas*.

<sup>6</sup> The consequences of the Conference of Berlin are known as the notorious *Scramble of Africa*.

Nowadays African countries and societies keep on being influenced by elements coming from both the Pre-European social, cultural and economic preexisting *substratum* and the former European controlling systems. Even if formal decolonization started in 1960 – and all regions in the whole continent<sup>7</sup> eventually gained formal independence – today's Africa is still influenced by its past, and its challenges are complicated by both internal factors (namely socioeconomic) and foreign factors (e.g. the actual European soft power in Africa and its consequent geopolitical and humanitarian implications). Most importantly, physiological, pre-colonial factors do even eventually partly shape African actual features: that is why a deep analysis of African pre-colonial characteristics and dynamics is dutiful, to better understand both its past and its underpinning evolutions that are in power even nowadays.

### *I.II African Population dynamics*

Though being the origin of our species on Earth, Africa has been a relatively lowly-inhabited continent. Reasons of this are multiple, and the effects of population changes and dynamics are also hard to completely detach one from the others in order to present a clear and systematic view of both African dynamics and outcomes.

According to *Maddison (2003)*, African population was relatively stable<sup>8</sup> through centuries, the total value of its inhabitants being about 90 to 100 million people in the whole continent during the Modern Era. This is in contrast with the general trends of exponential growth that we can observe in the other continents. For comparison, Europe's population has been monotonically growing since the end of the Black Death (mid XIV century), whereas Africa was the only continent to experience, *de facto*, a zero exponential population growth during the period from 1500 to 1870.

This *de facto* zero growth has to be explained by a further and deeper analysis of the population dynamics in Africa. Indeed, it is straightforward that – if a general population that is expected to grow exponentially *does not grow in fact* – there is some effect on population growth that operates to decrease growth to a *de facto* nil effect. Put another way, African population should grow at a physiological *n%* rate: if the total effect on

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<sup>7</sup> With the only exceptions of both the French territories of Réunion and Mayotte and of the Spanish *Plazas de Soberanía*.

<sup>8</sup> Among all continents, Africa shows the lowest aggregate value of rate of population growth, the value being only 0.10% on average for general population growth between 1000 AD and 1820 AD.

population is tending to be nil, we do have to expect that it exists a counter-effect on population that negatively balances both the population count and growth rate.

In such a frame, the analysis of the phenomenon of the Slave Trades is pivotal, as the rate of extraction of enslaved people contributed in a prominent way to the nil final effect of the zero-growth of African population. That is, the Slave Trade extraction rate should be interpreted as a negative effect on population growth: if African population tends to growth at 0.02% and the slave extraction effect accounts to reduce African population equal to -0.019%, it is straightforward that the overall population growth will tend to slightly a little more than 0%. This means that – if we account also for endemic general death rates (e.g. either diseases or local clashes), it is straightforward that the population has to remain stable during centuries<sup>9</sup>.

African population has started to grow at positive rates only since the XIX century. From 1820 to 1870<sup>10</sup>, population rose at a never-seen-before annual average rate of 0.40%. It is important to stress the fact that this is also the period when slavery was banned in the Western World<sup>11</sup>, thus leading to the end of the consequent demand for slaves.

Once all countries ended up both slavery and slave trades, from 1870 to the antecedents of WWI, African population nearly doubled its growth rate, reaching an annual 0.75% that is in line with the Western Europe's rate (being 0.77%).

From 1913 on, the African population started rising and rising to never-seen-before growth rates. More specifically, African population jumped on average annual population growth of more than 1.5% yearly, reaching the highest rate peak in the aftermaths of the Decolonization. Indeed, from the Fifties on, Africa permanently showed the highest annual rates of population growth among all continents, with a yearly average rate of 2.73% in the forty years after the start of the African decolonization.

To us, it is important to show these data on population, in order to stress the fact that there is an incredibly-evident coincidence between the zero-growth rate of African

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<sup>9</sup> The growth attesting to 0% and the amount of African people being between 90 and 100 millions people for five centuries. To have a better idea on century-based estimates of both African and non-African populations, see *Maddison (2003)*.

<sup>10</sup> See *Maddison (2003)*, p. 126.

<sup>11</sup> Among all countries, The UK – that had already banned Slave Trades in 1807 – abolished slavery in 1838, France in 1848, Portugal in 1869 and eventually Brazil – the last Western country to allow slavery – in 1888.

population and the phenomenon of the African Slave Trades. Indeed, in the words of *Manning (1990)*, slave trades affected so much and so deeply the population dynamics of African countries that «by 1850 Africa's population was only half of what it would have been had the slave trades not taken place»<sup>12</sup>. That is, the effect of slave extraction on African population had such a despicable role and high value it can explain the main reasons why the African population did not physiologically grow in the past centuries.

### I.III African Wealth dynamics

Africa – notably subsaharan Africa – has been a low-developing continent for centuries.<sup>13</sup> *Maddison (2003)* offers us a detailed *prospectus* of both the per capita GDP and aggregate GDP levels and changes over centuries. In particular, he analyzed the historical pattern of per capita GDP in a series of countries and regions. As our study focuses on this variable, we will deeply analyze the values of overall country per capita production instead of the aggregate levels of total country production (i.e. mere GDP).

Maddison's analysis on historical per capita GDP values ends up in providing an approximative aggregate value for the set of African countries. This amount remains still for centuries, and it's considered to purely indicative. More precisely, the author assigns a *priori* the aggregate African countries' per capita GDP the value of \$400/year, and expects *no changes* in centuries. This means that, overall – as population remained stable and so did GDP per capita – we can consider also aggregate African GDP as essentially stuck.

However, even if data are merely eventual and hard to estimate, such a *prospectus* does account well for both the scarcity and approximability of data on Africa and it also moves the debate on if per capita GDP is effectively an efficient estimator of wellness and richness in Africa<sup>14</sup>.

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<sup>12</sup> See both *Manning (1990)* and, consequently, *Nunn (2008)*.

<sup>13</sup> It is important to stress that, here, we rely on both classic literature and common sense; that is, we tend to identify overall production as a proxy for economic and social development. However, it is important to keep in mind that such economic indicators can be not so fit to proxy wealth, especially in a continent like Africa.

Put another way: it cannot be so straightforward to judge economic development in Africa using Western-tailored parameters such as either GDP or per capita GDP.

<sup>14</sup> The topic is furtherly analyzed in Development Economics. That is, especially for evaluations on Africa, there is some peculiar debate on if the estimates based on GDP (either aggregate or per capita) are effective in depicting the actual wealth situation in African countries. See, among all, the article by Professor Leight Gardner (LSE); the link is available in our sitography.

Coming to the leading factors in determining the per capita levels of production in Africa, we notice that these huge differences (even the ones between North and Sub-Saharan Africa) are underpinned by a lot of factors. We identified and propose the following explanation, that at least contributed to the underdevelopment and comparative negative differential between African wealth and Western economic standards.

Firstly, as previously mentioned<sup>15</sup>, Sub-Saharan Africa did suffer from a *technological disadvantage*. Indeed, even if important civilizations<sup>16</sup> rose in Africa, Sub-Saharan-African civilization did undergo a systematic lack of technology, partially due to the relatively low amount of local innovation. To be more specific: elementary technologies (having been known by North Africans, Westerns and other civilizations for centuries) were spread into Africa only with (and thanks to) the Bantu progressive migration waves. This caused an endogenous, endemic, *suboptimal* technological African frame. Now, if we rely on basic macroeconomic theories – that describe technology as a weighting value of individual production – we can understand how a comparative technological disadvantage ends up in generating lower values of both aggregate and per capita output. This means that technological underdevelopment physiologically causes lower levels of production<sup>17</sup>.

Moreover – and partly due to this lack of technology – African wealth has been systematically lower than elsewhere and particularly stable over time. Indeed, if we estimate the average amount of per capita GDP<sup>18</sup>, we can spot how its values remained stable.

If we combine these two *stati*, we can posit that – eventually – African countries' per capita GDP values are determined by both:

- a stable population, whose growth is lowered by the slave trade extraction rate; and
- a stuck production in a depressed economy, due to the lack of technological *stimuli*, the isolation of markets and the absence of relevant local innovations.

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<sup>15</sup> See *supra*, paragraph I.I.

<sup>16</sup> Especially in the Sahel region; e.g. the Ghana, Ethiopian, Manden and Songhai empires.

<sup>17</sup> It would be interesting, then, to run an analysis that accounts for the *local potential of technology*, rather than simplistically compare the outcomes between the dynamic Western countries and the less dynamic and more diverse areas on Earth.

<sup>18</sup> Data come from *Maddison (2003)*. It is interesting to stress that Maddison *assumes* the average value of per capita GDP in Africa in the period before the Scramble of Africa (XIX century). See *Maddison (2003)*, p. 331.

Our bottom line follow the suggestions by *Maddison (2003)*: in the end, poor economic performances and a harmed population (whose value and count were in fact below the physiological expected threshold) led to an overall stuck economy, both in aggregate and per capita terms.

In such a frame, it is once again straightforward how the Slave Trades phenomenon, by having a direct, relevant effect on African population, ends up in altering also the normal values of African countries' per capita GDP. That is, an economy of poor technologies and basic subsistence did eventually produce a quite-fix amount of output. Such output is then weighted by a local (still) population whose count is even reduced by the slave extractions.

Moreover, the slave trade extraction must have had an endogenous effect – other than on population itself – also on *human capital* and output production, as the better, healthier and more fitting people were extracted from Africa.

The bottom line is that: once you start extracting the most resistant and potentially-productive people from a population, you are about to cause a huge series of detrimental effects on: population dynamics, technological advancement, endogenous local innovation, human capital, total and per capita production, total and aggregate wealth, and so on.

By extracting slaves, slave traders operated a factual *selection* on African people that is doomed to cause (or at least contribute) suboptimal outcomes in African people's homeland. Put another way: after the extraction – from a statistical point of view – the original African population negatively suffered from a *slave-trader selection bias* that ultimately took the best people away from Africa: the remaining population was therefore a statistically-biased and an economically-suboptimal subsample of the original population. With such a harmed pool of people, only suboptimal outcomes are prone to be expected to come out.

The presentation we did in this introductory part should account for an indicative idea of how much we do think the African Slave trades ultimately altered the outcomes of the whole continent and its compounding countries. Having a deep analysis on the phenomenon is needed to better understand historical dynamics and to shape economic models that account for the *ex-ante*- and *ex-post* slave trade conditions in Africa.

## II. Literature review on the African Slave Trades

As we presented in *Chapter I* of this work, an analysis on the effects and consequences of the Slave Trades phenomenon is necessary to better understand both past and current dynamics in African population, economic trends and human and social features.

Multiple studies on the phenomenon have been conducted, especially from the Nineties on. However, even if the literature on the Slave Trades phenomenon (especially the one on its economic effects and consequences) is relatively recent, a series of previous works has been conducted since the second half of the XX century, to better define and understand African cultures, dynamics and also – more specifically – the main peculiarities of the Slave Trades phenomenon.

We will divide this section in the following parts: *paragraph I* will consider the classical and more actual studies on the main features of African people, cultures and on the descriptive features of the Slave trades; *paragraph II* will focus on Nathan Nunn's works; *paragraph III* will cover the post-Nunn studies that reached the same conclusions of our author; eventually, *paragraph IV* will account for the studies that aim at challenging Nunn's conclusions.

### *II.1 Classical and contemporary studies on the main features of Africa*

The most prominent and seminal classic work on African cultures and history is *Murdock (1959)*, i.e. the first study to provide the reader a systematic and complete analysis of the huge set of African tribes. The work by Murdock is the cultural basis on which a great majority of scholars has based their own subsequent analyses. It collects historical and cultural data on each single tribe in Africa, showing a hugely ethnic-diverse continent that is essentially different from our Eurocentric and geopolitical view of contemporary African countries. Murdock's work helps in reaching out the essence of the very cultural part of Africa, showing a continent whose people have been scattered and cut off one tribe from each other due to the European interests and scrambles in Africa. The ethnic frame Murdock provides is the starting point for any analysis that aims at providing some ethnic-based results, by going over the Western-centric conception of Africa as either a merely uniform continent or a handle of underdeveloped countries.

An other important study, especially for the contribution it brought to the scholar community concerning the Slave trades in Africa starting from a regional perspective, is *Northrup (1978)*.

Northrup's paper examined the impact of the Trans-Atlantic slave trade on the Bight of Biafra region, focusing on how the local internal dynamics and economies were affected by the slave trades. The study involves an analysis of the local participation in the trade, including the roles of various African intermediaries. Northrup focused on a more regional approach that, however, can provide a good and more general evidence on how much trade (especially the one with the Europeans) altered both local economies and societies.

The results from Northrup found some confirmation in subsequent works (namely, *Hubbell, 2001*); however, they have also been heavily criticized by scholars – such as John Thornton – who disagree on giving both the Europeans and their trades too much weight in shaping Africa and its local dynamics.

More specifically, *Thornton (1998)* examines the effects of European influence on both African societies and manufactures (i.e., on their economies). His most important assertion is that he rebuts the concept that Europeans had an advantageous trading position by introducing new products to Africa: from his point of view, the African people were more impactful at shaping their *own* societies than their enslavers. This means, therefore, that we have to look for some African features – *rather than* European influences – to better understand the phenomenon of the African Slave Trades. On the other hand, such features should be seen on a *broader* sense, as he also warns on the risk of having a too ethnically-diverged analysis: in his words, «the degree of diversity in Africa can easily be exaggerated»<sup>19</sup>. The aim is so to overcome «the older anthropological tendency to see each ethnolinguistic group as a separate 'tribe'»<sup>20</sup> and to provide a more concrete and uniform analysis.

On the other hand, another work, *Lovejoy (1994)*, explored the methods of enslavement, the organization of slave trading networks, and the impact on African societies, including the disruption of local communities and economies. The bottom line of the approach by Lovejoy – that we can also identify in his subsequent work (*Lovejoy, 2000*) – is to put more stress on the non-African compounds of the Slave Trades phenomenon. That is: Lovejoy's bottom line is that the demand for slaves *in the Americas*

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<sup>19</sup> See *Thornton (1998)*, p. 191.

<sup>20</sup> *Ibidem*.

led to increased raiding and internal conflicts in Africa. According to the author, the geopolitical and global features of the Triangle Trades did count more than the intra-African features of the African societies that participated into the phenomenon.

Notably, Lovejoy's approach focuses more on the "gun-slave cycle" rather than on the specific characteristic of the African societies the European got in touch with. His internationalistic concept of the Slave Trades – different from the "African-endogenous" concept by Thornton – has been followed from a series of scholars; among them, we cite the two works by Hawthorne (*Hawthorne, 1999* and *Hawthorne, 2003*). Interestingly, Hawthorne focuses not only on the market dynamics between European weapons and African slaves (as Lovejoy did), but extended the analysis to iron in a broader sense. That is: Hawthorne considers the *iron-slaves cycle*<sup>21</sup>, i.e. the exchange among general European iron-made goods and African slaves<sup>22</sup>.

From this literature review so far, we can spot that the phenomenon of the African Slave Trades was a very branched and complex human phenomenon; scholars' analyses range on a local-African/international dimension that does not always manage to feed back the whole complexity of both human and historical interactions between agents.

Another approach – perhaps even more economically-significative – of the studies on the Slave Trades phenomenon concerns the economic and social effects on contemporary (say, post-enslavement) African societies and on their current socioeconomic outcomes.

The general trend (supported also by both common sense and historical evidence) is that the eventual effect of the Slave Trades has been detrimental to Africa.

The work by *Vansina (1966)* focused on central Africa to depict how the Slave Trades phenomenon managed to eventually disrupt – from a social point of view – the societies in the area.<sup>23</sup> Eventually, the social outcomes reached after the phenomenon were

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<sup>21</sup> Both Hawthorne's and Lovejoy's *cycles* works as follows: African communities captured and traded slaves to obtain iron goods and/or firearms from European traders. These tools and weapons, in turn, increased the communities' capacity for further slave raiding and defense, perpetuating a vicious cycle of violence and enslavement.

<sup>22</sup> Here we counter-call again for the historical and cultural evidence that, on the other hand, *Thornton (1998)* brought to the literature – in order not to make a too-Eurocentric analysis of the phenomena.

<sup>23</sup> It is not improper to extend, by induction, the effects of the phenomenon also to the African continent in general.

despicable, as Africa inherited broken societies that were prominently leaning on the Trades. States that were about to flourish started collapsing due to the consequences of the phenomenon.

The work by *Barry (1998)* concerns the analysis of such outcomes, too. Barry explores how the slave trade transformed local economies, leading to the rise of powerful slave-trading élites and the integration of African economies into the global capitalist system. Barry also addresses the erosion of traditional structures and the spread of new forms of social stratification.

Also the research by Elizabeth Colson (*Colson, 1969*) spotted this relevant warfare élites' rising power in societies involved into the Slave Trades. More specifically, her work is focused on the so-called *Amazons of the Dahomey*, i.e. the all-female military regiment of the Kingdom of Dahomey that has been known for either their bravery and their matriarchal bargaining power as a warfare élitarian group. The author's bottom line is that, even if the Kingdom of Dahomey was one of the most important states in modern-day Benin, the élitarian warfare "policies" ultimately led to severe slave extraction and trades, social disasters, even though having joined the Slave Trades' businesses had been one of the most important economic boosts for the Kingdom for centuries<sup>24</sup>.

Such social disaster, along with the élites' rising powers, brought to a socially-devastated continent; in such a situation, social fragmentation was a clear element of social instability (and, consequently, of lower economic and less-socially wealthy outcomes). Among all, the impact of either ethnic divisions (consequent to the social fragmentation) or the levels of state development were analyzed in detail by, respectively, *Easterly and Levine (1997)*<sup>25</sup> and *Gennaioli and Rainer (2006)*<sup>26</sup>.

The general concept coming from this literature review is that the socio-economic effects of the phenomenon seem to be easily addressed as undoubtedly *negative*;

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<sup>24</sup> Furthermore, a very recent study by Nathan Nunn (i.e. *Nunn, 2024c*) eventually shew the positive relation between matrilineal societies (showing polygyny and matrilineal kinships) and the intensity of the slave extraction. In fact, the Kingdom of Dahomey was known for its huge slave business.

<sup>25</sup> The authors pointed out that ethnic fragmentation has contributed to the current adoption of growth-reducing policies, such as high government deficits, underdeveloped financial systems, and poor infrastructure.

<sup>26</sup> The authors' measure of state development is used in *Nunn (2008)* to provide further evidence of the existing correlation between the harshness of the slave extraction and the consequent state development.

however, the risk we spot is either to consider the historical frame in a too simplistic manner, or not to give each parameter the actual worth and weight it deserves. This last point makes us warn the reader not to be too specifically focused on some peculiar characteristics of such a ways-too-complex phenomenon; otherwise, a too-focused, dichotomical approach could lead to partial and imprecise analyses and conclusions on the phenomenon.

From our point of view, we do generally call for a more nuanced, balanced, wide and – most importantly – *geohistorically-based* analysis of the whole phenomenon, as the one we can find in the analysis of the Trans-Atlantic slave trades by Herbert S. Klein (*Klein, 2001*)<sup>27</sup>.

Finally, coming to the most important databases to the topic of the African slave trades, we want to mention – for the Trans Atlantic route – the huge work by *Eltis et alii* (1999): the database records information for 34,584 voyages from 1514 to 1866<sup>28</sup>, combining shipping data from original documents and records, especially from European harbors<sup>29</sup>.

Furthermore – for the Indian Ocean, Red Sea, and Trans-Saharan slave trades, – the main databases come from three works by Ralph A. Austen: *Austen* (1979), (1988), (1992). The data are based on estimates from all available documents, records, and accounts by observers and government officials on the location and volume of slave exports.

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<sup>27</sup> *Klein* (2001) offers a wide range of considerations over the Trans Atlantic Slave Trades. His analyses comprehend all the main themes we exposed *supra* and provide the most detailed analysis at least on this part of the African slave trades.

<sup>28</sup> A further database covering the very early period of the Trans-Atlantic slave trade route was created by Professor Ivana Elbl (Trent University, CA): see *Elbl* (1997), which covers the period between 1450 and 1521.

<sup>29</sup> The subsequent work by David Eltis – *Eltis and Richardson* (2006) – estimated that the database by *Eltis et alii* (1999) contains data on 82% of all trans-Atlantic slaving voyages ever attempted.

Further literature relies on historical, geographic, ethnic, linguistic and cultural features of African people, tribes and countries. We cite here the works by *Koelle (1854)*<sup>30</sup>, *Curtin (1969)*<sup>31</sup>, *Higman (1984)*<sup>32</sup>, and *Hall (2005)*<sup>33</sup>, that were used by Nunn in his work.

