Coastal Proximity and Individual Living Standards: Econometric Evidence from Geo-Referenced Household Surveys in Sub-Saharan Africa

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Abstract
We investigate geo-referenced household-level data consisting of up to 128,609 individuals living in 11,261 localities across 17 coastal sub-Saharan African countries over 20 years. We analyze the relevance of coastal proximity, measured by geographic distance to harbors, as a predictor of individual economic living standards. Our setting allows us to account for country-time fixed effects as well as individual-specific controls. Results reveal that individuals living further away from the coast are significantly poorer measured along an array of welfare indicators. Our findings are robust to the inclusion of other geographic covariates of development such as climate (e.g. temperature, precipitation) or terrain conditions (e.g. ruggedness, land suitability). We also explore mechanisms through which coastal proximity may matter for individual welfare and decompose the estimated effect of coastal proximity via formal mediation analysis. Our results highlight the role of human capital, urbanization as well as infrastructural endowments in explaining within-country differences in individual economic welfare.

JEL Classification: O15, O18, R12, O55

Keywords: Geography, Coastal Proximity, Sub-Saharan Africa, Mediation Analysis

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I. INTRODUCTION

Cross-country studies investigating the link between physical geography and economic development consistently provide evidence of a positive and statistically significant association between coastal proximity and national income (e.g. Bloom et al. 1998; Radelet and Sachs 1998; Gallup et al. 1999; Redding and Venables 2004; Putterman and Weil 2010; UN-OHRLLS 2013; Carmignani 2015). More recent literature analyzing subnational variation in economic activity also suggests coastal proximity as a relevant indicator of within-country income differences (e.g. Rappaport and Sachs 2003; Gennaioli et al. 2013; Motamed et al. 2014; Mitton 2016; Flückiger and Ludwig 2018; Henderson et al. 2018; Jetter et al. 2019).

To systematically complement the literature that focused on outcomes at the national or regional level, this paper analyzes the relevance of coastal proximity on individual economic welfare. We employ a repeated cross-sectional dataset from the Afrobarometer spanning almost 20 years and consisting of up to 128,609 individuals living in 11,261 geo-referenced localities across 17 coastal sub-Saharan African countries. Particularly in Africa, countries and regions with coastal access have had higher levels of economic development compared to more remote areas, which has been attributed to factors such as lower costs of trade as well as the amplifying forces of urbanization and agglomeration (Bloom et al. 1998; Gallup et al. 1999; Limão and Venables 2001; Rappaport and Sachs 2003; Atkin and Donaldson 2015; Storeygard 2016; Henderson et al. 2018). Spatial inequalities such as these have been shown to persist even when initial advantages of coastal areas may have declined in relevance (Bleakley and Lin 2012; Jedwab et al. 2017).

Our results confirm coastal proximity as a robust indicator of individual economic welfare across African countries: Living further away from the coast is associated with a significant and meaningful reduction in the likelihood of having cash employment, increases in the occurrence of cash-, food-, water- and medicinal droughts (deprivation), as well as lower
overall household wealth (possessions). Our results are robust to the inclusion of relevant individual-level covariates, country-time specific influences via fixed-effects, as well as an extensive set of further geographic variables related to development such as latitude, elevation, climatic factors (e.g. temperature, precipitation) and features of the terrain (e.g. ruggedness, land suitability).

We also explore potential mechanisms on how coastal proximity may matter for individual living standards and investigate several candidate factors shown to contribute to spatial disparities in the literature (for an overview see Breinlich et al. 2014). In particular, we analyze the relevance of human capital (Skoufias and Katayama 2011; Gennaioli et al. 2013; Flückiger and Ludwig 2018), urbanization-agglomeration (e.g. Young 2013; Motamed et al. 2014; Chauvin et al. 2017; Gollin et al. 2017; Henderson et al. 2018), institutions (Acemoglu et al. 2001; Nunn and Wantchekon 2011; Radeny and Bulte 2012; Michalopoulos and Papaioannou 2014; Mitton 2016), infrastructure (Calderón and Servén 2010; Dinkelman 2011; Jedwab and Moradi 2016; Bluhm et al. 2018; Donaldson 2018; Jetter et al. 2019) as well as market access and trade (Brülhart 2011; Bosker and Garretsen 2012; Hirte et al. 2020; Jedwab and Storeygard 2020). We consider these factors in turn and assess their power in mediating the relationship between coastal proximity and individual welfare through formal mediation analysis. The results highlight human capital, urbanization as well as infrastructural endowments as the predominant channels via which the presented within-country differences in individual economic welfare may be explained.