## II.II *Studies by Nathan Nunn*

The paper by Nathan Nunn, *Nunn (2008)* is considered to be one of the most seminal works in the analysis of the effects on the African slave trades.

The study was the first to combine data on enslaved people – both on an ethnic and country-based point of view – with contemporary economic data on countries' performances in terms of per capita GDP in year 2000.

Nunn's bottom line was to look for a feasible relation (if not even a causal effect) between the dynamics of slave trades in Modern Era and the consequent economic contemporary outcomes of the actual countries in Africa. In doing so, Nathan Nunn firstly creates a new dataset combining ethnic data with the shipping records. Then he looks for results in some OLS log-log regressions and finds out that it does exist a negative correlation between the harshness of the intensity of slave export and the successive contemporary economic performance.<sup>34</sup>

Subsequent works on the topic by Nathan Nunn involve the relationship between the Slave Trades and current economic outcomes; each study accounts for a historically-based analysis that considers the historical frame to better detect the actual contemporary effects in actual economies of African countries.

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<sup>30</sup> A XIX-century research on a linguistic analysis over former slaves in Sierra Leone.

<sup>31</sup> The author provided the very first database on the Trans-Atlantic Slave Trade route.

<sup>32</sup> The author provided a database on the Trans-Atlantic Slave Trade route from a "supply-side" point of view, i.e. accounting for the African slave population in the British Caribbean in the period between 1807 and 1834.

<sup>33</sup> Gwendolyn Midlo Hall's work emphasizes the importance of African ethnic identities in the Americas. Even her work accounts for a "supply-side" point of view of the Trans-Atlantic route.

<sup>34</sup> *Chapter III* is specifically dedicated to a further and deeper analysis of *Nunn (2008)*; see *infra*.

### II.III *Studies providing evidence on Nunn's conclusions*

Among all the studies that provide evidence to Nathan Nunn's conclusions, we mention *Nunn and Wantchekon (2011)* and *Nunn and Puga (2012)*.

*Nunn and Wantchekon (2011)* analyzes the relation between the slave trade and the consequent mistrust among African communities. In fact, regions that were heavily affected by the slave trade use to exhibit lower levels of trust today; this implies lower levels of both economic development and cooperation among members in the same society. The paper is relevant, as Nunn manages to extend the very same dataset of *Nunn (2008)* and to apply it on a *regional and ethnic basis*, i.e. accounting for each enslaved tribe and its own territory. The consequent analysis is better fitting into the actual ethnic and social dynamics of African societies, and it is ways less dependent from the Western-based approach of considering African people only on the bases of the features of contemporary, arbitrary, tailor-made countries.

*Nunn and Puga (2012)* focuses on *geographical* features of African countries. It finds out some positive correlation between the degree of harshness of a certain area and the intensity of local slave extraction. That is, the study shows how the more rugged regions in Africa shew less export of slaves.

Subsequent studies by Nunn contribute to analyze the phenomenon from a vast series of detailed perspectives, considering factors such as missionary activity (*Nunn, 2014*) and even gender roles (*Nunn, 2024c*).

### II.IV *Studies challenging Nunn's conclusions*

On the other side, there are some studies that somehow challenge Nunn's paper. More precisely, these studies try to better understand the historical dynamics underpinning the Slave Trades: even if Nunn's conclusions are widely accepted and seem to be coherent with both common sense and actual economic history, these paper provide some implicit critique to Nunn's methodologies and offer a better and more detailed way of thinking to the very same phenomenon, especially on a temporal dimension.

Among all of them, we mention *Acemoglu, Johnson, and Robinson (2001)*, *Austin (2008)*, *Fenske (2013)*, *Fenske and Kala (2015)*.

*Acemoglu, Johnson, and Robinson (2001)* is less recent than Nunn's work; it is a *de facto* classical work in Development Economics and it must be cited because of its general idea on the phenomenon of the slave trades. The book focuses more on the negative implications of colonialism rather than of the slave trades *stricto sensu*: in fact, it tends to stress more the effects of the colonial past on current economies rather than the less recent slavery dynamics. Such an approach indirectly provides a reasonable counter-analysis to try to explain the same outcomes from the same context, though by different features of the very same historical frame.

*Austin (2008)* challenges the fact that, in his paper, Nunn effectively oversimplified the historical and geographical context of Africa. That is, Nunn considered geographical features in a too vague way, and – most importantly – he «compressed history»<sup>35</sup>, depicting a too simplistic time-vision of his cumulative data on exported people.

*Fenske (2013)* challenges the *direct causal link* proposed by Nunn between the Slave Trades and contemporary economic underdevelopment. In fact, the study posits how the context is too complex to clearly find out simple – and simplistic – causal relations<sup>36</sup>.

Eventually, *Fenske and Kala (2015)* provides some evidence on a *climatic* basis, stating that cooler years led to higher intensity in slave extraction: this was due to the contemporary increase in agricultural productivity and to the decrease in mortality. That is: better geo-climatic and health conditions led to better productivity and to subsequent higher demand for slaves. This study challenges the idea that a higher extraction rate *causes* lower economic outcomes: firstly, because now it appears that geographic and climatic conditions cause some effect on the slave export and not vice versa; secondly, because it seems that better geographic and climatic conditions cause better economic performances that eventually cause an increase in the slave extraction rate. Such a conclusion is substantially contradicting the results of *Nunn (2008)* on economic outcomes and their relations with the slave trades' export rates.

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<sup>35</sup> See *Austin (2008)*. This quote from the work by Gareth Austin is crystal-clear, as Nunn – in regressing all his data on a single cross-sectional dataset – eventually did compress five centuries of African history in one mere aggregate cumulative observation per country. If he had created a panel, century-based dataset on each century of African history experiencing slave trades, Nunn's results would have been *ways less* time-compressed.

<sup>36</sup> We have to point out that *Nunn (2008)* aims at both checking if some findings are meaningful and proposing some channels of causality. Indeed, Nunn does not look for detecting clear causal relationships. Anyway, we will use *Fenske (2013)*'s suggestions to better analyze the factual correlations existing in *Nunn (2008)*.

### III. Nathan Nunn (2008)'s analysis

#### III.1 Nunn (2008)'s analysis

The paper by Nathan Nunn (*Nunn, 2008*) provides some interesting evidence on the first analyses on the phenomenon of the African slave trades. The bottom line of the work from Nunn is to try to understand the effect of the intensity of the exportation of people from Africa and to see its consequences on the current economic outcomes – that is why Nunn's work is considered as influential and innovative in Development Economics literature, especially on African Slave Trades-related topics.

The author attempts the first empirical approach to the matter that combines the intensity of the country-based export rates of enslaved people from Africa with the current<sup>37</sup> per capita GDP outcomes.

However, his aim is not to pretend to depict a clear causal effect of the Slave Trades on current economic performances. Indeed, an array of possible interpretations is presented and made available to the reader: the author's idea is that a pure causal effect could not even be detectable, as the conclusion of the work could also be that there are unobserved characteristics (of both African countries and specific tribes) that can eventually bias the final results.

However, even if the implications on causality are not stated univocally, the paper succeeds in providing robust evidence of overall negative effects of the Slave Trades on African economies. Nunn's first approach is therefore pivotal to *start* understanding the relations between factual data on the Slave Trades and African countries' subsequent economic trends.

The paper is structured in seven sections; in the first two ones, some literature review shows the historical background and previous works about the phenomenon. Then, the author explains: how he arranged his data and built his dataset (*section III*); how he interprets his results (*section IV*) and how the correlation with other African features can be interpreted to better understand the phenomenon (*sections V and VI*). Finally, *section VII* summarizes the paper's conclusions.

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<sup>37</sup> Say, on year-2000 per capita GDP performances by each African country.

### III.II On Nunn (2008)'s data

Nunn starts his empirical work by creating a huge dataset containing information on: the number of people enslaved from each African country, the route they were forced to follow and their ethnic origin. The data come from shipping records and further documentation (especially reports from the main exporting and importing harbors). Basing on the *Trans-Atlantic Slave Trade Database* constructed by *Eltis et alii* (1999), Nunn reconstructs the initial number of enslaved people in the most intense slave trade. Data for the early period of the Atlantic slave trade not covered by the Trans-Atlantic Slave Trade Database are from *EIbl* (1997). On the other hand – for the Indian Ocean, Red Sea, and trans-Saharan slave trades – data are from the previously-quoted works by Austen<sup>38</sup>.

Other than the number of human beings exported, the original database by Nunn contains also data on the ethnic group of provenience of the same people. This *datum* is crucial to assign each person to its original ethnic group<sup>39</sup> in order to then cluster each observation at a modern-country level.

The ethnic assignation is not so straightforward, as data are obviously incomplete over most of the exported people. That is why Nunn operates an estimate on the origin of each slave.

Nunn's bottom line is to operate an inductive extension of the peculiar characteristics of the little information we have over certain groups of slaves to the *whole* sample. That is: given the fact that, in general, a specific port exported *tot* people and the ratio in the ethnic-certain subsample was, say, 70% of the slaves coming from the same area of the port and the other 30% coming from some landlocked area, Nunn extends this ratio to the whole number of people exported from a port.

In such a way, Nunn manages to assign (robustly) each person to the actual modern country she was coming from when traded.

Even if such estimate can be biased *per se* (as it frequently comes out from inductions), Nunn's work can be considered as considerably *trustable*, as mathematical induction is supported by historical, linguistically and ethnographical evidence coming

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<sup>38</sup> i.e. *Austen* (1979, 1988, 1992): see *supra*.

<sup>39</sup> To do so, Nunn relied on the pivotal work by *G. P. Murdock* (1959) on African ethnic groups. The ethnic assignation is made based on a series of qualitative reports from various main harbors on each of the four slave trade routes. Even if the results are partial, the ethnic assignation is statistically robust and the subsequent historical and cultural counter-analysis confirms the trends spotted by Nunn and his consequent allocation of enslaved people to modern-day countries, that is based on slaves' ethnic origin.

## ESTIMATED TOTAL SLAVE EXPORTS BETWEEN 1400 AND 1900 BY COUNTRY

Isocode	Country name	Trans-Atlantic	Indian Ocean	Trans-Saharan	Red Sea	All slave trades
AGO	Angola	3,607,020	0	0	0	3,607,020
NGA	Nigeria	1,406,728	0	555,796	59,337	2,021,859
GHA	Ghana	1,614,793	0	0	0	1,614,793
ETH	Ethiopia	0	200	813,899	633,357	1,447,455
SDN	Sudan	615	174	408,261	454,913	863,962
MLI	Mali	331,748	0	509,950	0	841,697
ZAR	Democratic Republic of Congo	759,468	7,047	0	0	766,515
MOZ	Mozambique	382,378	243,484	0	0	625,862
TZA	Tanzania	10,834	523,992	0	0	534,826
TCD	Chad	823	0	409,368	118,673	528,862
BEN	Benin	456,583	0	0	0	456,583
SEN	Senegal	278,195	0	98,731	0	376,926
GIN	Guinea	350,149	0	0	0	350,149
TGO	Togo	289,634	0	0	0	289,634
GNB	Guinea-Bissau	180,752	0	0	0	180,752
BFA	Burkina Faso	167,201	0	0	0	167,201
MRT	Mauritania	417	0	164,017	0	164,434
MWI	Malawi	88,061	37,370	0	0	125,431
MDG	Madagascar	36,349	88,927	0	0	125,275
COG	Congo	94,663	0	0	0	94,663
KEN	Kenya	303	12,306	60,351	13,490	86,448
SLE	Sierra Leone	69,607	0	0	0	69,607
CMR	Cameroon	66,719	0	0	0	66,719
DZA	Algeria	0	0	61,835	0	61,835
CIV	Ivory Coast	52,646	0	0	0	52,646
SOM	Somalia	0	229	26,194	5,855	32,277
ZMB	Zambia	6,552	21,406	0	0	27,958
GAB	Gabon	27,403	0	0	0	27,403
GMB	Gambia	16,039	0	5,693	0	21,731
NER	Niger	133	0	0	19,779	19,912
LBY	Libya	0	0	8,848	0	8,848
LBR	Liberia	6,790	0	0	0	6,790
UGA	Uganda	900	3,654	0	0	4,554
ZAF	South Africa	1,944	87	0	0	2,031
CAF	Central African Republic	2,010	0	0	0	2,010
EGY	Egypt	0	0	1,492	0	1,492
ZWE	Zimbabwe	554	536	0	0	1,089
NAM	Namibia	191	0	0	0	191
BDI	Burundi	0	87	0	0	87
GNQ	Equatorial Guinea	11	0	0	0	11
DJI	Djibouti	0	5	0	0	5
BWA	Botswana	0	0	0	0	0
CPV	Cape Verde Islands	0	0	0	0	0
COM	Comoros	0	0	0	0	0
LSO	Lesotho	0	0	0	0	0
MUS	Mauritius	0	0	0	0	0
MAR	Morocco	0	0	0	0	0
RWA	Rwanda	0	0	0	0	0
STP	São Tomé & Príncipe	0	0	0	0	0
SWZ	Swaziland	0	0	0	0	0
SYC	Seychelles	0	0	0	0	0
TUN	Tunisia	0	0	0	0	0

Figure 1: total number of exported slaves per African country and per slave trade route (original from Nunn, 2008).

from further studies<sup>40</sup>. Moreover, the data collected are also robust to the underestimation due to the mortality rates on each route that force the sample to be physiologically underestimated.

Once he built his dataset, Nunn rearranges his data on slaves in order to calculate a *measure of local intensity of slave extraction*: that is, for each country<sup>41</sup> in his dataset he first *aggregates* data of each trade route and each time period, in order to have a unique total amount of exported slaves, and then he computes the ratios of the number of exported slaves and the land area<sup>42</sup> of the country. In order to be then regressed on a log-log fashion, Nunn computes the logarithms of these very data.

Thus, the general formula to obtain the indicator of the export ratio for each country  $i$  is:

$$\ln(\text{export}_i) = \ln\left(\frac{\sum_{t=1}^4 \sum_{j=1}^4 n \cdot \text{slaves}_{ijt}}{\text{area}_i}\right)$$

Where we consider  $j = \{1, 2, 3, 4\}$  being the indicators for, respectively: the Atlantic-, Indian-, Trans-Saharan- and Red-Sea routes and  $t = \{1, 2, 3, 4\}$  being the indicators for, respectively, the periods: 1400-1599; 1600-1699, 1700-1799, 1800-1899.

It is therefore important to stress the fact that Nunn does compute neither *any route-specific*, nor *time-specific*, observation<sup>43</sup>. That is: he regresses the total number of

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<sup>40</sup> The most prominent being *Koelle (1854)*, *Murdock (1959)*, *Curtin (1969)*, *Higman (1984)*, and *Hall (2005)*.

<sup>41</sup> Nunn's dataset consists of 52 countries out of 55 African countries. Indeed, Eritrea, South Sudan and Western Sahara are missing. The main reason of this lays on the fact that data for Eritrea are merged with Ethiopia and data on Western Sahara are merged with Morocco (in this last case, the total amount of exported slaves in the *de facto* Morocco remains zero). Of course, data on South Sudan are not disaggregated from Sudan, as the study was published in 2008 and South Sudan gained independence in 2011.

<sup>42</sup> In his dataset, Nunn expresses the land area in millions of square kilometers; however, his ratios are computed by dividing for land area values that are expressed in *thousands* of square kilometers.

Moreover, Nunn proposes also a ratio between exported slaves and the country's population. Even if this datum is consistent as well, Nunn uses the land-normalized data in his official regressions, as such data are not sensitive to the physiological changes in population.

<sup>43</sup> In fact, Nunn estimates time-related ratios for each country (see *Nunn, 2008*; p. 151); however, he ends up using only time-aggregated data in his regressions. We think that especially this lack of interest for the time-period frames of the slave trades is a big *vulnus* to Nunn's study. Moreover, it justifies the critic on compressed history by *Austin (2008)*: see *supra*, paragraph II.IV.

exported slaves on land area, without considering the specific route these people were exported on<sup>44</sup>.

Moreover, the other pivotal data used and included in Nunn's dataset are the ones related to the per capita GDP observations per country; Nunn relies on *Maddison (2003)* to use a single specific year-related datum: per capita GDP in year 2000.

Further data include a series of variables that are then organized in two vectors. More specifically, Nunn identifies the vector  $\mathbf{C}_i$ , i.e. a set of eight dummy variables to control for the specific European country that colonized the African country<sup>45</sup>.

Finally, there is vector  $\mathbf{X}_i$ , i.e. a second set<sup>46</sup> of control variables to control for either geographical, climatic, cultural and production-related features of each country:

- The *geographical* variables account for: latitude, longitude, and the logarithm of the ratio between a country's length of the coastline and the same country's area.
- The *climatic* ones account for: minimum monthly rainfall, average maximum humidity and average minimum temperature.
- The *cultural* controls are three dummy variances controlling for: the countries of the Mediterranean Africa<sup>47</sup>, the island countries<sup>48</sup>, countries adopting Civil-law legal frames and each country's percentage of muslim people over the entire country population.
- Eventually, the *production-related* ones account for the annual average per capita production between 1970 and 2000 of: gold, oil and diamonds.

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<sup>44</sup> A further study, *Nunn (2011)*, provides route-specific data in its regressions. Such data account only for the two most-exporting routes; namely, the Trans-Atlantic and Indian routes. Note, however, that the mere Trans Atlantic route only accounts for *more than 67%* of the whole phenomenon: these findings can therefore be very significative to contribute to explain the phenomenon.

<sup>45</sup> These eight dummy variables account for either being colonized by: no one (*colony0*), the UK(*colony1*) France (*colony2*), Portugal (*colony3*), Belgium (*colony4*), Spain (*colony5*), the UN (*colony6*, accounting for Namibia only), or Italy (*colony7*, accounting for Libya only).

<sup>46</sup> We must stress the fact that vector  $\mathbf{X}_i$  is a *generic and broad* way to identify the whole set off control variables. In the following sections, to be more precise and clearer, we will define and use in our model some specific sub-vectors of the general vector  $\mathbf{X}_i$ .

<sup>47</sup> i.e. Egypt and the four Maghreb countries: Morocco, Algeria, Tunisia and Libya.

<sup>48</sup> Namely: Mauritius, Seychelles, São Tomé e Príncipe, Cabo Verde and Comoros. It is important to stress the fact that none of these countries ever experienced slavery – in fact, these countries were places where slaves were actually either imported or being transiting towards the New World.

### III.III On regressions, findings and interpretations

#### III.III.I OLS results

Nunn regresses his country-based ethnic data on a unique, one-shot temporal OLS log-log regression frame. That is: he condenses his data on exported slaves on only *one* cross-sectional<sup>49</sup> dataset.

The author's general model is the following one:

$$\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + X_i' \gamma + \varepsilon_i \quad (0)$$

where our dependent variable  $y_i$  is the per capita GDP (in equivalent USD) of country  $i$  in year 2000; the export ratio (i.e. our independent variable) is defined as *supra*, and the two vectors<sup>50</sup> (i.e.  $C_i$  and  $X_i$ ) account for both the colonizer and the geo-climatic, cultural-productive controls – their effects being, respectively,  $\delta$  and  $\gamma$ .<sup>51</sup>

From this general model, Nunn generates a series of *six* different regression models to analyze his data.

Nunn's first regression accounts for the effect of the logarithm of the export rate on the country's per capita GDP in year 2000, controlling only for the so-called *colonizer effect*, i.e. the  $\delta$ -effects coming from vector  $C_i$ :

$$\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + \varepsilon_i \quad (1)$$

His second regression accounts for the same parameters of the regression model (1) and also includes a new set of controlling variables on geographical features of each country; namely, each country's latitude, longitude, lowest monthly rainfall, average maximum humidity, average minimum temperature and the logarithm of each country's coastline (normalized by the country's land area).

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<sup>49</sup> Here it is straightforward to spot mere and approximative "*history compression*". See and compare with, once again, *Austin (2008)*.

<sup>50</sup> Due to the properties of matrices, the vectors must be *transposed* to be used in the model and multiplied by the effects.

<sup>51</sup> The series of Nunn regressions is available in our *Appendix*: see *Appendix, A.I.*

The resulting model is the same in (0) – now, the  $\mathbf{X}_i$  vector accounts *only* for the geographical features. We define  $\mathbf{G}_i$  as the particular case in which the the  $\mathbf{X}_i$  vector contains only such geo-climatical controls.

The consequent model is:

$$\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + G_i' \gamma + \varepsilon_i \quad (2)$$

The third regression restricts the sample to 42 countries, dropping the 5 North African and the 5 island countries. This is done in order to both drop non-Sub-Saharan countries (who were affected at most by some side features of the Trans-Saharan slave trades and were not trading people with the Americas) and not to account for island countries (whose history does not concern slave trades as continental African countries)<sup>52</sup>. Model (3) is the same of (2), though limited in its observations:

$$\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + G_i' \gamma + \varepsilon_i \quad \forall \text{ country } i \mid \text{neither island nor North African} \quad (3)$$

The forth regression adds controls for both Maghreb countries and island countries to the whole sample, in order to capture a specific regional effect of these nations. It also controls for the French legal<sup>53</sup> origin of a country's legal system. Each indicator is set as a dummy variable. Also the percentage of muslim people in the country is added as a further control. We define  $\mathbf{K}_i$  as the “cultural vector” including both geo-climatic and cultural control variables.

The model used is therefore the following one:

$$\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + K_i' \gamma + \varepsilon_i \quad (4)$$

The fifth regression adds three productivity parameters to the vector of control variable used in regression (4); namely, it also control for the production of gold, oil and diamonds<sup>54</sup>. We define this new vector as  $\mathbf{P}_i$ .

$$\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + P_i' \gamma + \varepsilon_i \quad (5)$$

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<sup>52</sup> We have to spot here that it would have been better to offer also a furtherly-restricted sample that hadn't accounted also for Southern African countries, as those countries never experienced either systematic or formal slave trades *stricto sensu*.

<sup>53</sup> That is, countries adopting the so-called Civil law.

<sup>54</sup> Each of these three variables is normalized on the country population and taken in logarithm.

Finally, the sixth regression restricts the sample to 42 countries again and drops the dummy variables for both islands and Magreb countries from former vector  $\mathbf{P}_i$ . We define this new vector as  $\mathbf{S}_i$ ; the model is:

$$\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + S_i' \gamma + \varepsilon_i \quad \forall \text{ country } i \mid \text{neither island nor North African} \quad (6)$$

Nunn's results are straightforward: a clear, net, negative effect of the logarithm off the export ratio on the logarithm of per capita GDP is spotted. That is: controlling for either variables or vectors of dummy-variable effects, the percent change in the intensity of exportation has a statistically-significant negative percentile effect on the variation of per capita GDP.

### III.III.II IV results

The very same conclusions are reached also with an Instrumental Variable analysis that Nunn conducts to further explore his results in *section V* of his work: instrumenting for the trade-route distances from each country's geographical centroid to the nearest exporting and importing harbor (i.e. the continuous variables  $Atl_i, Ind_i, Sah_i, Red_i$ ), Nunn checks for the eventual effects of instrumented export ratio on per capita GDP.

The consequent *Two-Stages Least Squares* is run in the following two passages:

- 1)  $\ln(\text{export}_i) = \beta_0 + \beta_1 Atl_i + \beta_2 Ind_i + \beta_3 Sah_i + \beta_4 Red_i + w_i$
- 2)  $\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + X_i' \gamma + \varepsilon_i$

That is: in the first stage, Nunn regresses the instrumental distances from the nearest port (related to each trade route) from the country's geographical centroid, in order to describe the export ratio. Then, in the second stage, Nunn plugs his instruments in the general equation (0). More precisely, he regresses his instruments on the following four second-stage models:

- A.  $\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + \varepsilon_i$
- B.  $\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + \varepsilon_i$
- C.  $\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + G_i' \gamma + \varepsilon_i$
- D.  $\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + G_i' \gamma + \varepsilon_i \quad \forall \text{ country } i \mid \text{neither island nor North African}$

That is, in the first model Nunn checks the direct, *immediate* instrumental effect of the export ratio on per capita GDP; the effects with colonizer effects (B); the effects with both colonizer and geo-climatic effects in both the whole (C) and restricted (D) samples.

Nunn concludes that his results are robust and very explicative in evidencing that, the farther the gathering spot from the exporting harbor, the lower the slave export rate.

### *III.III.III Correlational analyses*

Further analyses based on correlations between the export ratio and some parameters – i.e. each country's state development, ethnic fractionalization and the population density in 1400 – let Nunn better define some ulterior features of the slave trades. That is: enslavement was higher, the higher a country was ethnically fractionalized, the more densely it was populated and the less developed it is today.

In the end, even if Nunn does not call for pure causal evidence *per se* and instead proposes some further feasible explanations to his results (at least from a correlational point of view), his work seems to provide strong *evidence* on some peculiar negative effects of the Slave Trades over African dynamics, that can also be useful at describing current economic patterns in Africa<sup>55</sup>.

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<sup>55</sup> Indeed, Nunn points out how the economic development of the lowest exporting countries has been very different in the growth of the average real per capita GDP. See *Nunn (2008)*, Figure VIII.

### III.IV Critics of Nunn's conclusions and call for better evidence

The work by Nunn does not come out without stressing some weakness of both the approach used and its results. Indeed, the methodology Nunn used consists in creating a *unique* cross-sectional dataset. This means that, in the words of *Austin (2008)*, he is effectively and evidently «compressing history».

Can such a historically-clustered approach be the most effective in explaining economic dynamics? Can data referenced on a *single* year of per capita GDP describe the factual economy of a country *in toto* and *per se*? We strongly disagree on such approach.

Firstly, our bottom line is that history *mustn't* be compressed *per se*: this means that we have to account for a more year-sensitive approach to such a dynamical matter (as economics is). And, moreover, history shouldn't be compressed, since each historical period has its peculiar features. The threat we spot is that, by compressing history, we do risk not to give each historical period its own importance and its proper value.

Nunn decides to collapse 500 years of African history on the Slave Trades on *only one, unique* datum. This implies that his conclusions are made over an average value that does *not* (and *cannot*) take into account even *any* century-specific effects; moreover, we should expect a yearly-decreasing effects of the slave trade phenomenon on economies as long as years pass from the end of the phenomenon. That is: *ceteris paribus*, we expect a less negative effect of the phenomenon onto country A's economy if, say, slave trades ended in country A *tot* years before when they ended in country B.

Nunn's analysis does not even permit to look for such feasible year-dependent effects.

Moreover, even if Nunn defends his regression methods on his data, we do challenge also the regression frame from a *logical and theoretical* point of view. Our bottom line is that, even if Nunn manages at providing mathematical evidence to prove the validity of both his data and methods, we claim that such conclusions are either inconsistent or unacceptable.

Thus, in our work, we spot such weaknesses of the pionieristic work by Nunn and call for both different approaches and different conclusions. Our aim is to propose an array of different approaches on the same matter in order to better investigate, understand and explain the underpinning dynamics to the phenomenon of the African Slave Trades.

## IV. A Logical Critique and replication of *Nunn (2008)*

### IV.1 *Divergences and observations in Nunn (2008)'s results, and possible interpretations*

Our first concern comes from the very same data Nunn used. Indeed, if we focus on the data in *Figure 1*, we can spot the great variation on the total number of slaves from country to country. Indeed, we have some countries that exported millions of human beings, while other countries exported either zero slaves (as the island nations around Africa's coastline) or «virtually no slaves»<sup>56</sup>.

Once we noticed such variance in data, we questioned on the fact if it were the better solution to consider data as country-clustered: to us, concentrating such human and historical information into a single country observation carries out the risk of an harmonization of our sample. Put another way: we risk to have the lower-exporting countries as overrepresented in computing the log-centile variation effect, whereas the top-exporting countries are *even underrepresented* in the same analyses.

Starting from an analysis on Nunn's dataset, we spot that 11 countries in our sample account for *zero* exported people, whereas the top ten exporting countries account for million of human beings: the risk of basing conclusions on a log-log regression on such country-clustered data is therefore to obtain a result that is consistently *biased* towards such non-exporting countries.

Put another way: from a logical point of view: a log-log regression makes us predict a *relative*<sup>57</sup> effect and does not consider the *absolute* features of our sample at all. By regressing 52 observations as Nunn did, we obtained a fair relative effect that however comes out from a too unbalanced sample. Indeed, in Nunn's regressions, the weight of a zero-exporting country is *the same* as the weight of Angola that exported more than 3.5 million human beings. Such factual "country harmonization" cannot be accepted.

If we do believe that one human being's life worths as the one of any other human being – *as we do* – we cannot accept such a mere relative analysis: otherwise, the more than 13 millions people exported by the top-eleven exporting countries would worth *exactly* as the number of people exported by the eleven countries that exported zero

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<sup>56</sup> See *Manning (1983)*, p. 839. Manning refers to the countries in Southern Africa – namely South Africa, Namibia, Lesotho, eSwatini, Zimbabwe and Botswana. Such countries experienced a very little level of people extraction; as such area in Africa exported less than 3500 human beings in 500 years, we do practically agree with Manning's suggestion.

<sup>57</sup> Relative, as it is interpreted as a variation on percentage (i.e. on a relative indicator).

people. That is, we are equalling more than 13 million lives to zero lives: Nunn's relative analysis is consider the weight of countries where million people were missing *exactly* as the weight of countries that did not have *any* enslavement. It is therefore straightforward that – even if a relative analysis *has* some sense – its sense is *not meaningful from a logical, historical and human point of view*.

That is: by forgetting the *absolute* (and also numerical) value of a single enslaved person<sup>58</sup> – we are completely loosing the attachment to the reality of the very facts.

Given that each country *de facto* worths the same in Nunn's work, now we propose the reader to focus on the *weighted* worth of each country in the same sample, given the absolute value of the absolute number of factual exported human beings. That is: if a country exported 15% of the total number of enslaved people, we have to conclude that such country shows (and should worth) the *very same 15%* of the overall phenomenon.

To be better aware of the absolute features of the African Slave Trades phenomenon, we want to first highlight – as Nunn did in his analysis – the *total amount* of people exported from each African country, regardless of either the time period or the specific slave trade route.

That said, we computed the relative weights (i.e. the *shares*, the fractions on the total number of slaves) for each African country – given the absolute number of people exported, that in Nunn's sample accounts for 15,677,543 people.

As Nunn pointed out, this number is both indicative and underestimated, as it does not take into account the death/mortality rates that enslaved people experienced during the trades. More specifically, estimates of cross-Atlantic mortality rates ranged from 7% to 20%, depending on the time period and the length of the voyage<sup>59</sup>. Death rates during the trek to the coast are known with less certainty, but estimates range from 10% to 50%.<sup>60</sup>

Eventually, if we use Nunn's data and apply a potential average additional general death-related +30% on each country's amount of total enslaved people, we end up dealing not with just 52 mere countries, but with a set of *potentially more than 20,380,000 people*.<sup>61</sup> Given such huge numbers, it is ways reasonable that, now, each country

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<sup>58</sup> From both a statistical and, we dare, a *moral* point of view.

<sup>59</sup> See Curtin (1969), pp. 275–286; Lovejoy (2000), p. 63.

<sup>60</sup> See Vansina (1990), p. 218 and, again, Lovejoy (2000), pp. 63–64.

<sup>61</sup> As data are not altered in relative differences by this mortality-rate weight, we follow Nunn's suggestions and report here only the country-based absolute repartition of the total number of enslaved people, without weighting numbers by the mortality rates.

observation *must* account for its relative weight into the phenomenon (e.g. the Angolan observation now does count for *more than 23%* of the whole number of human beings involved in the phenomenon, and *not any more* as 0.019% of the phenomenon, i.e. as *one mere* country out of fifty-two African countries).

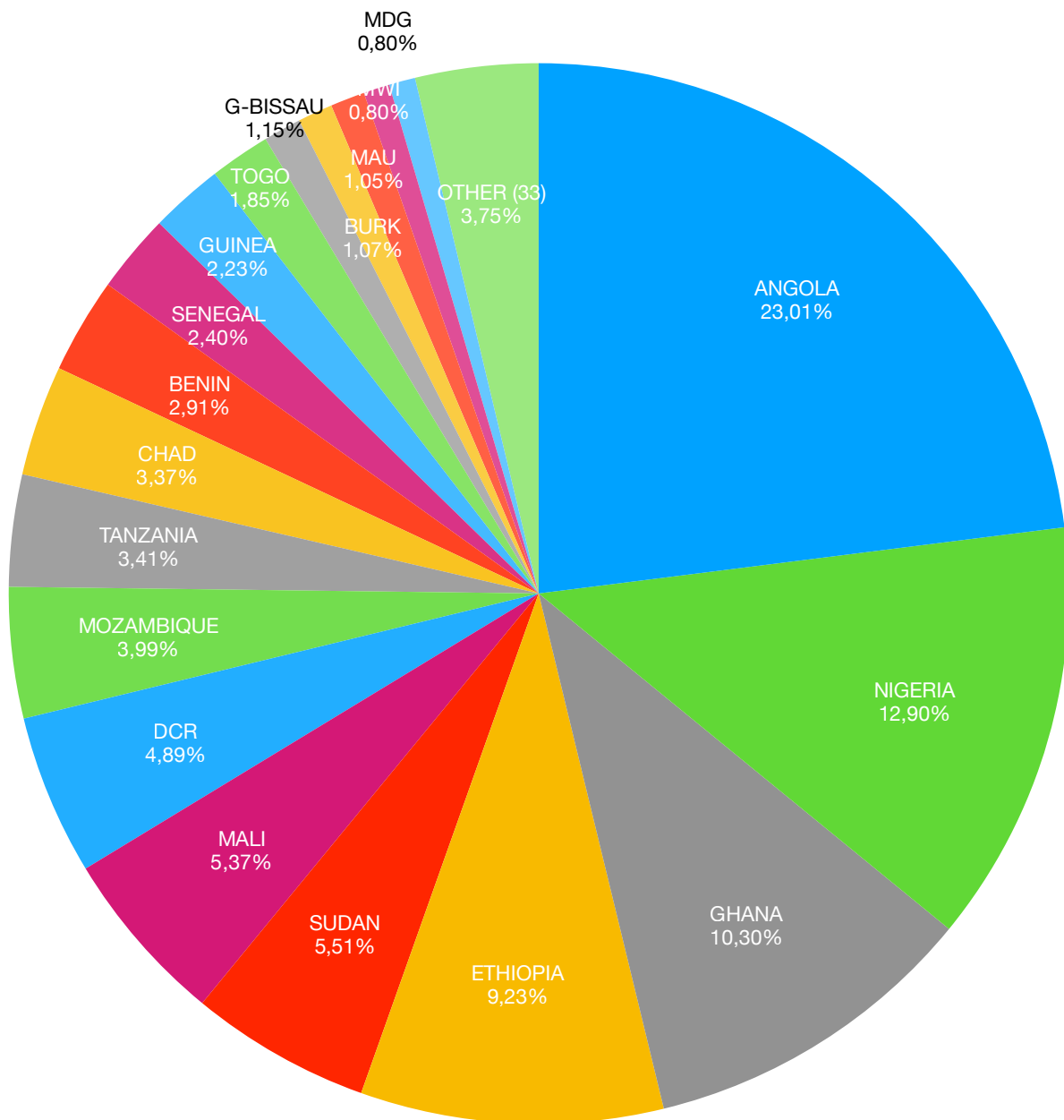
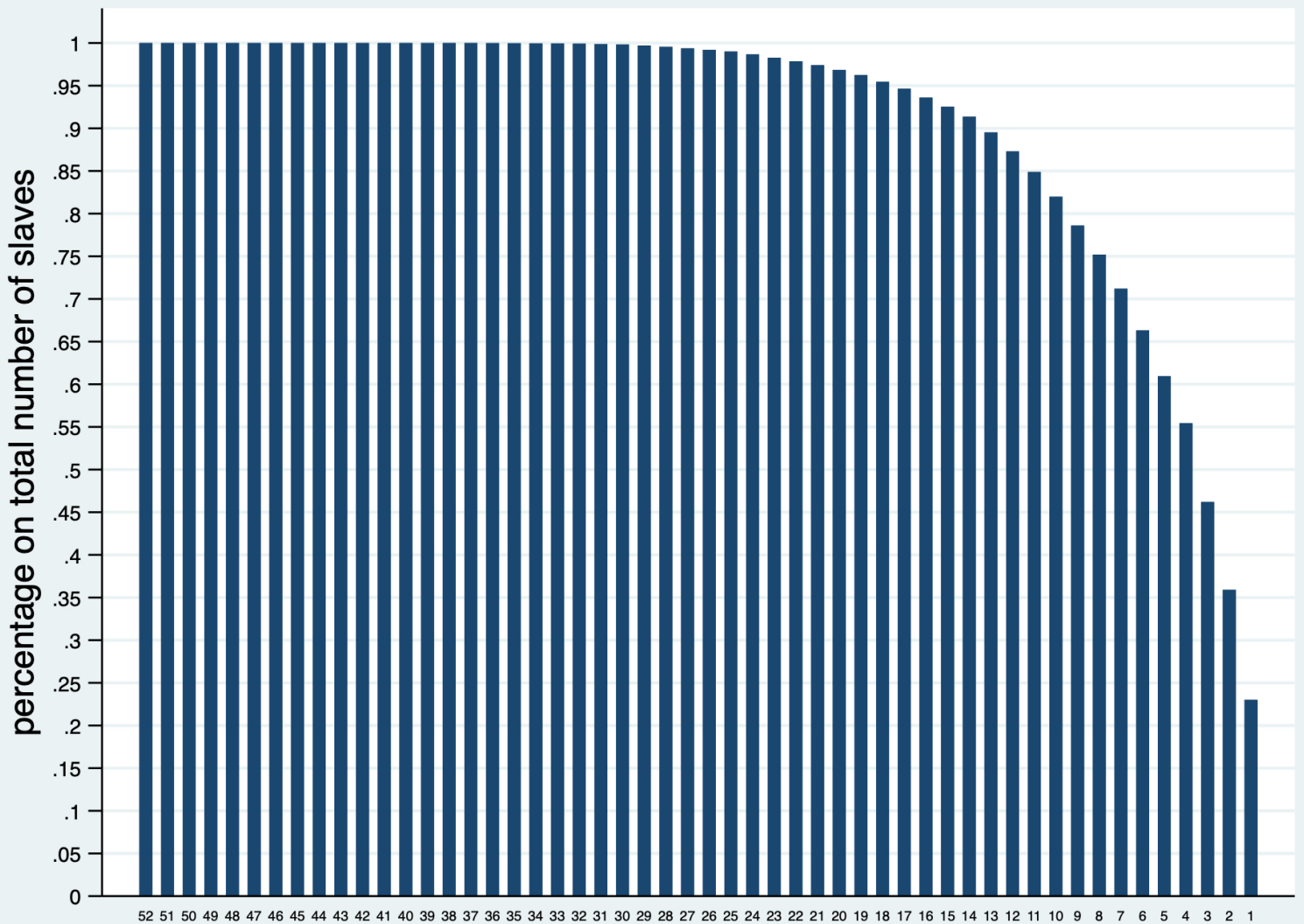


Figure 2: Percentages on the total number of enslaved people by each country.

As we can see from the pie graph in Figure 2, once we compute the relative weights of each country with respect to the total absolute number of enslaved people in Africa, now

the phenomenon seems to be better described in its relative country-based intensities. We can also spot that, eventually, a little bunch of countries does account for a very large share of the overall phenomenon, whereas the cumulative share of the 33 less-exporting countries (that would be an absolute majority subset in Nunn’s analysis) does account only for *less than 4%* of the overall phenomenon.

More specifically, if we create a series of sub-sets containing each #-top exporting country, we can show the cumulative percentage of the slave trade phenomenon, as it is clear from the bar chart in *Figure 3*.



*Figure 3: Cumulative shares of the top-# exporting African countries. Each number on the x-axis accounts for the number of the top-exporting countries in the selected subset.<sup>62</sup>*

<sup>62</sup> E.g. the bar corresponding to 4 accounts for the cumulative shares of the number of enslaved people in the top-4 most-exporting countries – namely, Angola, Nigeria, Ghana and Ethiopia. As we can see, just these four countries overall exported more than half of all people enslaved from Africa (namely, nearly 8.700.000 people over 15.677.543).

As it comes out, the subset of the nineteen top-exporting countries accounts for *more than 95,5%* of the *overall* phenomenon. It is therefore reasonable to focus on such these most-exporting countries to better understand both dynamics and effects of the Slave Trades phenomenon and not to consider each country as worthing the same as the others – especially, as counting the same as countries that *never* experienced enslavements.

#### *IV.II Reanalyzing Nunn (2008): our suggestions and strategy*

That said, we come to what our strategy and analyses will be. Our bottom line is to first replicate Nunn's regressions, showing the differences in tendencies between the most-exporting countries and the other low-exporting countries in the sample. Our first work does not challenge either the structure or the models by *Nunn (2008)*; instead, it wants to be focused on the different trends in the most illustrative subsets of Nunn's sample, in order to provide a more detailed analysis of the phenomenon and to also spot eventual divergences and other feasible explanations from the very same data from Nunn.