Our findings at the individual level emphasize the relevance of coastal proximity as an indicator of economic development and lend further support to the previously established interrelation between first- and second nature causes of development (see Breinlich et al. 2014; Lessmann and Seidel 2017).
The remainder of this paper is structured as follows: Section II presents the data and the estimation strategy. Our results are given in Section III, where we also present the insights from our mediation analysis. Concluding remarks are offered in Section IV.

II. DATA AND EMPIRICAL STRATEGY

Data

We employ the complete set of the geo-referenced Afrobarometer survey rounds, spanning a timeframe of 20 years (from 1999 to 2018) across seven survey waves (Afrobarometer 2019). Afrobarometer surveys are representative at the national level and respondents are adults of the sampled households. They carry individual- and household level information on basic characteristics, including living conditions and household assets, and additionally, provide information on individuals’ sentiments as well as opinions towards the economy, democracy, governance and society. Afrobarometer fits geo-coordinates (latitude and longitude) to respondents at the level of their respective enumeration area (BenYishay et al. 2017). The sampling procedure aims for eight individuals/households per EA. Our main (extended) sample of countries consists of up to 128,609 (212,037) individuals living in 11,261 (17,319) geo-referenced localities across 17 (28) coastal sub-Saharan African countries (see Figure 1). We chose to restrict the main sample to coastal countries, so as to separate the distance effect from a more general “landlockedness” effect which potentially confounds distance with other influences (UN-OHRLLS 2013; Carmignani 2015). We investigate the extended sample including individuals living in landlocked countries in our robustness tests.

1 Surveys were sampled in 1999-2001, 2002-2004, 2005-2006, 2008-2009, 2011-2013, 2014-2015 and 2016-2018, respectively.
a) Dependent Variables and Channels of Influence

We employ three main dependent variables as indicators of individual economic welfare: 1) The dichotomous variable *Cash Employment* (0-1) which indicates whether survey respondents currently have part- or full-time cash employment. 2) The index *How often gone without enough: [Water / Food / Cash Income / Medical Care]* (0-4) which serves as a measure for individual- as well as household deprivation and is constructed by averaging individuals’
responses in these four categories. The index Possessions: [Radio / TV / Motor Vehicle] (0-1) which serves as a measure for survey respondents’ wealth.

To explore the potential channels through which coastal proximity may matter for individual living standards, we make use of Afrobarometer’s opinion polling first and investigate individuals’ sentiments regarding the most important issue of their respective country, Most Important Issue: [Education/Institutions/Infrastructure] (0-4). Thereafter, we directly investigate the lived realities around these concerns via Education Level (0-9), two further composite indices, Institutions Score (1-4) and Infrastructure Present in Enumeration Area: [Electricity Grid / Piped Water / Sewage / School / Paved Road / Health Clinic] (0/1), as well as the dummy variable Urban (0/1). We also analyze individuals’ opinions towards supranational organizations aimed at increasing political as well as economic integration, Helps your Country: [AU or ECOWAS/SADC/EAC/IGAD...] (0-3) to directly relate coastal proximity with regional trade considerations.

To further explore a potential trade channel, we use information on individuals’ occupation and test for a differential effect of distance using

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2 The four different questions read: “Over the past year, how often, if ever, have you or anyone in your family gone without: Enough clean water for home use” / “[…] : Enough food to eat” / “[…]: A cash income” / “[…]: Medicines or medical treatment?”. These questions are consistently available in all Afrobarometer survey rounds. Using each question separately does not affect our main insights as shown in the Appendix.