Therefore, our first task will be to replicate the OLS results from *Nunn (2008)*, and then to focus on both the top-19 exporting countries and the bottom-33 exporting countries<sup>63</sup>.

Then, we will turn to a time-dependent analysis that is based on a dynamic conception of economic performances: that is, we will investigate the effect of the export ratio on the dynamically-changing outcomes of per capita GDP over years, not focussing on a unique year-observation anymore. As before, we will firstly run an aggregate analysis based on the complete set of 52 countries and then look for the main features of each one of our two subsets.

Finally, we will propose an other panel analysis accounting for the interactional year-effects of the export ratio on current economic performances. Also in this case, we will firstly run an aggregate analysis and then look for our two subsets.

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<sup>63</sup> We highlight the fact that each subset is created from the set of all countries, put in a descending order with respect to the total amount of enslaved people by country.

Zero-exporting countries are considered when selecting the bottom-exporting countries.

The end of this chapter will be dedicated to our replications and analyses on the same basis as the one for the paper by Nunn<sup>64</sup>. Then, *Chapter V* and *Chapter VI* will be devoted to the presentation of our two further approaches on the same Slave Trade data on different, dynamic and time-varying economic outcomes.

#### *IV.III Preparing our dataset*

In order to both implement our dataset, we start from Nunn's database and rearrange it with yearly-based data on each country's per capita GDP coming from both *Maddison (2003)* and from the *Maddison Project Database (Maddison, 2023)*. Our main strategy in arranging the dataset is then to create a series of dummy variables equalling one if and only if the country belongs to the #-top-exporting country subset.<sup>65</sup> That is: the dummy variable *top26* will equal one for all the twenty-six top exporting countries, and zero otherwise.

Such variables are not inserted in the models, but are useful to run *conditional regressions* on subsets of the original sample. Indeed, running – say – a regression conditional on the fact that the dummy *top19* equals 1 will provide results only for the top-19 subset, whereas running a regression conditional on the fact that the dummy *top19* equals 0 will provide results for each country other than the top-19 most exporting ones, i.e. the bottom-33 subset.

#### *IV.IV Correlation analyses*

Our first analysis involves a check on the correlation between Nunn's independent and dependent variables, namely the logarithm of the export ratio and the logarithm of per capita GDP in year 2000. Indeed, from such correlation pattern we can spot a different tendency between top-exporting and low-exporting countries.

As we can spot from *Figure 4*, the overall trend considering the whole sample by Nunn is clearly spotting a negative correlation between the two variables. This result can be interpreted in a common-sense and convincing way: indeed, it seems that – whenever

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<sup>64</sup> Indeed, we used and worked on Nunn's very same dataset.

<sup>65</sup> As in the case of the generation of the top- and bottom- subsets, we firstly sort our country observation in a descending order.

you export more and more people<sup>66</sup> from a country, you will end up somehow negatively affecting the subsequent economic outcomes.

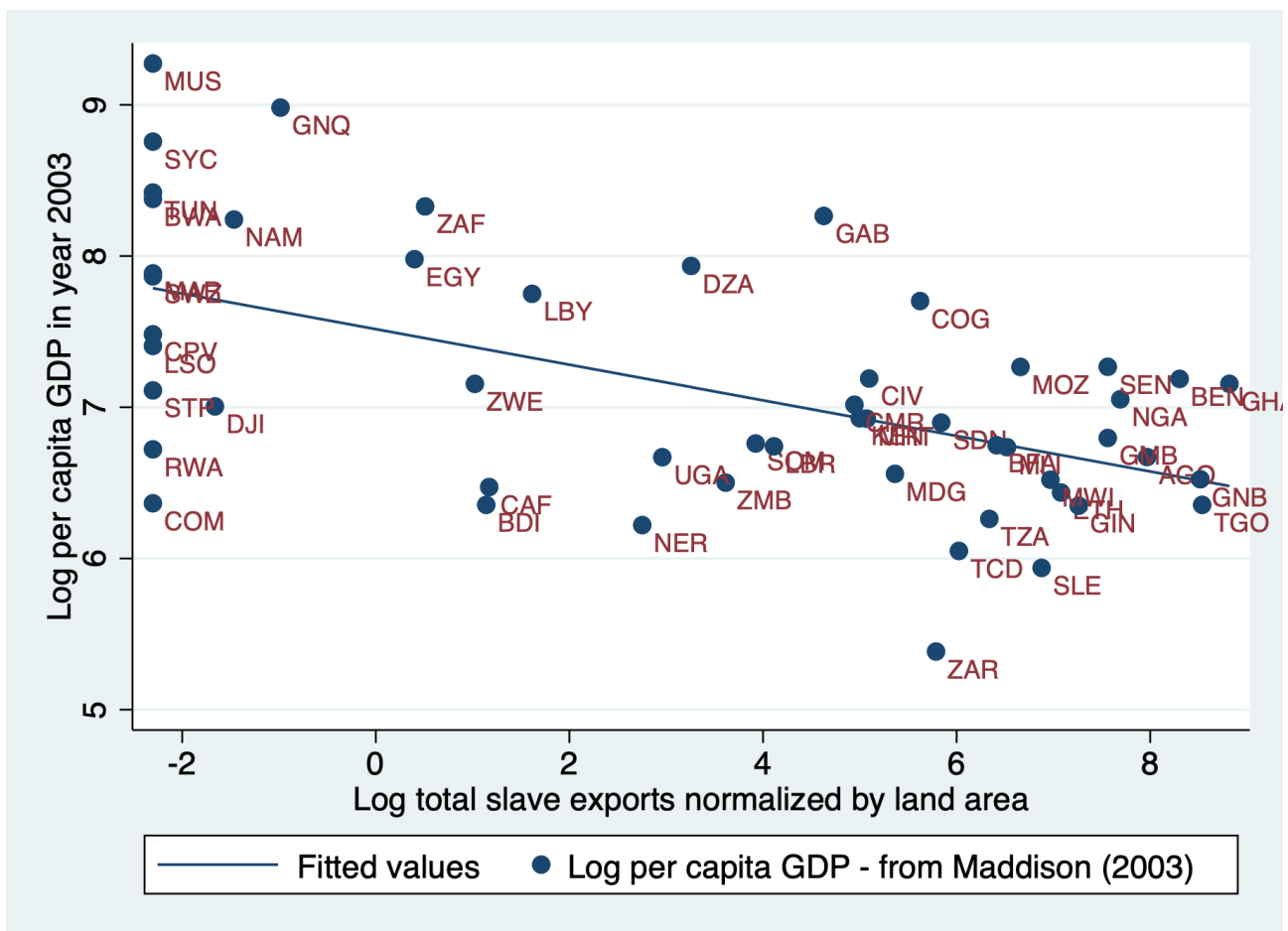


Figure 4: Correlation (scatterplot and fitting line) between log of the export ratio and log of per capita GDP in year 2000 – overall 52-country sample.

On the other hand, *Figure 5* provides evidence for the subsets of top-19 exporting countries and bottom-33 exporting countries.<sup>67</sup> As we can see, the trends differ heavily between the two subsets. In the end, it does seem that the lower export ratios for low-exporting countries has been more detrimental to their economy than what the high exports for top-exporting countries did<sup>68</sup>.

<sup>66</sup> That is, more precisely, when the intensity of the extraction is higher.

<sup>67</sup> Our results on correlation analysis are coherent and consistent from the top-23 / bottom-29 subsets on. That is, the trend is the one described even if considering the top-23 exporting countries, i.e. the 98.27% of the whole amount of people enslaved.

<sup>68</sup> We stress that these are just mere correlations: there is neither sufficient evidence – nor intention – to draw any kind of causal relationship.

Therefore, there's some suspicion that the overall *factual* effect of the percent chance export ratio on per capita GDP might have a very different effect from the one in the original sample. That is, if we restrict our sample only to the top-19 most-exporting countries<sup>69</sup> and therefore accept to focus “only” on the 95,5% of the whole phenomenon, dynamics on effects appear to be very different, if not *even reversed*.

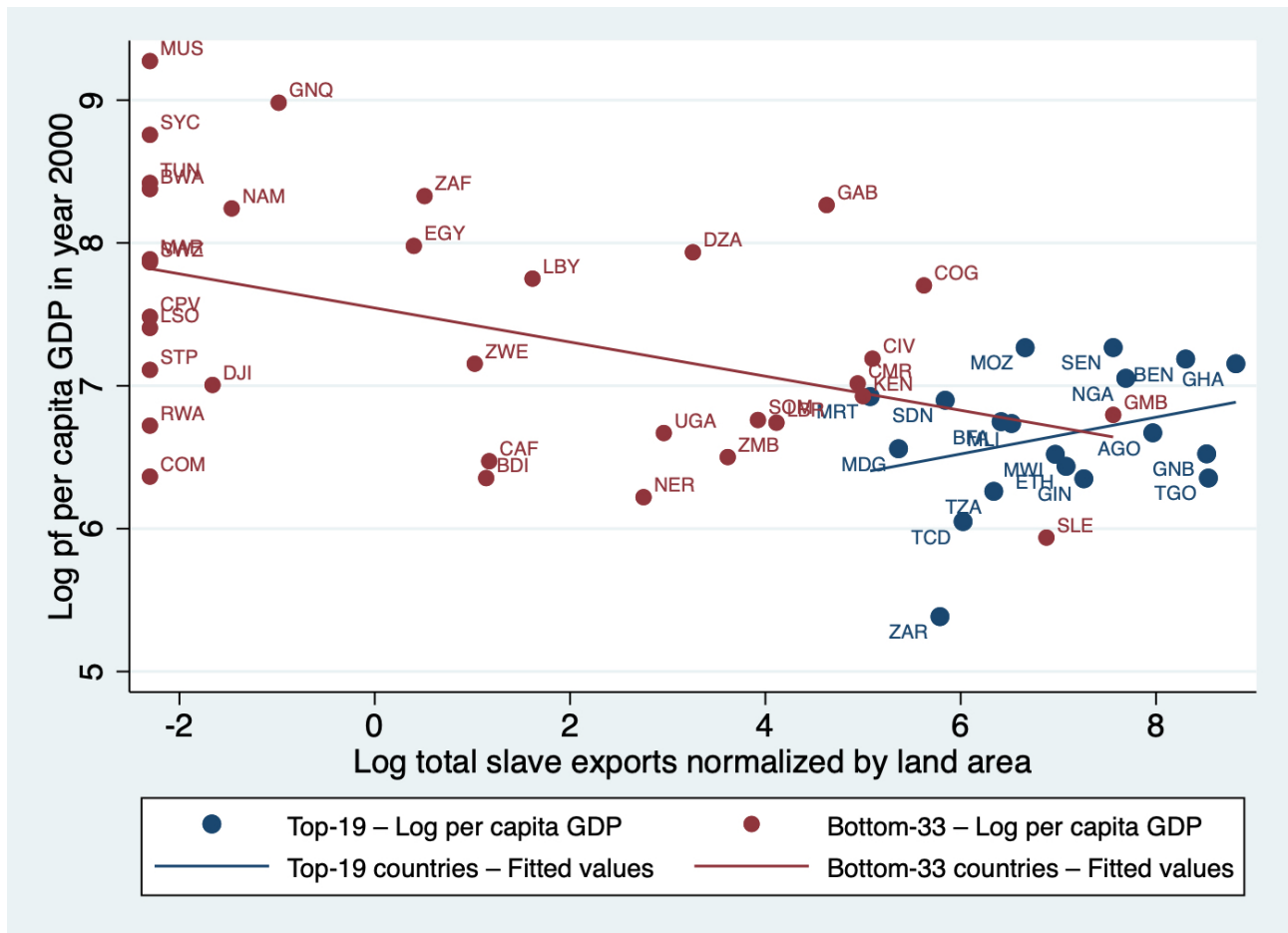


Figure 5: Correlations (scatterplots and fitting lines) between log of the export ratio and log of per capita GDP in year 2000 – top-19 and bottom-33 exporting countries subsamples.

Thus, in fact, we have some initial clue of the fact that we should start rethinking our conception of the correlation (and therefore relationship) between the African Slave Trades and their subsequent effects on current economic outcomes.

More precisely, we can infer the two following possibilities:

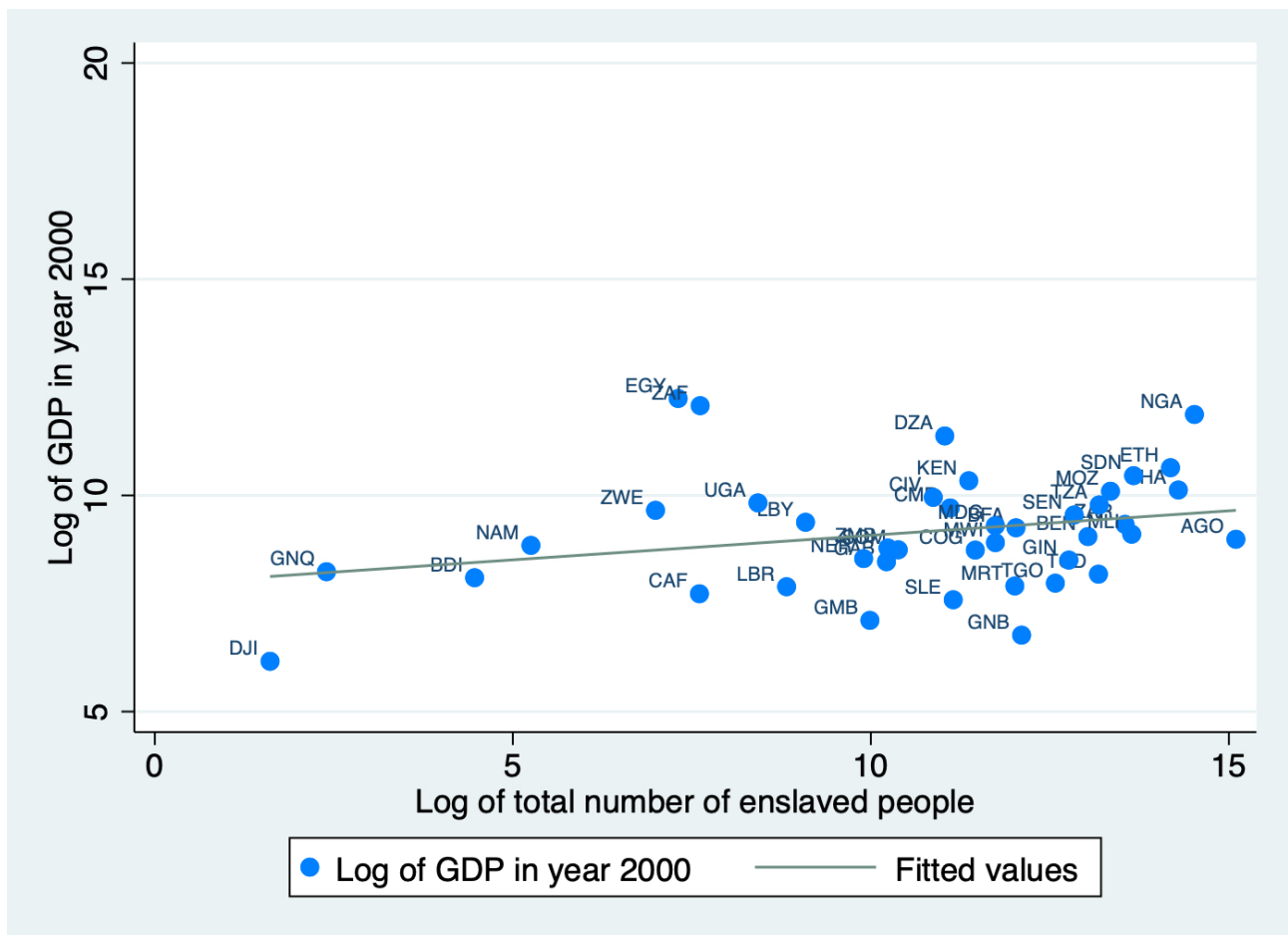
- either the analysis and method identified by Nunn is partial (i.e. implicitly biased) or incorrect (though being econometrically robust and significant); or

<sup>69</sup> That we assume to be *de facto* the most prominent countries experiencing the phenomenon and also the most affected ones by its consequences.

- the factual correlation with the economic variables in such relevant parts of the sample has to be rethought and reinterpreted in a different fashion<sup>70</sup>.

Perhaps, either the choice to select the year-2000 per capita GDP or to compute the export ratio in this way can hide some peculiar features of both the phenomenon and the subsequent country-based economic situation.

For instance, if we look for the correlation between the logarithm of the number of total enslaved people per country and the logarithm of aggregated GDP in year 2000, we end up discovering that indeed some clear positive correlation between the two variables exists, and that – moreover – the pattern is confirmed at both an aggregated level and at a sub-sample level. *Figures 6 and Figure 7* clearly show it.



*Figure 6: Correlation (scatterplot and fitting line) between log of the export ratio and log of total number of enslaved people and log of GDP in year 2000 – overall 52-country sample.*

<sup>70</sup> Indeed, it might be – as also Nunn suggested in *Nunn (2008), Section V.A* – that there exists some correlation between the export rates and some indicators of good/positive economic outcomes. *Figure 5* provides some first, general clues in this sense. *Figure 7* shows it; see *infra*.

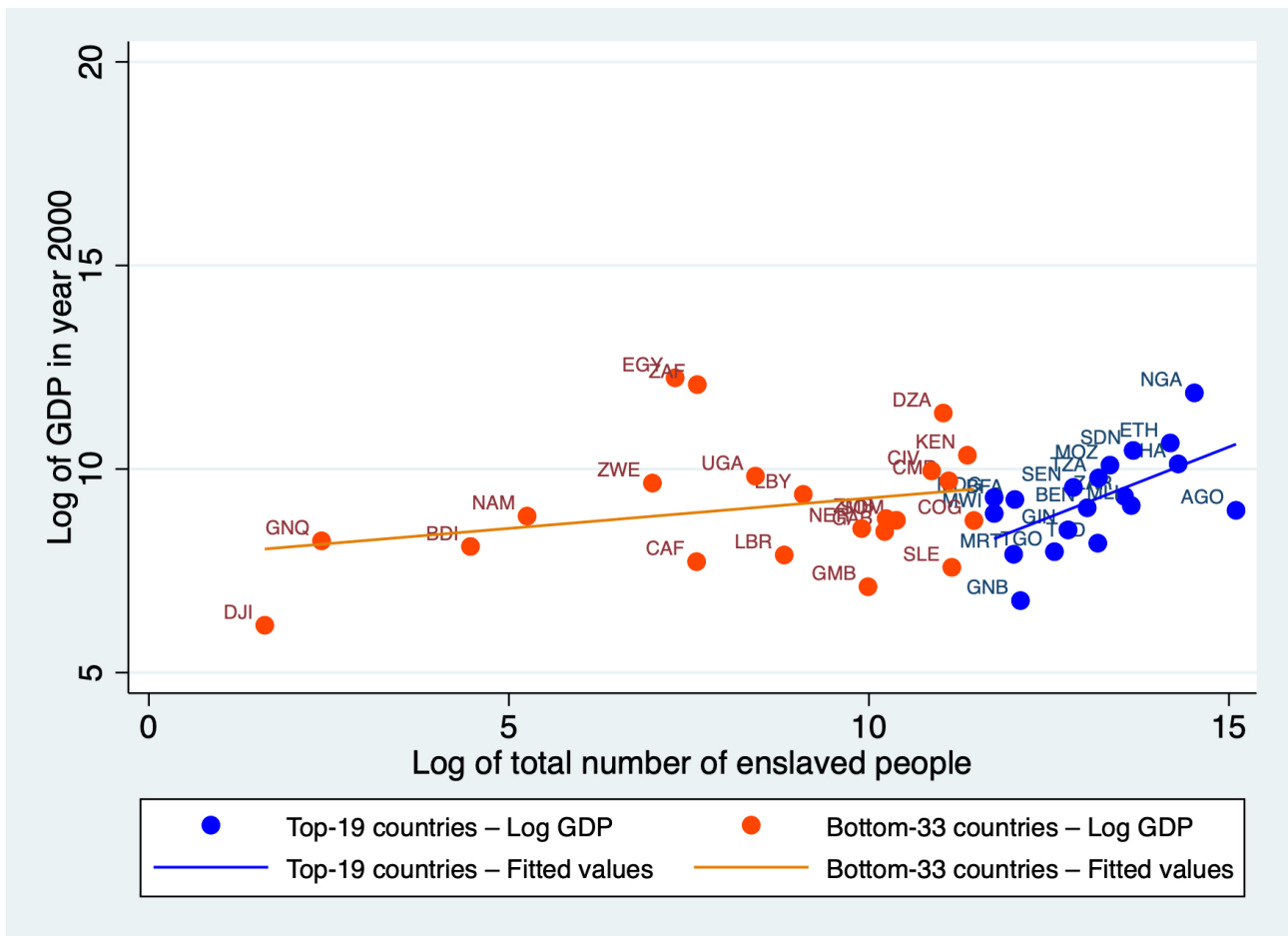


Figure 7: Correlations (scatterplots and fitting lines) between log of total number of enslaved people and log of GDP in year 2000 – top-19 and bottom-33 exporting countries subsamples.

However, we preferred to keep on being focused on the original Nunn’s frame. Even if there is some clue (and evidence) that such analysis could have been managed differently, we continue our work by showing how the two subsamples trends (with respect to per capita GDP) do differ along the whole analysis Nunn ran.

#### IV.V Further evidence for different trends: regression replications

We then start our counter-analysis on Nunn’s results by concentrating on progressive subsets of the top-exporting countries to identify if there are different patterns in our findings. We select each subset by activating the related dummy variable as an indicator to run conditional OLS regressions.

Therefore, we proceed by using such method of progressive exclusion of the less-exporting countries from our original sample. To do so, we start from the same models by Nunn that we presented in *Chapter III, paragraph III* and then present the values of the coefficients of the export ratios with respect to each selected subset. We can see an example in Figure 8, where *model (1)*<sup>71</sup> by Nunn is regressed:

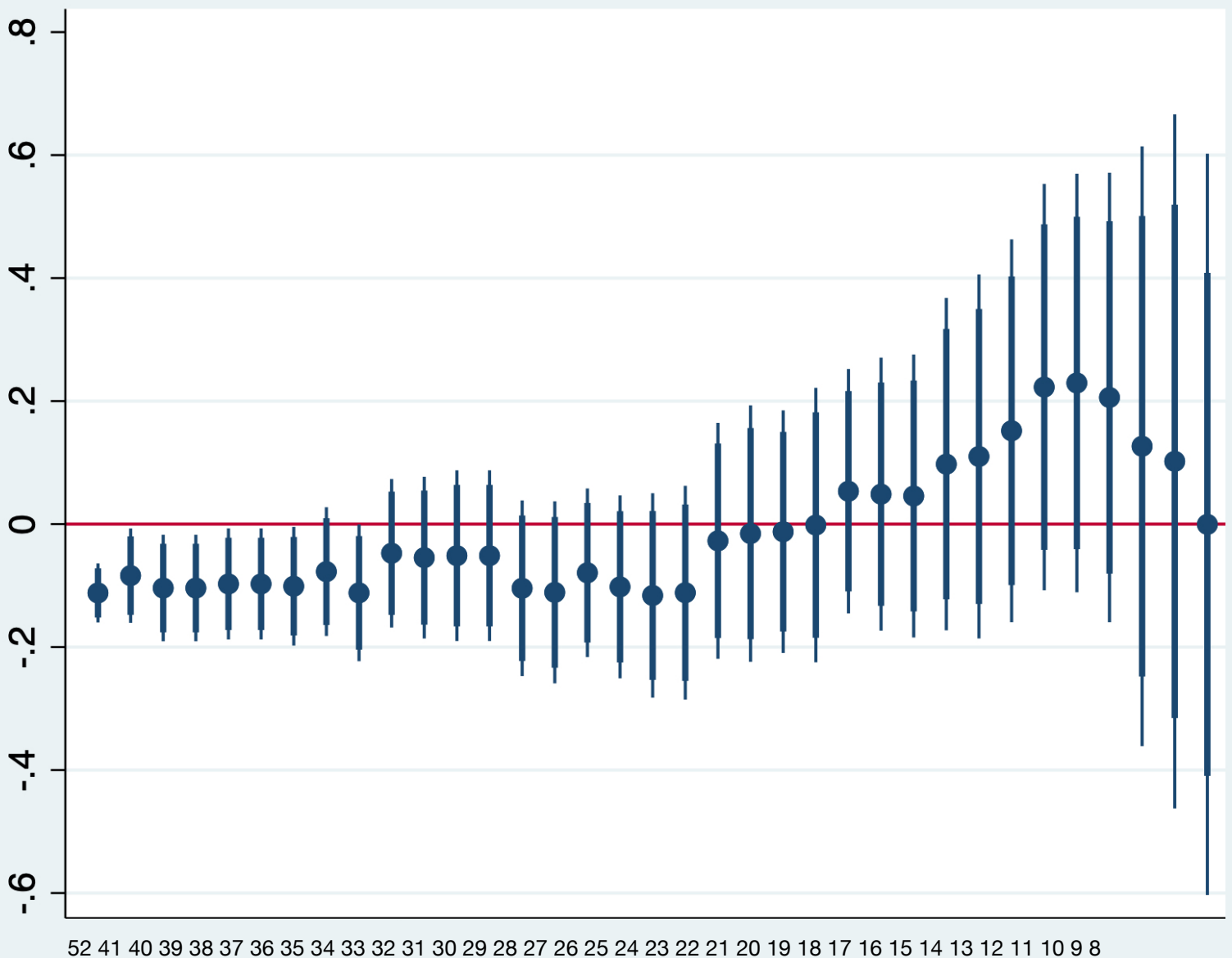


Figure 8: Values of the export ratio coefficients for each top-# exporting-country subsample. Regressions are based on Nunn’s Model (1). Confidence intervals are at  $\alpha=0.05$  (thinner) and  $\alpha=0.10$  (thicker).

<sup>71</sup> i.e.  $\ln(y_i) = \beta_0 + \beta_1 \ln(\text{export}_i) + C_i' \delta + \varepsilon_i$ , the one controlling only for the colonizer effects.

*Figure 8* shows how, even with using Nunn's own data, we can spot some peculiar change in the export ratio effect. Namely, it is straightforward that, once we focus on less and less top-exporting countries, the effect of the export ratio becomes less and less negative, if not even *positive* in some specific cases<sup>72</sup>.

Thus, other than concentrating on different variables and analyses, we end this section by positing that the effect of the export rate differs among country-subsets and therefore has to be reinterpreted (if not even rethought) at a broader level in a more precise sense.

We conclude by highlighting that these less-negative, progressive trends are spotted also for the regressions based on the other models by Nunn<sup>73</sup>.

#### IV.VI Further look for better evidence

In order to check for further evidence of this tendency, we ran counterpart regressions to estimate the effects of the export rate on per capita GDP in a series of subsets that comprehend each country in the whole sample *but* excluding the #-top exporting countries. That is: in this regressions, we use the top# dummy variables to exclude the #-exporting countries. This is practically done by considering each dummy variable as equalling to zero and consequently selecting the corresponding subsamples.<sup>74</sup>

As we can see from *Figure 9*, a slight reduction in intensity of the negative effect of export on per capita GDP is detectable as long as more and more high-exporting countries are added to the model. *Model (1)* by Nunn is used again to obtain such results.<sup>75</sup>

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<sup>72</sup> However, the positive values, namely the ones for the top-11, top-12 and top-13 subsamples, are *statistically* significant only for confidence intervals set at  $\alpha=0.30$ .

<sup>73</sup> We offer a better and more detailed presentation of this in our *Appendix*. See *Appendix, A.II*. Since models (3) and (6) are thought to be applied to a restricted sample, we did not regress them – as our detection strategy already involves some country-dropping process that otherwise would contrast with the very feature of the two models.

<sup>74</sup> E.g. if we set the variable  $top19==0$ , we end up obtaining the subset that includes every country *but* the top-19 exporters: that is, the subset of the bottom-33 exporting countries.

<sup>75</sup> We offer a better and more detailed presentation of this in our *Appendix*. See *Appendix, A.III*. Since models (3) and (6) are thought to be applied to a restricted sample, we did not regress them; see *supra*, NOTE 73.

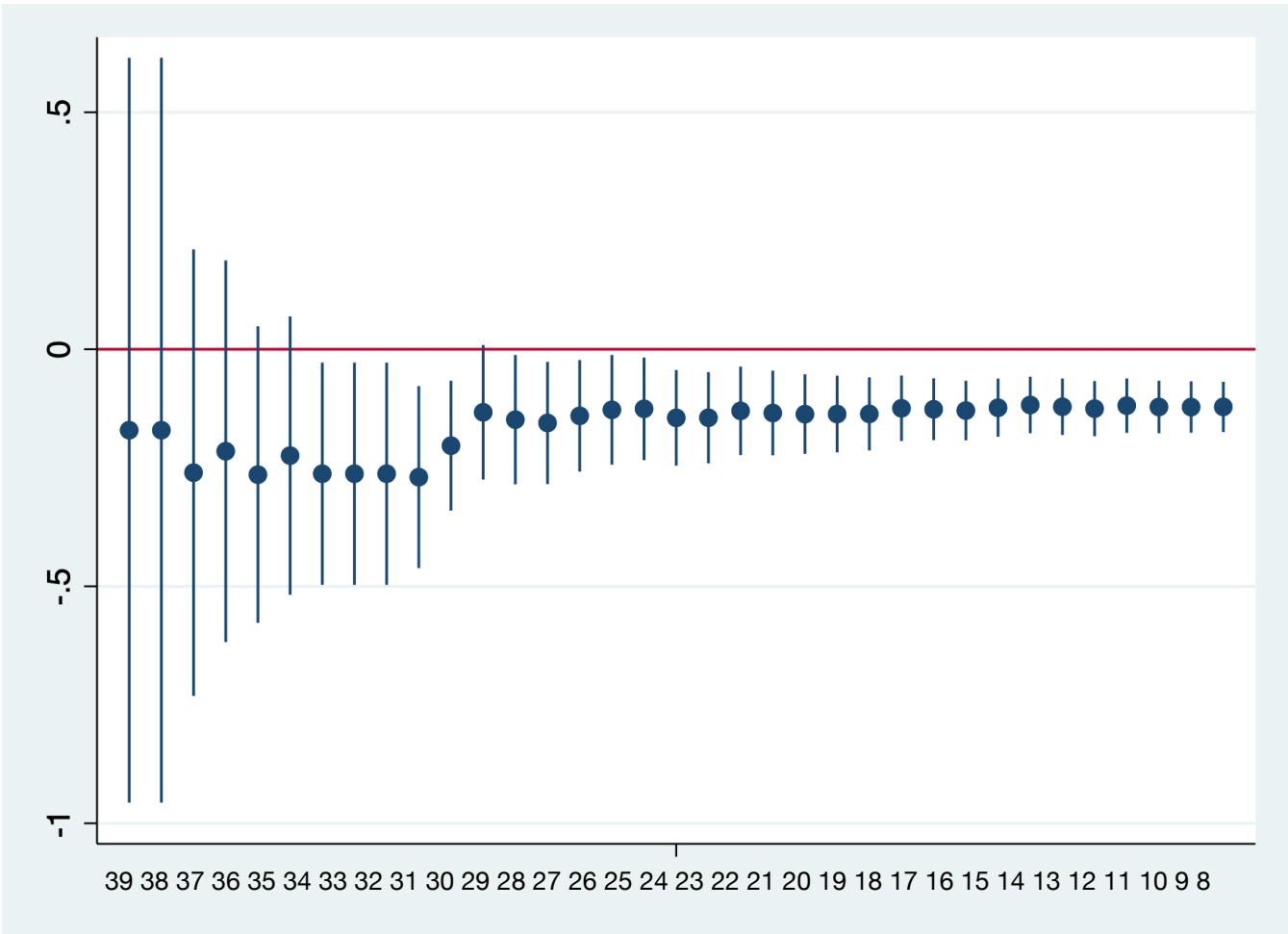


Figure 9: Values of the export ratio coefficients for each country in the sample but the top-# exporting-countries. Regressions are based on Nunn’s Model (1).<sup>76</sup> Confidence intervals are at  $\alpha=0.05$  .

This analysis shows how, by adding more and more top-exporting countries, the overall effect of the export rate on per capita GDP becomes smaller and smaller – and less negative, too. We take these results as a further clue of the fact that, in fact, the export ratio has a not-so-clear effect on the relevant subsamples of Nunn’s dataset, and that therefore we cannot assume Nunn’s aggregated data as unambiguously meaningful.

Moreover, we have to stress again the fact that the negative-bias (that is perhaps bending down the overall effect in Nunn’s regressions) is actually related to less-exporting countries, as the addition of more and more top-exporters ends up in reducing the overall negative effect of the export ratio on per capita GDP.

<sup>76</sup> Only 95% confidence intervals are reported here, as the 90% confidence intervals are not relevant into illustrating this general pattern. We applied the same choice and reported only 95%-confidence intervals for all the next *Figures*. The only exception is *Figure 16* (see *infra*); the reason of this is furtherly motivated *infra*.

## V. A Feasible Replication on a Dynamic Approach

### V.I Considering economic outcomes in a dynamic way: building a panel dataset

We then adapted Nunn's dataset to look for a different, dynamic frame that could analyze the effects of the slave trades on current economies on a year-based manner. Indeed, we chose to consider economy in a more dynamic way, i.e. we decided not to compress economic outcomes on just one mere observation in year 2000; instead, we chose to focus on the whole set of each country's current economic outcomes from the period of decolonization on. This to obtain a broader and more specific view on the detrimental effects of slave export on independent African countries and economies.

Our dataset is arranged as follows: we integrated the original dataset by Nunn by adding further data from *Maddison (2003)*, in order to obtain yearly observations on economic and social indicators – namely GDP, per capita GDP and population (both in levels and in growth rates). Our original year-balanced panel dataset contains all Nunn's 52 original countries; each country accounts for 57 year-observation (from 1951 – some years previous to the start of decolonization in 1960 – to 2008).

Furthermore, we integrated the data by *Maddison (2003)* with more recent data from the Maddison Project (*Maddison, 2023*), in order to collect more recent – if not current<sup>77</sup> – outcomes on nowadays economic performances of African countries.

This let us work with a ways more expanded dataset. However, our final panel ended up in being *unbalanced*, as data for Somalia end in year 2008. Therefore, we can account for 73 year-observations per country (from 1950 to 2022) with the exception of the Somali observations, that covers the 59-year period between 1950 and 2008. Anyway, the fact that we had to deal with an unbalanced panel did not create us any problem: indeed, since we focused mostly on the top-19 exporting-country subset, we didn't have to consider Somalia in our subsample<sup>78</sup>.

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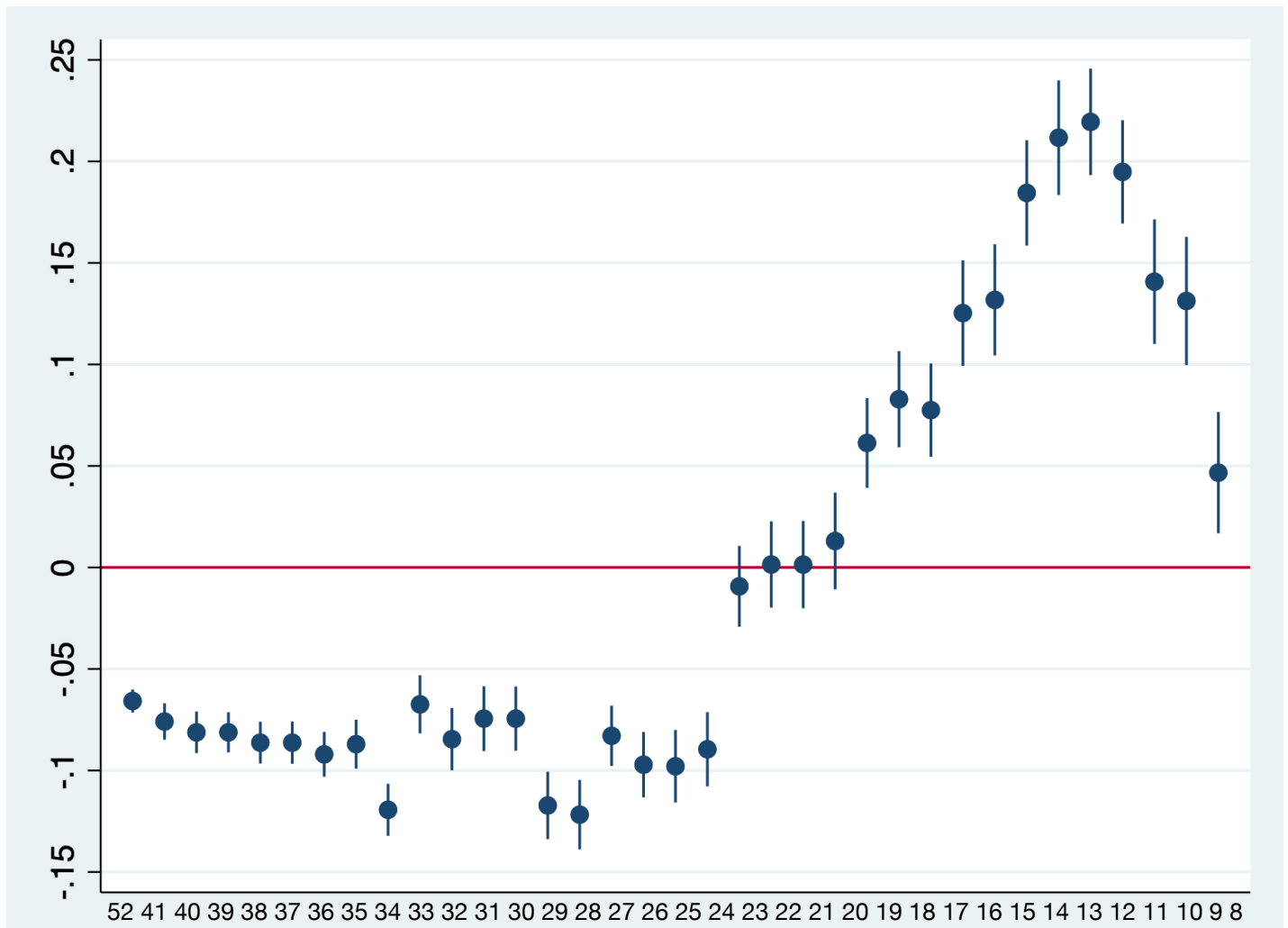
<sup>77</sup> In fact, data in the *Maddison Project* are the most recent we can find. The study collected economic and social data on African countries up to 2022 and was eventually published in 2023.

<sup>78</sup> Indeed, Somalia – accounting for 32,277 exported people during the Slave Trades period – is the 26<sup>th</sup> most-exporting country among the African countries in our sample.

V.II *Considering economic outcomes in a dynamic way: panel data regression*

We then ran each one of the six regression equations by Nunn and obtained more statistically-significant and robust results. In order to do so, of course, we did not chain economy on values in 2000 only; instead, we created the new variable *ln\_pcgdp*, that we used as our new dependent variable.<sup>79</sup>

As previously done, we present here – in *Figure 10* – the regression results of Nunn’s Model (1) on our series of subsamples:



*Figure 10: Values of the export ratio coefficients for each top-# exporting-country subsample. Regressions are based on Nunn’s Model (1), adapted to fit a panel regression. Confidence intervals are at  $\alpha=0.05$ .*

Due to the vast extent of year observation, we obtain now results that are ways more statistically significant. The positive (counterintuitive) effect is now clearly spot in the top-

<sup>79</sup> Our new dependent variable accounts for the natural logarithm of each country’s per capita GDP in each year in our sample.

nineteen exporting countries ( $p$ -value = 0.000) and it remains positive, consistent and statistically-significant also in further, littler sub-samples of top-exporting countries.

We can also spot a "transition threshold": for the top-20 and top-21 subsets the effect is positive but not statistically significant. For the top-22 subsample the effect is *de facto* nil. For the top-23 subsample the effect is negative but not statistically significant. From top-24 on, the effect is negative and statistically significant.

This provides further evidence to our suggestion: by adding more and more low-exporting countries (that are non influent from an absolute point of view, but are influent from a statistical point of view) we do end up in eventually biasing the overall result towards a negative effect that is logically inconsistent. That is: Nunn's conclusions are robust in his study, are agreeable and are also substantially recognized as correct; however, the frame of Nunn's work is not so-well fitting the real situation.

Put another way: Nunn obtained common-sense and reasonable conclusions from *biased* data; indeed, once we drop non-significant countries from our regressions, the results appear to be exactly the opposite of Nunn's findings and conclusions. The trend, that came out even from a mere one-shot OLS regression, is now crystal-clear and undoubtable when it comes to a dynamic, panel data regression analysis.

Indeed, once we focus on a broader period (avoiding the temptation of *compressing history* – and economics), we can spot counterintuitive trends with respect to Nunn's effects. Therefore, there might be the risk that we should be somehow forced to even jump to a *repugnant conclusion*: if we had to interpret our data in the frame and the shape we are seeing them from these results, we would have to either conclude that, in the end, such a phenomenon has eventually been *good* for African economics; or we would have to call for better and deeper analyses to the phenomenon.

The first hypothesis – be it despicable to agree with – can actually have some fundament in real history of African cultures<sup>80</sup>. Indeed, historical sources do tell us that were eventually the *most*-developed countries in Africa that first permitted and then selected into the slave trades. The bottom line is that a minimally-spread economic system was needed as a necessary condition to start trading slaves. That is, smaller and less developed societies weren't able to self select into slave trades, whereas larger and

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<sup>80</sup> See – among others – Barry (1998) and Vansina (1990).

more flourish societies were. As most developed societies started such a market with the Europeans and gained some wealth from this<sup>81</sup>, we could expect that, indeed, it might be correlated that the more flourish a society, the higher export it had and the higher per capita GDP it had. Our bottom line is therefore that the trends we spotted with the correlation analysis on GDP may be analogical to the effect analysis on coefficients related to export ratio effects on per capita GD, too. That is: the export ratio could eventually have positive effects *also at a per-capita-GDP level*.

However, such finding might be hard to justify from both historical and common-sense-based approaches. That is why we are more prone to interpret our data in a way that accounts more for our second hypothesis: that is, such a phenomenon is too complex to be fully explained by the effects of the export ratio. Therefore, we do call and invite for further, deeper and more detailed analysis, since we cannot accept to bias our results by relying on a series of 33 low-exporting countries that systematically alters partial results by adding a series of irrelevant observations (accounting for less than 4% of the phenomenon) that eventually bends down the overall results towards negative effects.

That said, we assume these results (that counterbalance Nunn's ones) as a valid trigger to begin further research for some *dialectic* improvement on the topic. I.e. – as our results contradict Nunn's ones – we expect that this counter-prove will bring some robust counterevidence and *impetus* to call for better analyses on such a complex phenomenon.

Thus, we challenge the overall validity and fitting features of Nunn's export ratio *per se* and invite to both analyze and model the problem and the subsequent analyses in a different manner. Otherwise, relying on the export ratio would necessary lead *per se* to unacceptable economic, social, political and moral conclusions.

In fact, it seems that the intensity rate of people export from Africa – as Nunn's export ratio is – is *neither enough nor coherent enough* to fully account for the effects of the African Slave Trades on African economies, at least when it comes to the analysis of the subset of the most important and affected exporting countries in our sample.

In the following *Chapter VI*, we will provide further evidence of the fact that, also when it comes to interactional analyses on the effects of the export ratio over each specific year in our sample, the results of the top-19-exporting-countries relevant subset are systematically different and divergent from both the results from the aggregated 52-country-based original sample and the ones from the 33-low-exporting-countries subset.

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<sup>81</sup> See the economic and social implications of the so-called “gun-slave cycle” (among all, check *Lovejoy, 2000*) or the “iron-slave cycle” (among all, see *Hawthorne, 2003*).

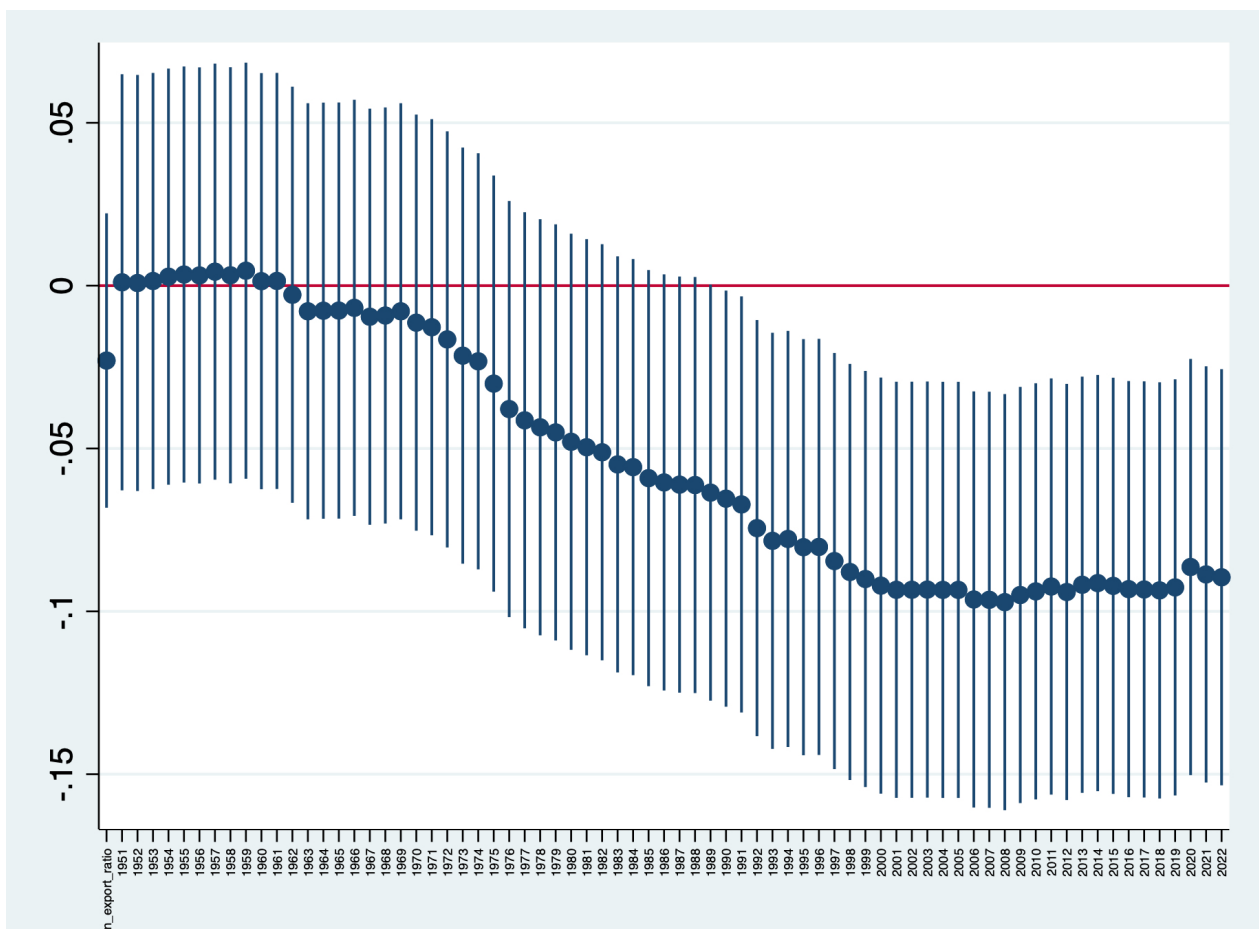
## VI. A Feasible Replication with Interactional Effects

### VI.1 Our results and possible explanations

In order to both call for further research hints and for better and more robust counter-evidence to Nunn's conclusions, we ran a new panel data OLS log-log regression analysis to look for the *interactional effects* of the export ratio on yearly observations of economic outcomes in African countries from 1951 to 2022.

To do so, we used the very same panel dataset we created in *Chapter V* and looked also for the interactional effects of the export ratio over each year. Once again, we used *Model (1)* by Nunn to firstly ran three interactional regressions on: the whole sample and our two specific subsets of top-19 and bottom-33 exporting countries.

*Figure 11* presents the results for our whole 52-country original sample:



*Figure 11: Values of the export ratio and its year-interaction coefficients for the whole original sample. Regressions are based on Nunn's Model (1), adapted to fit a panel regression with interactional effects. Confidence intervals are at  $\alpha=0.05$ .*

As we can see from *Figure 11*, the effect of the export ratio on our aggregated panel dataset is very little in absolute value, negative and not statistically-significant. Moreover, its year-interactions are generally negative and start to become statistically-significant from the Nineties on.

It is hard to infer some robust conclusion from this; however, the most surprising finding is that, in fact, the interactional effect seems to become negative years after not just the end of the Slave Trades, but also after each country had started to be decolonized.

This findings call for either further research on the query and for further questions about the factual causes of these effects.

Namely, it might be the case that such post-decolonization negative backlashes be driven by some further variable (e.g. some institutional effect) that is not contemplated by Nunn's model.<sup>82</sup>

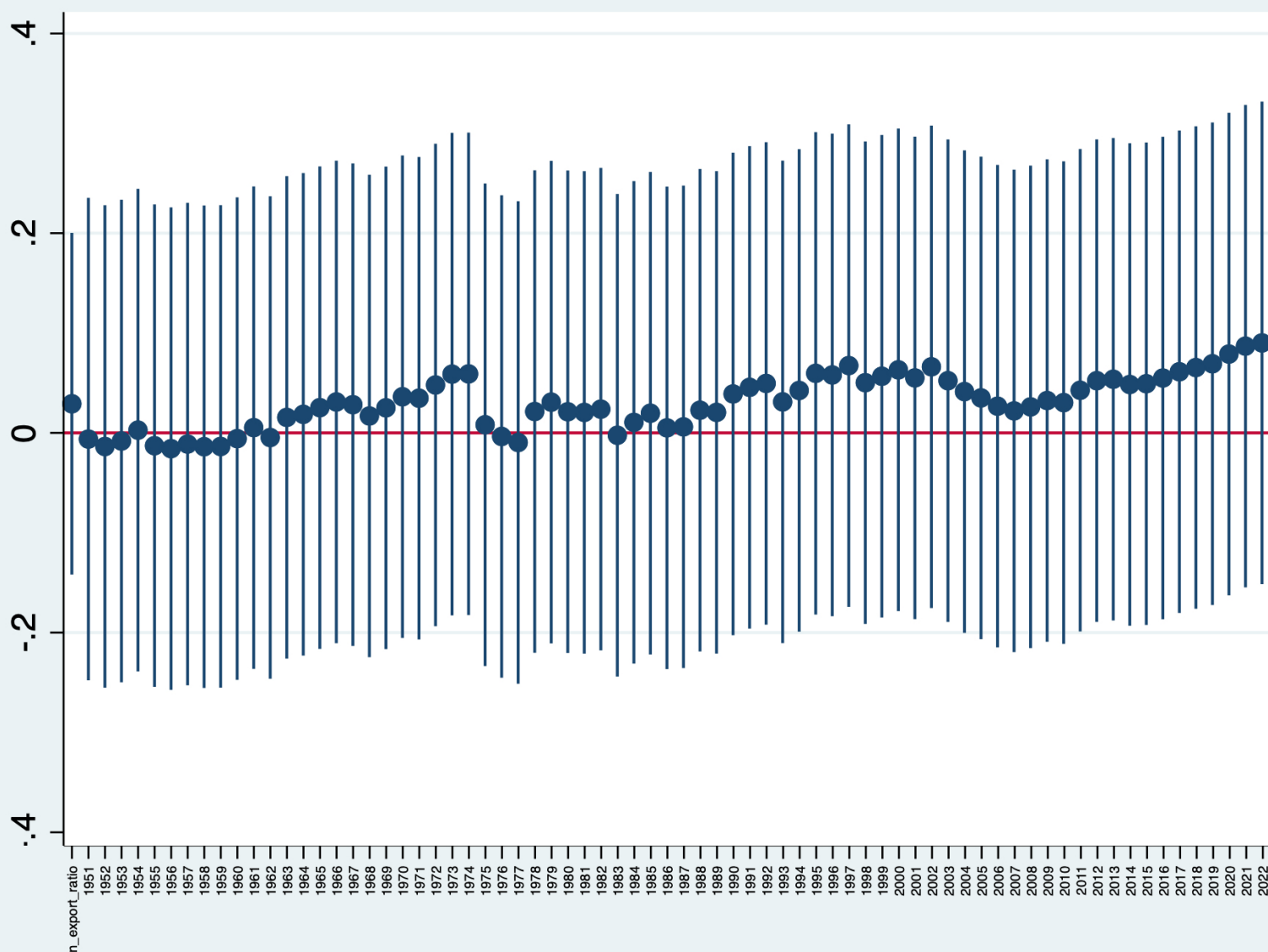
Moreover, it could also be that the export ratio is somehow correlated to some missing variable (related to either some peculiar feature of these countries, or even merely related to somewhat African business cycles) that is being explained through this very same indicator.

Whatever our possible conclusion be, such findings show at least some delayed effect of the export ratio on African countries' economies that should at least better analyzed in detail. That is why we propose, once again, a sub-sample sub-analysis of the same interactional model.

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<sup>82</sup> Put another way: the explanation on this might lay on some post-decolonial institutional features, and not on former colonizers regimes' characteristics.

Our analysis on relevant subsets is then resumed by *Figures 12A* and *12B*, that show the different trends of both the isolated export effect and its yearly interactions:



*Figure 12A: Values of the export ratio and its year-interaction coefficients for the top-19 exporting-country subsample. Regressions are based on Nunn's Model (1), adapted to fit a panel regression with interactional effects. Confidence intervals are at  $\alpha=0.05$ .*

As we can see, the top-nineteen exporting countries show a statistically non-significant, positive effect of the export ratio on per capita GDP, whereas their interactional effects with each year has effects tending from nil to slightly positive.

That is, we notice that *de facto* there is not a clearly-negative effect of either the export ratio – or its year-interactions – on current economic outcomes. It seems to us that, in fact, the export ratio is *not* affecting African economies in a statistically-significant way.

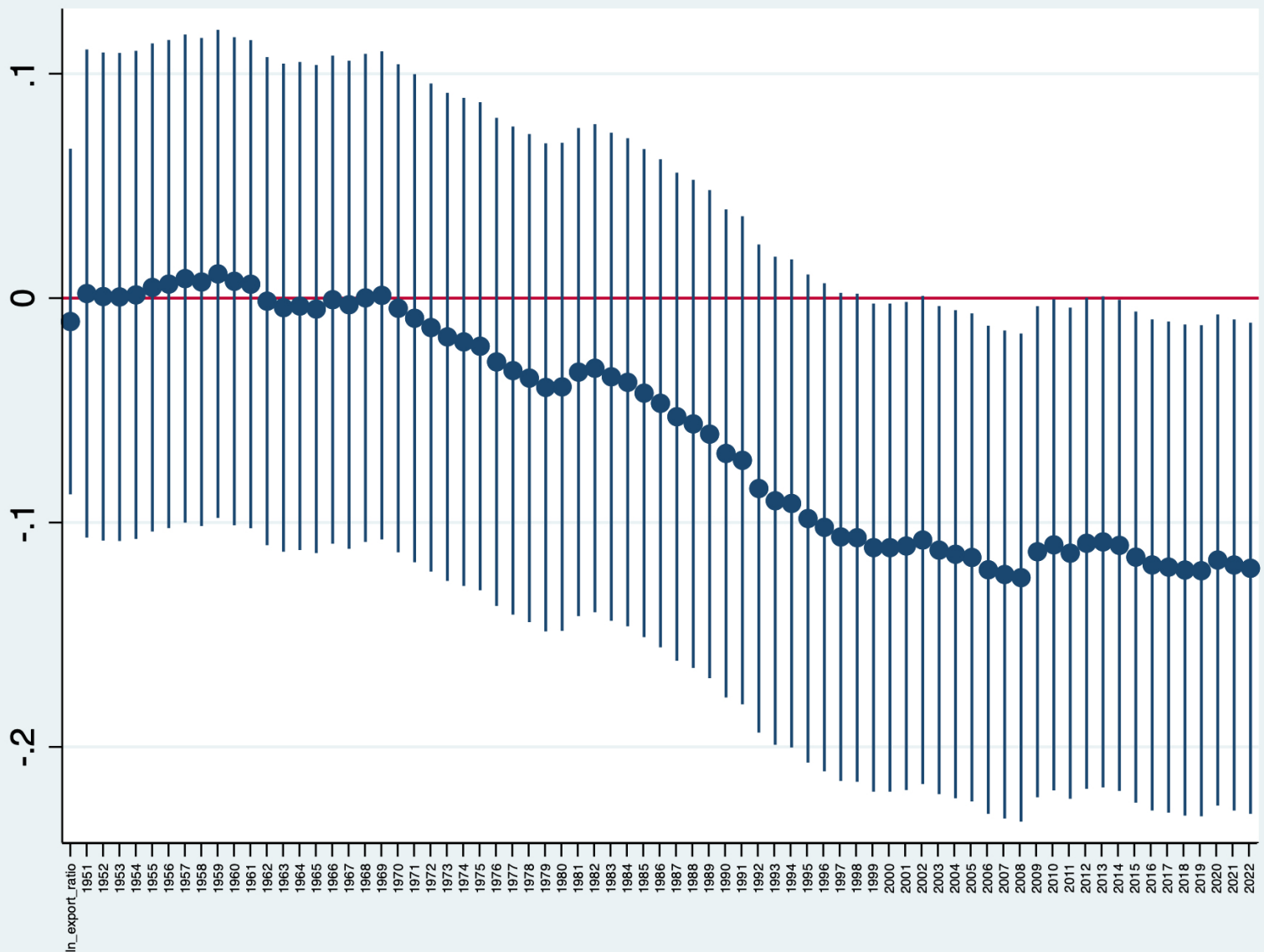


Figure 12B: Values of the export ratio and its year-interaction coefficients for the bottom-33 exporting-country subsample. Regressions are based on Nunn's Model (1), adapted to fit a panel regression with interactional effects. Confidence intervals are at  $\alpha=0.05$ .

On the other hand, the group containing the bottom 33 exporting countries – whose 11 countries exported zero slaves and 17 of them exported *at most* less than 1500 people each over five centuries) – shows a slightly negative, statistically non-significant effect of the export ratio on per capita GDP; however, its interactional effects are unambiguously bending towards negativity and are even statistically-significantly negative (at least at 90%) from year 1999 on.

That is, we can spot a year-dependent, clear negative pattern between the extraction rate and its economic yearly effects. More precisely, it seems that the export rate – in its year-interactions – is more and more affecting negatively African economies of low-exporting countries, even year after year – and the more, the more recent the year.

These results can be interpreted as: either bottom-exporting countries are biasing the overall results by negatively-altering the overall result, or there is *something more* in economic flows – a parameter other than the export ratio – that is *more performative* in explaining current economic dynamics. It is straightforward, then, that further research on the topic is strongly needed, in order to better consider all the specific cases and implication we exposed so far.

From our point of view, however, we do call for some intuitive and mathematical support for our first option. That is: we expect that the *de facto* non-significant trend of the top-19 exporting countries – though representing the trend of 95.5% of the whole phenomenon of the African Slave Trades – is eventually bended down towards negativity by the second subset of *de facto* irrelevant, low exporting countries that however account for a very little share of the overall phenomenon.

In fact, put in a mathematical way: the *linear combination* between a *de facto* zero-effect<sup>83</sup> fitting line for the top-19 exporting countries and the negative-effect fitting line for the bottom-33 exporting countries ends up in providing a unique, negative fitting line resumming the overall effect of the export ratio on per capita GDP for the whole sample.

Figure 13 provides evidence of such linear-combination effects of the export ratio on per capita GDP among the whole sample and the two subsamples:

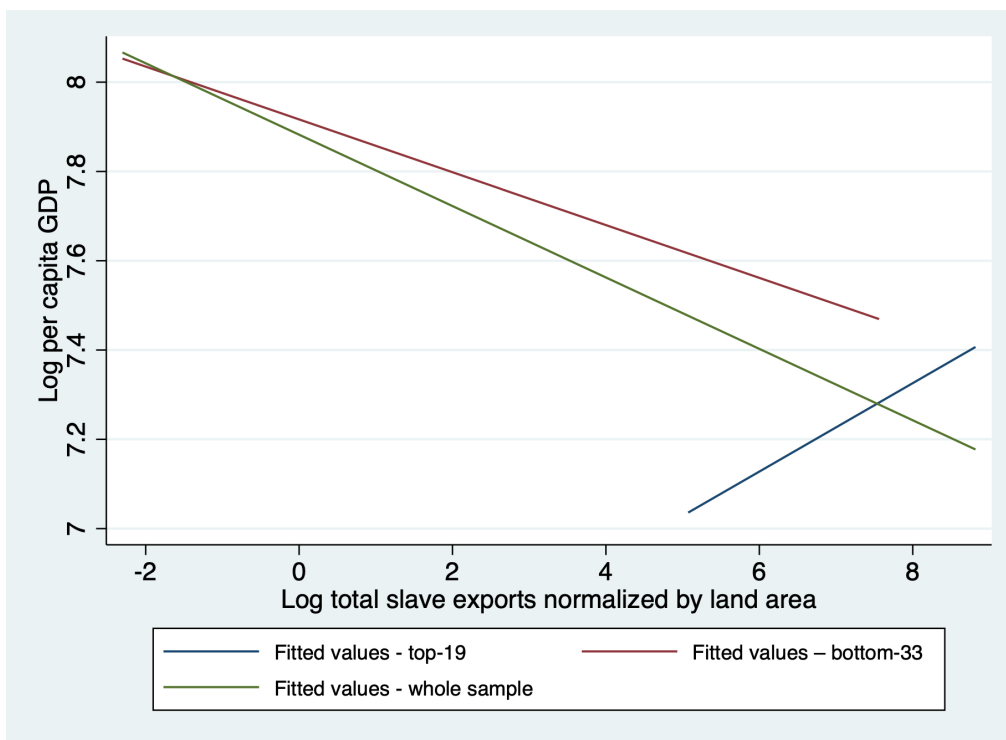


Figure 13: fitted values for the whole sample and the two relevant subsamples.

<sup>83</sup> The top-19 correlation line shows, in theory, a positive (not significant) effect. Anyway, the overall correlation is negative due to the bottom countries being weighted *more* than the top ones.

## VI.II Using a more detailed model: further results and evidence from Model (5)

In order to start deepening the research on this topic, we end this *Chapter VI* by presenting some further results from Nunn's *Model (5)*, i.e. the one accounting for colonial, geo-climatic, cultural and production-related effects.

We chose to work with such a model in order to try to present a decently more-complex frame to describe and analyze the phenomenon of the African Slave Trades.

Our bottom line is to control for the highest number of features of the African countries given Nunn's dataset, in order to have a better and more clear-cut vision on the factual effects of the export ratio on current economic outcomes.

If we obtain the same results as before with this more complex model, we will be more prone to call for evidence that Nunn's results start to be *severely* challenged.

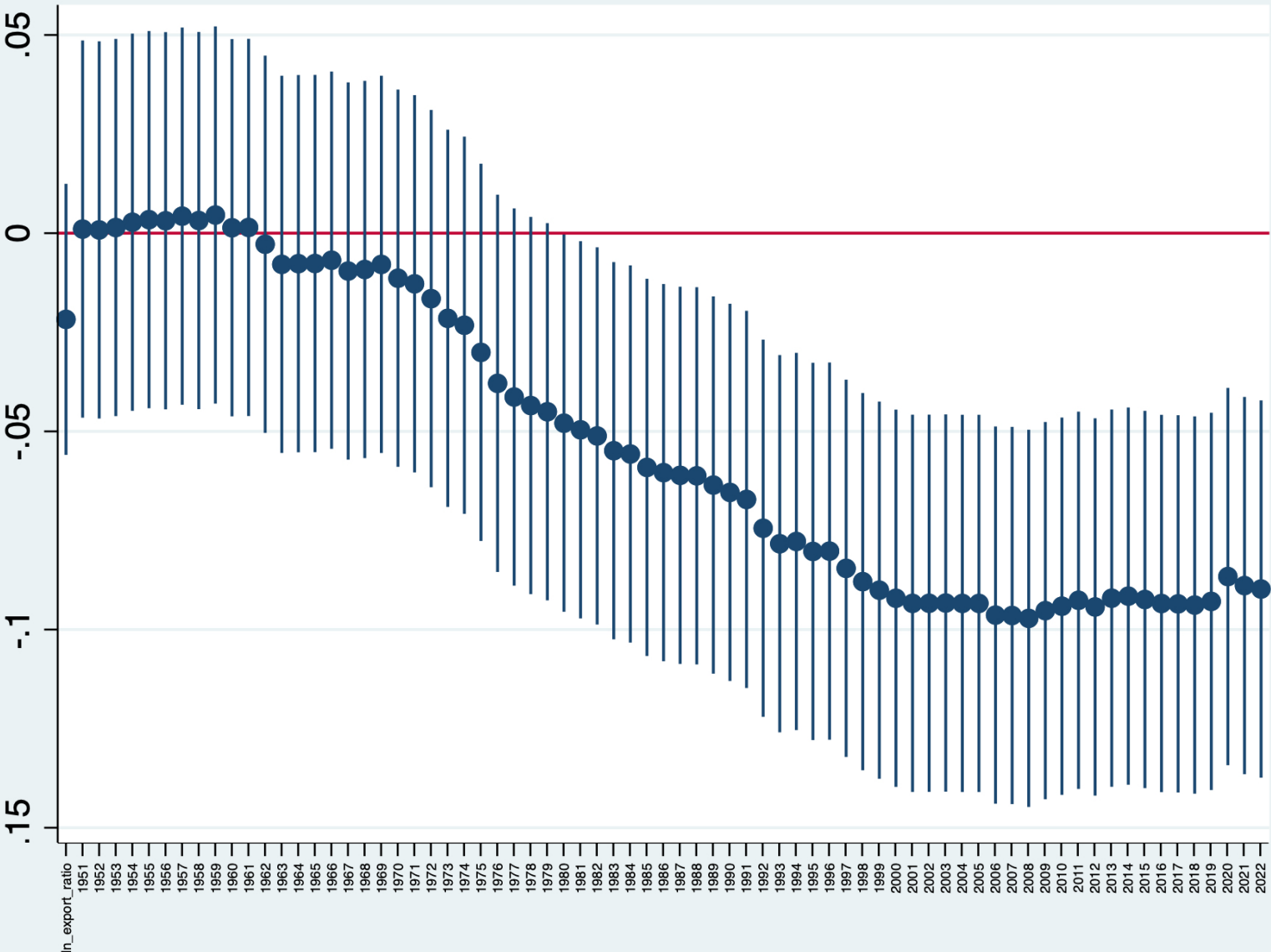
It would not a question of complexity anymore; rather, it would become a question on if the export ratio is a correct and consistent estimator of the real effect of the Slave Trades, due the historical and cultural context we know.<sup>84</sup>

As we did so far, we will propose the findings on the coefficient from the whole sample and then will move on specific subsets again.

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<sup>84</sup> Of course, we cannot exclude the possibility to build a more detailed, complex and fitting frame of control variable and to eventually obtain historically-consistent results. However, we leave such option for further research and focus here on working merely with data from *Nunn (2008)* in order to challenge, if needed, Nunn's own conclusions.

The coefficients for the whole 52-country sample are depicted here in *Figure 14*:

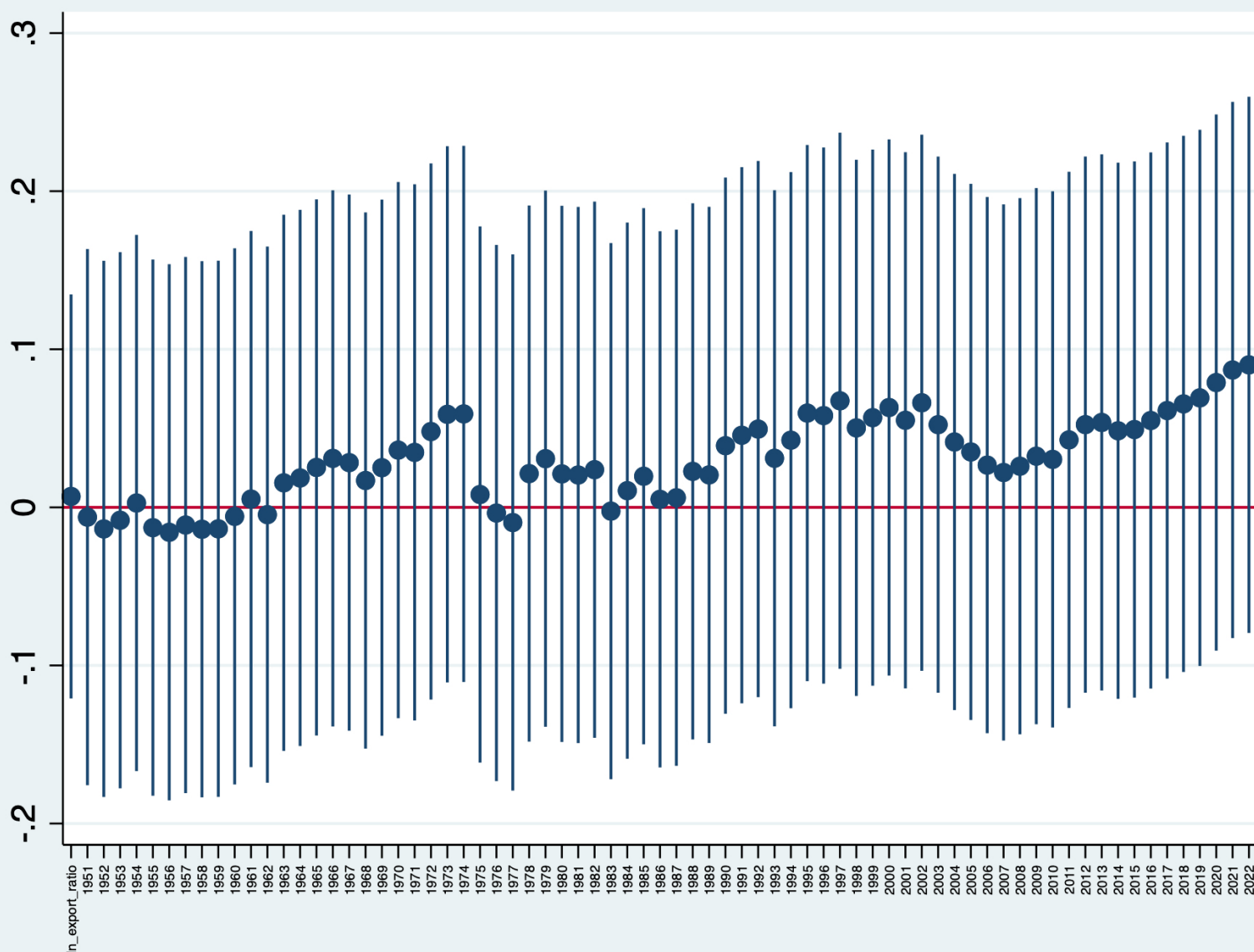


*Figure 14: Values of the export ratio and its year-interaction coefficients for the whole 52-exporting-country subsample. Regressions are based on Nunn’s Model (5), adapted to fit a panel regression with interactional effects. Confidence intervals are at  $\alpha=0.05$ .*

The overall results in *Figure 14* are consistent with the findings based on Model (1) that we presented in *Section VI.I*.<sup>85</sup> That is: the export ratio has some non-significant, negative effect, whereas its year-interactions have a negative effect that is also statistically-significant (in this case, interactional effects start to be statistically-significant from the Eighties on).

<sup>85</sup> See *supra*: *Figure 11*.

With respect to the application of Model (5) to our subsets, we first focus on the top-19 exporting-countries subset. The related coefficients are drawn in *Figure 15*:



*Figure 15: Values of the export ratio and its year-interaction coefficients for the top-19 exporting-country subsample. Regressions are based on Nunn's Model (5), adapted to fit a panel regression with interactional effects. Confidence intervals are at  $\alpha=0.05$ .*

We can spot from here that the effect of the export rate is *de facto* nil (i.e. no coefficient is statistically-significant); its interactions are non-significant and tend to be *even* positive.

This finding is suspicious, as it might seem that the subsequent events of the the Slave Trades eventually contribute to make African economies perform better and better, year after year.

Indeed, such trend is clear and consistent also in further subsets of top-exporting countries.

Figure 16 illustrates the coefficients for the subset of the top-10 exporting countries:

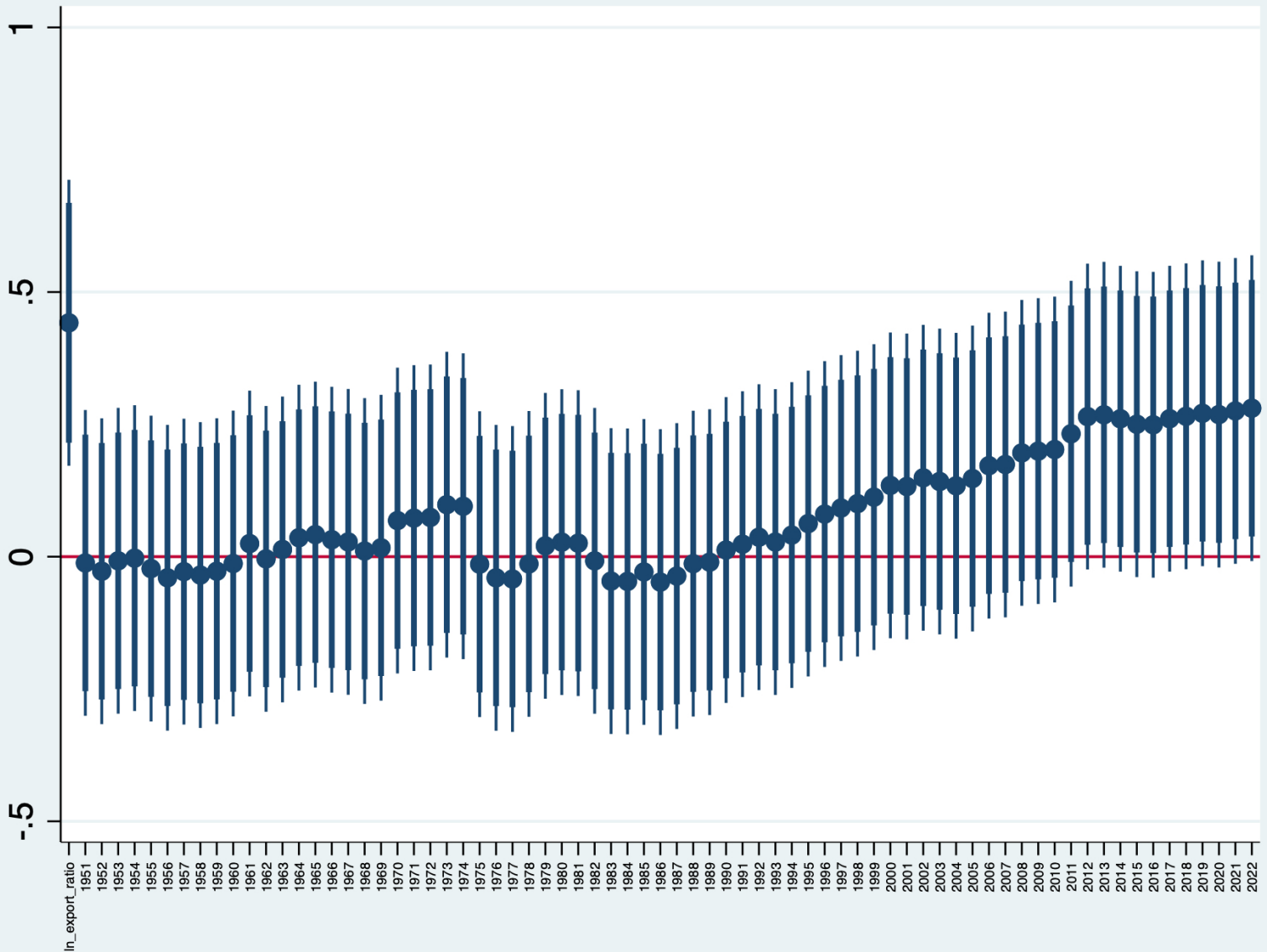
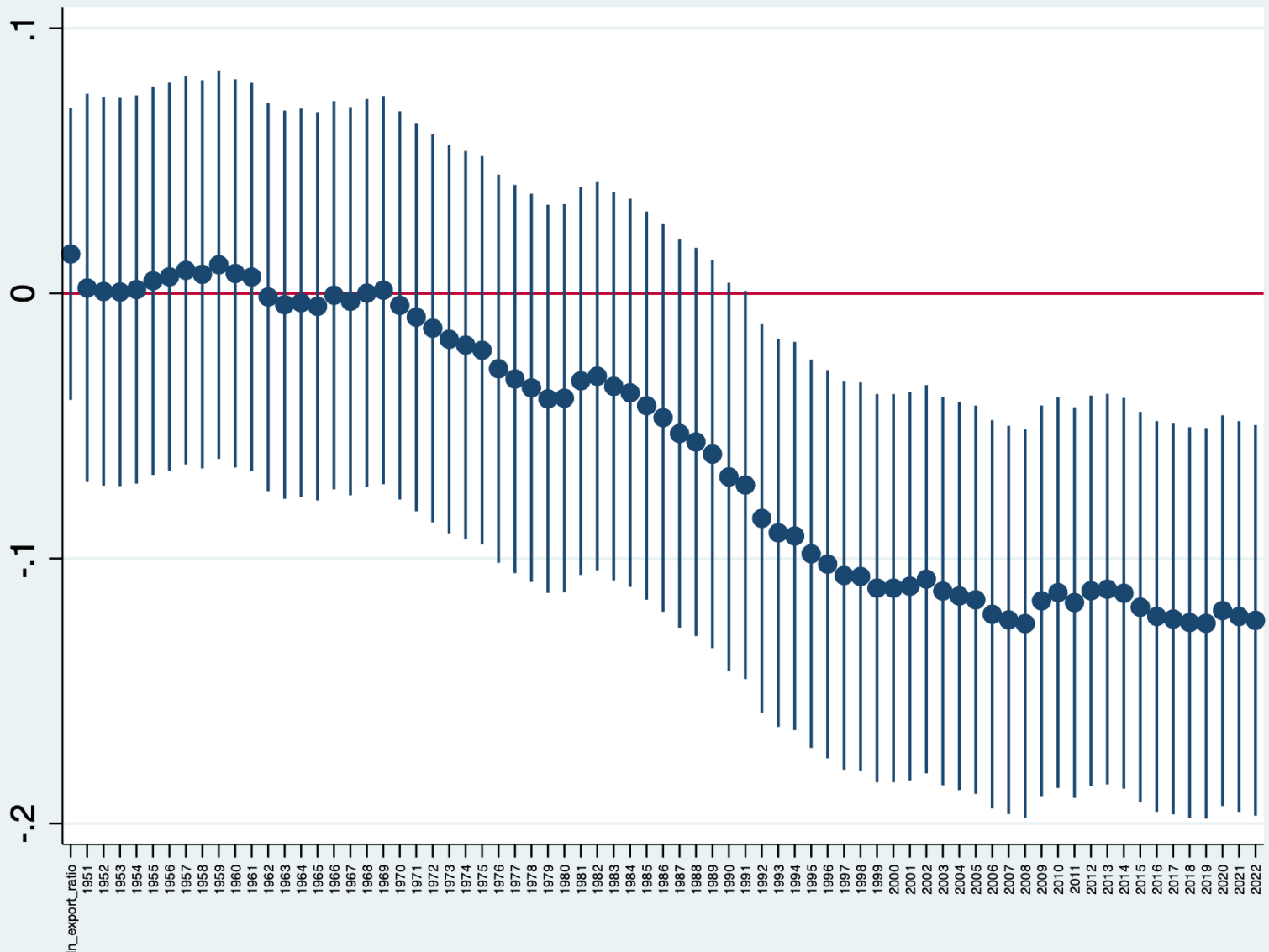


Figure 16: Values of the export ratio and its year-interaction coefficients for the top-10 exporting-country subsample. Regressions are based on Nunn’s Model (5), adapted to fit a panel regression with interactional effects.

Confidence intervals are at  $\alpha=0.05$  (thinner) and at  $\alpha=0.10$  (thicker).

Also here, the trends are clear, and even statistically-significant (at 90% from 2012 on). We stress the fact that these top-10 exporting countries account for 81.98% of the whole phenomenon (i.e. slightly less than 13 million people enslaved) and their dynamics are *the exact opposite* – positive *and* statistically significant – of the results coming from both the whole sample and the less-exporting-countries subsets.

Coming to the bottom-exporting-countries subsets, we present in *Figure 17* our findings for the bottom-33 exporting countries:



*Figure 17: Values of the export ratio and its year-interaction coefficients for the bottom-33 exporting-country subsample. Regressions are based on Nunn's Model (5), adapted to fit a panel regression with interactional effects.*

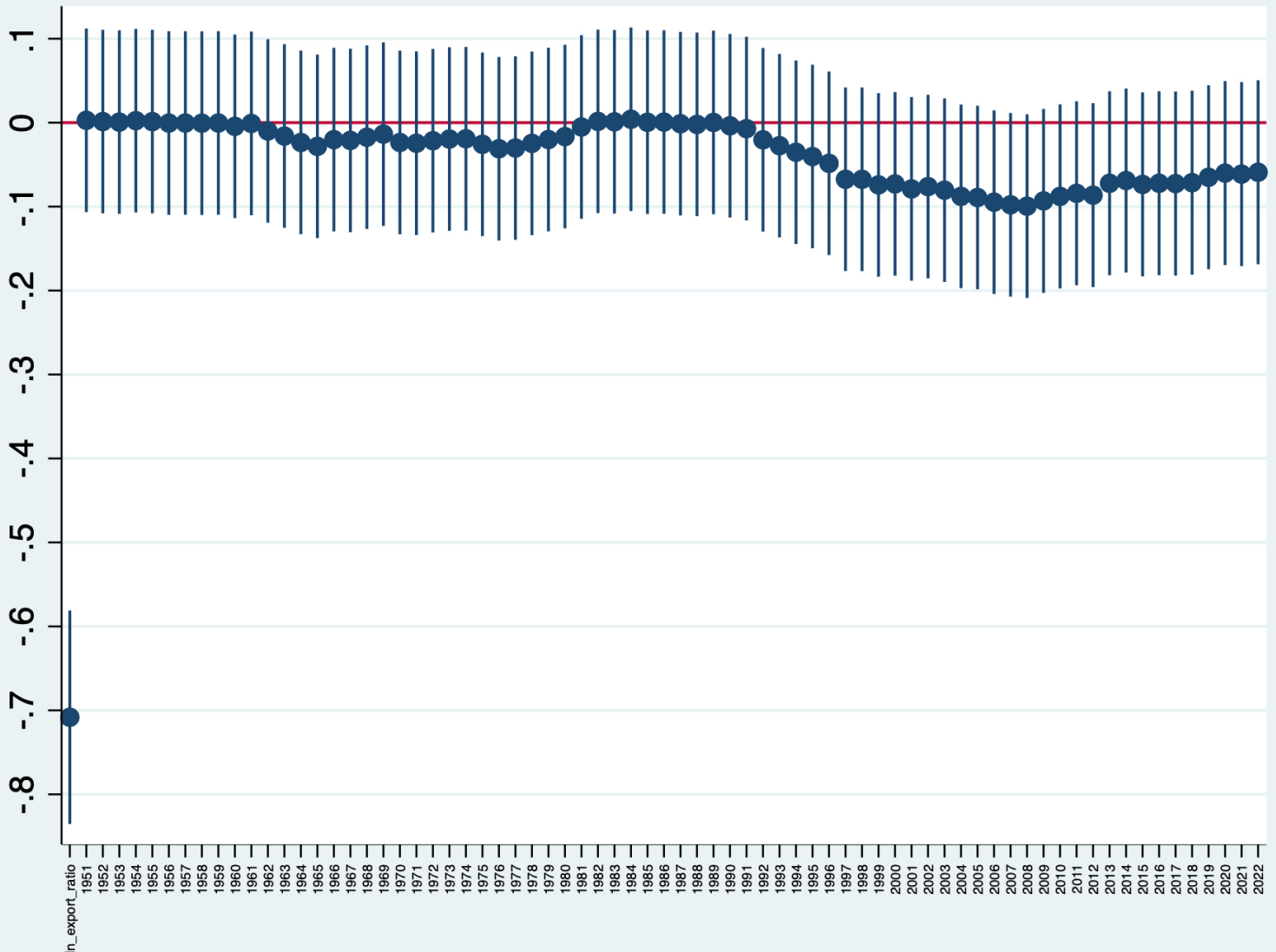
*Confidence intervals are at  $\alpha=0.05$ .*

The effects are analogical to the ones from the whole sample; the only difference being that the export coefficient is *positive*, though non-significant.

If we combine the findings in *Figure 15* and *Figure 17*, we can infer *again* that the results of the aggregate sample come out from the fact that top-exporting countries have effects tending to zero, whereas bottom countries have negative effects; the combination of the two subsets *eventually* leads to *overall negative* effects.

If we furtherly analyze the compounding parts of the bottom-33 subsample, we end up in providing some further *discrimen* (in both subsamples and findings) between the bottom-22 least-exporting countries<sup>86</sup> and the 19 virtually-zero-exporting countries<sup>87</sup>.

Findings are in *Figure 18* and *Figure 19*:



*Figure 18: Values of the export ratio and its year-interaction coefficients for the bottom-22 countries exporting at least one person. Regressions are based on Nunn's Model (5), adapted to fit a panel regression with interactional effects.*

*Confidence intervals are at  $\alpha=0.05$ .*

<sup>86</sup> i.e. the set of bottom exporting countries that did export *at least one* human being.

<sup>87</sup> i.e. the subset containing the 11 countries that did not experienced any slave trade, plus the eight countries that exported at most less than 2,050 human being each – a number corresponding to slightly 4 people missing per year. This second group of countries, *de facto*, experienced zero slavery. See *Figure 1* to get the complete list of these selected countries.

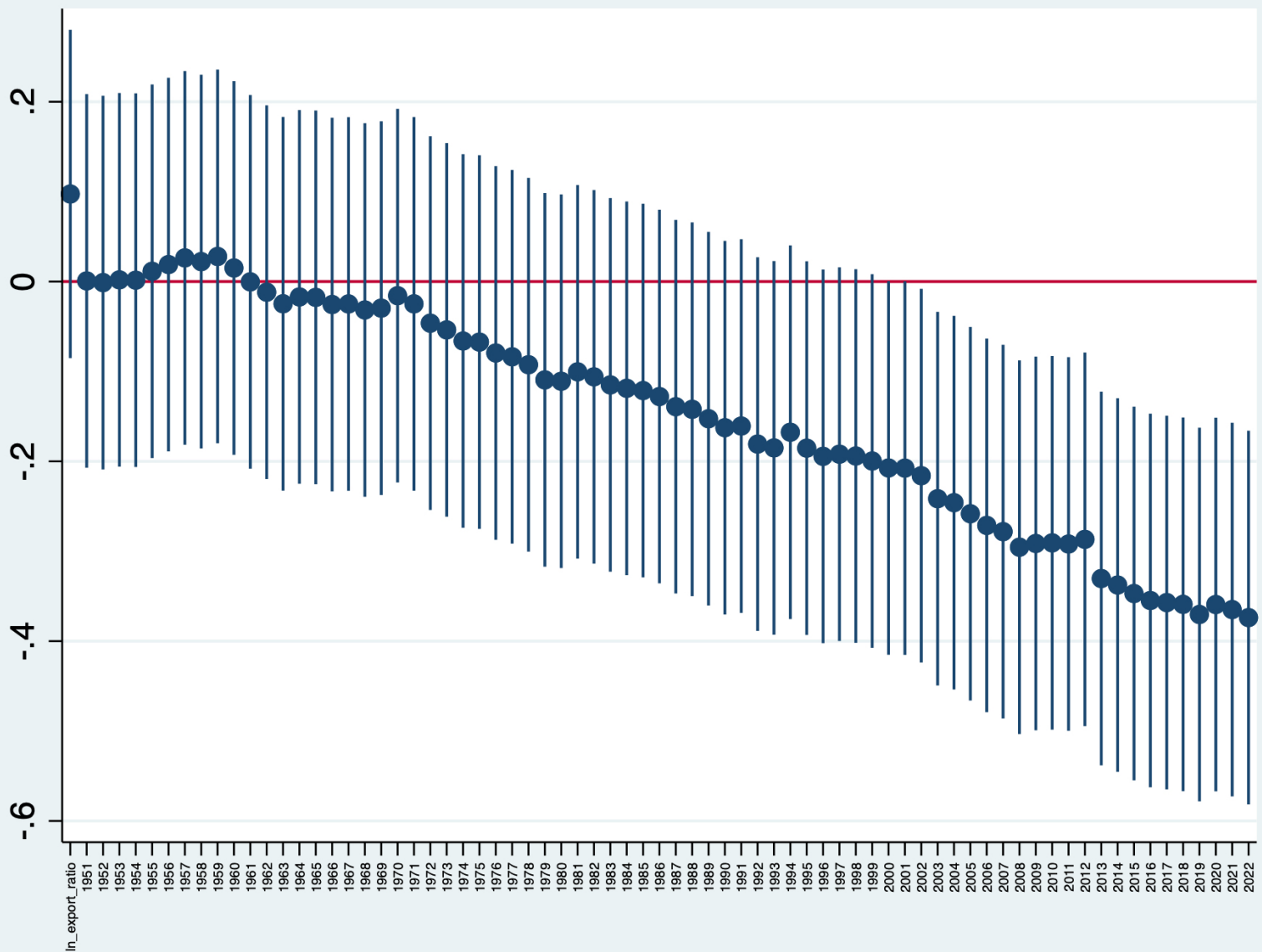


Figure 19: Values of the export ratio and its year-interaction coefficients for the bottom-19 countries (exporting zero or virtually zero people). Regressions are based on Nunn's Model (5), adapted to fit a panel regression with interactional effects. Confidence intervals are at  $\alpha=0.05$ .

From the two figures, we can spot *two* furtherly different trends. Namely, the bottom-exporting countries in Figure 18 are experiencing the detrimental, negative and statistically-significant effect of the export ratio; however, the interactional effects are *de facto* nil, if not at most slightly negative (though statistically non-significant).

On the other hand, virtually-zero-exporting countries in Figure 19 are experiencing a *positive*, non-significant effect of the export ratio; however, the interactional effects are undoubtedly negative (at least after 1960) and even statistically-significant from the start of the XXI century. Moreover, their absolute value is increasing *almost* monotonically from the Seventies on.

A series of feasible explanations are available: that is, the effects on economic outcomes are not clear and not coherent among each single subsample; perhaps, because of further, non detected effects of institutions, of post-colonial rules, or even of economic global cycles.

The clear finding is that, in the end, we think that further research definitely must be put into effort, as a dynamic frame based on Nunn's dataset ends up in providing non-clear findings.

Otherwise, we could rely on these data (especially the ones from the whole sample), but our conclusions might be defeated by mere contradictory results coming straight from coherent analyses from the very same dataset. That is: Nunn's general conclusions are constantly threatened by the possibility to analyze his very same data from another point of view; Nunn's conclusions can be questioned and challenged simply by changing the frame and context underpinning the analysis. Even if they are econometrically-robust, they end up in being neither logically- (nor geohistorically-) robust.

Therefore, summarizing our findings, we posit that:

- for the *top-10-exporting countries*, we expect a somewhat positive effect of the African Slave Trades (at least in the shape Nunn proposed), along with interactional effects that end up into reinforcing the already-positive effect of the Slave Trades year after year. This completely contradicts Nunn's findings, though spotting the econometric trends that describe more than 80% of the phenomenon (in terms of human beings involved).
- For the *top-19-exporting countries*, we expect economies not to be significantly affected by the Slave Trades; however, we spot a somehow positive trend in yearly interactions that could even turn into statistically-significantly positive in the next decades. This provides some clue that the more a country exported slaves, the better the effects of the Slave Trades on that country's economy.
- For the *bottom-33-exporting countries*, we expect economies not to be significantly affected by the Slave Trades; however, we spot a negative trend in yearly interactions that turn into statistically-significantly negative from the Nineties and can be expected to exacerbate the negative effects of the Slave Trades in the next decades.
- For the *least-22-exporting countries*, we expect a clear, statistically-significant negative effect of Slave Trades, that is not expected to either change or furtherly alter African countries' economies in the next years. This is coherent with Nunn's

conclusions; however, the selected subsamples accounted for only less than 590,000 people over nearly 16million slaves taken from Africa.

- For the *19-virtually-zero-exporting countries*, we spot a slightly, non statistically-significant positive effect of the Slave Trades<sup>88</sup>. The effect is expected to become more and more negative (and detrimental) year after year. Whatever the results be, these findings are nonsense, as we are looking for the effects of a phenomenon – the African Slave Trades – that *by definition* hadn't ever happened in those countries.<sup>89</sup>

Thus, the very same parameter – the export ratio – seems to have *five* different subsample-effects, fashions and interpretations, each one depending on the regression frame and the historical, socio-economic context we wanted to focus on specifically.

It is therefore straightforward and crystal-clear that the export ratio by Nunn is eventually *ineffective* – *rebus sic stantibus* – at completely and coherently depicting the current economic characteristics of the African countries in a somewhat convincing, consistent way.

Thus, we do call for both further evidence from more detailed research, and for more complex frames and models that might aim at better detecting the peculiar features of both the African continent and its compounding countries, regions, people, ethnicities and individuals.

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<sup>88</sup> However, this conclusion could be *de facto* nonsense, as the phenomenon of the Slave Trades did not affect *directly* these countries. Further research frame is therefore open to investigate for the *indirect* effects of the Slave Trades on these countries (that are effects that *cannot* be captured by such these models that Nunn proposed).

<sup>89</sup> It remains extremely unclear to us why Nunn decided to include such zero-exporting countries in his regression. We consider this as a severe logical, theoretical and mathematical inconsistency in Nunn 's paper.

Moreover – even if mathematically-justified by taking the logarithm of 0.1 when he had to consider  $\ln(\text{export ratio})$  – we consider abhorrent the fact that Nunn both treats people as a non-discrete variable ("*0.1 slaves*" is nonsense) and thinks to take the logarithm of a number that *tends* to zero when in fact that number *is* zero, just to pretend to avoid the problem and being able to run a log-log OLS.

## Conclusions

In the end, Nunn's analysis of the effects of the African Slave Trades on current economies of African countries has been pivotal, for it managed to firstly combine enslavement data along with current economic outcomes.

However, we shew that such approach is effectively too simplistic, as it both does not take into account further relevant features of the African countries, and it is too poor and ineffective to explain such a complex phenomenon, as the African Slave Trades were. Namely, once we focus on a people-related, absolute analysis of the phenomenon (rather than a country-aggregated, relative analysis anymore), the findings related to Nunn's intensity-of-export rate are too different among relevant subset of countries to let us call for a general, *unique*, econometrically-robust evidence coming from these data.

In our work, we pointed out some of the weaknesses of Nunn's approach. Indeed, Nunn's analysis and results are clearly altered by a series of countries that are factually overweighted in his analysis – though accounting for a very little part of the phenomenon in terms of human lives.

This means that the analysis by Nunn takes these biasing countries too much into account to estimate the effects of the whole phenomenon. The final effect is, then, bended towards negativity by some *de facto* not-so-relevant observations in Nunn's dataset; however, these conclusions are too general and aggregated to us to be considered as how factual dynamics really are.

More precisely, we can consider Nunn's conclusions as describing *neither the whole* phenomenon, *nor the actual* phenomenon.

Firstly, we point out that Nunn's analyses *cannot* describe the whole phenomenon in a robust way, as the African Slave Trades were a *too complex* and articulate event whose peculiarities are not caught by either Nunn's models or his results. Therefore, Nunn's approaches are definitely both too simplistic and partial to get enough evidence to call – in fact – for *decisive* and crystal-clear effects.

Secondly, we posit that – with his data – Nunn doesn't manage to describe the *actual* phenomenon. Put another way: Nunn describes some economic trends by relying on a sample that includes country-observations whose eligibility we questioned.

That is, we disagree on considering as relevant all country-observations whose total number of enslaved people is either zero or a very low number. This because we think

that it is improper to look for percentual-variation effects<sup>90</sup> where you have either zero exported people (and therefore *zero factual variation*) or a too-low number of exported people<sup>91</sup>.

That is: to identify the effects of the African Slave Trades, Nunn considers a too broad sample. He both includes irrelevant observations in his analysis and calls for general evidence even if his findings are *clearly* drifted by such an array of irrelevant and improper country observations (even though his effects *appear* to be econometrically-robust and coherent with the overall literature). The main issue in *Nunn (2008)* is, then, that Nunn analyzes a broader phenomenon that – if we look at factual numbers of exported people – should have been described by analyzing *less* countries.

In the subsets we analyzed, we managed to find statistically-robust and significant evidence of counterfactual interpretations based on the very same data from Nunn.

Our findings show very different results from Nunn's ones and are considerable as both meaningful and coherent in describing the *whole* phenomenon. In fact, we shew how a relevant subsample of the mere 19-top exporting countries (i.e. countries accounting for more than 95% of the whole phenomenon) shows different trends and is also more consistent in describing the whole phenomenon than the overall biased sample.

Indeed, our top-19 exporting countries subsample<sup>92</sup> manages at describing the phenomenon by both using only the *relevant* observations by Nunn and not loosing its overall meaningfulness, as it accounts for nearly the whole<sup>93</sup> number of enslaved people.

While Nunn's conclusions about the negative effects of the slave trades on contemporary economic performances of African countries are robust, our expanded dataset and alternative methodologies reveal clear and consistent *nuanced trends* that should have to be furtherly investigated in subsequent research attempts.

More specifically, our findings indicate that the effects of slave exports vary significantly *across different (relevant and consistent) subsets* of countries also when it

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<sup>90</sup> As the log-log regression fashion does let.

<sup>91</sup> As we cannot dare to regress the economic outcomes of a country like Djibouti on merely only five people missing over a year-period of *five hundred* years.

<sup>92</sup> When it comes to absolute, people-based analyses, we should do rely *only on relevant observations* to spot concrete and coherent findings in the research.

<sup>93</sup> *Anyway*, it accounts for a huge set of enslaved people who we do consider being the relevant people to focus both our study and its implications on.

comes to a dynamical approach to economic outcomes. Our conclusions from the subset analyses show that the effect on the relevant subsample accounting for explaining the phenomenon shows both reversed and statistically-significant effects with respect to Nunn's trends. On the other hand, the subset containing the array of countries we considered as irrelevant shows results consistent with Nunn's findings, albeit being made of countries whose presence in the dataset – also with respect to this dynamic panel approach – we questioned from a logical, theoretical and mathematical point of view.

Moreover, for the top-10-exporting countries, we spot also clear statistical evidence suggesting a statistically-significantly positive economic year-dynamic impact from the slave trades, likely due to either the initial economic infrastructure that facilitated such trades, a somewhat (hidden) *institutional* effect, or to the economic consequences of historical businesses over enslaved people – an option Nunn *never* considered in his econometric analyses.

These findings should be furtherly analyzed, as they can hide some underpinning evidence of the fact that – in the end – the Slave Trades did have a *somewhat factual positive* implication in economies of African countries.

This could have been happening not only on an aggregate-GDP level<sup>94</sup>, but it could also hold at a per-capita-GDP level. If confirmed by further research, this finding would contradict Nunn's evidence and would imply that more developed societies were able to improve their economic systems and outcomes even in the context (*or even thanks to*) of such a devastating practice; in such a case, also a robust review of current literature should be strongly called out.

Conversely, the least-exporting countries do exhibit *again* a clear negative impact, aligning with the expected detrimental effects of the Slave Trades current literature has been showing.

As previously questioned, we challenged the validity of results based on these pleonastic data and we shew how they can eventually alter the overall results<sup>95</sup>.

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<sup>94</sup> Whose evident likelihood we swiftly shew in *paragraph IV.IV, Figures 6 and 7*.

<sup>95</sup> *Figure 13 in paragraph VI.I* provides, once again, clear and mathematical evidence of the effects of combining different trends and fitting lines between our two relevant subsamples and the overall sample.

Of course, a lot of further research work is expected and due in order to eventually reach more consistent and coherent conclusions on the final effects of such a harsh phenomenon on the economies of Africa as a continent and of its compounding countries.

Moreover, our dynamic panel data analysis eventually managed at *decompressing history* and at providing a more time-diverse frame of the African Slave Trades. It reveals that the temporal dimension plays a crucial, not-ignorable role – as in each historical phenomenon – in both *describing* and *understanding* these impacts.

The interaction effects over time suggest that the negative consequences of slave trades might diminish or even reverse in some cases as we move further away from the historical period of the Trades. This highlights the importance of considering both the immediate and long-term effects in such analyses, but also to focus on some pre-colonial, colonial and post-decolonial features whose importance is spotted and clued but whose presence in models is not included (nor considered by our author).

This complexity necessitates a more detailed and context-sensitive approach to fully capture the long-term repercussions of the African Slave Trades on current economic outcomes.

In conclusion, our research calls for a more comprehensive exploration of the dynamics of the African Slave Trades – both as a historical phenomenon *per se* and as a pivotal event whose subsequent consequences still somehow do affect Africa today.

While we provide substantial evidence to support some of Nunn's conclusions – at least where it comes to aggregate data on the whole sample – our findings also suggest furtherly-new paths for research. Further studies should aim to refine these analyses both by incorporating more factually-relevant data and by using econometric models that better fit the complex cultural and geo-historical frame of the African Slave Trades, in order to unravel the multifaceted features of the eventual and time-related effects of the Slave Trades on both current and historical African development.

By proposing the reader this work – that aims at calling for better analyses of both frames and findings coming from econometric masteries over the phenomenon – we hope to contribute, were it at least *dialectically*, to a more detailed understanding of the Slave-Trade-related phenomena and, more broadly, of how historical events and injustices do continue to shape economies even today, year after year.

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