3 The questions read “Which of these things do you personally own? Radio” / “[…] Television” / “[…] Motor Vehicle-Car-Motorcycle”. Wealth possessions were surveyed from Round 3 and onwards. Using each question separately does not affect our main insights as shown in the Appendix.

4 The question reads: “In your opinion, what are the most important problems facing this country that government should address?”.

5 To measure the quality of institutions, we construct an “Institutions Score” similar to Mitton (2016), which is based on an array of questions regarding local- authorities, processes and government. The score is constituted of 21 questions measuring individuals’ trust in (local) courts, police and government, their experience with the procedures of local authorities, especially regarding bribery (corruption), the enforcement of crime, and the ease of handling matters. Higher values indicate fewer experiences/better judgments of (local) institutions.

6 Nunn and Wantchekon (2011) use an identical measure for the provision of public goods, excluding roads.

7 Regional Economic Communities have the proclaimed aim to foster the movement of goods and people, and to improve living standards. The question reads: “In your opinion, how much do each of the following do to help your country, or haven’t you heard enough to say”.

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Commercial Farmer (0/1), a dichotomous indicator for individuals working as farmers who grow their produce mainly for sale.\(^8\)

\(b\) Main Independent Variables

To construct our main explanatory variable of interest, \(\log(Distance\ to\ Harbor)\), we measure the shortest geodesic (ellipsoidal) within-country distance from each respondent’s enumeration area to the respective country’s major harbor(s).\(^9\) As in Rappaport and Sachs (2003), we define all large and medium sized ports listed in the World Port Index (WPI) as “major harbors” (NGA 2019).

We also employ alternative conceptions of coastal proximity for robustness checks, namely shortest within-country distance to the coastline, \(\log(Distance\ to\ Coastline)\), distance to major harbors using beelines (as the crow flies), \(\log(Beeline\ Distance\ to\ Harbor)\), as well as distance to the coastline using beelines, \(\log(Beeline\ Distance\ to\ Coast)\).\(^{10}\) Shapefile data for country administrative areas, the boundaries of which we use to calculate within country distances – and also from which we construct the coastline – come from the Center for Spatial Sciences at the University of California (GADM 2020).

\(c\) Further Covariates

To isolate coastal proximity from other, potentially correlated, geographic influences of development, we closely follow Henderson et al. (2018) and add an extensive set of geographic covariates. We include Elevation (Farr et al. 2007), (Abs.) Latitude, Ruggedness (Nunn and Puga 2012) and Malaria Ecology (Sachs et al. 2004) as well as agricultural characteristics such as Land Suitability (Ramankutty et al. 2002), Growing Days (FAO and IIASA 2019), Monthly

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\(^8\) We thank an anonymous referee for pointing out this additional extension.

\(^9\) We measure distances using the projection of coordinates along the earth’s ellipsoid (using WGS 84, EPSG 4326). We add +1 (kilometer) before logging all our distance measure prior to taking the logarithm.

\(^{10}\) Beeline distances disregard country boundaries, i.e. cross country borders for shorter distances.
Temperature and Monthly Rainfall (Fick and Hijmans 2017). We also include seven dummy variables indicating the dominant natural vegetation of the area according to Olson et al. (2001).\footnote{Following Henderson et al. (2018) for the definition of those dummies leaves us with seven indicators relevant to our sample: Mediterranean (0/1), Desert (0/1), Mangroves (0/1), Tropical Forest (0/1), Tropical Grassland (0/1), Temperate Grassland (0/1) and Montane Grassland (0/1).} We account for individuals’ access to rivers or lakes by adding two dummy variables indicating whether individuals live within 25 kilometers of a navigable river or major lake, i.e. Navigable River (0/1) and Major Lake (0/1), and thereby analyze an extended set of trade-related covariates together with our main explanatory variable, \( \log(\text{Distance to Harbor}) \) (see Henderson et al. 2018).\footnote{The inclusion criteria for both rivers, i.e. „navigability“ as well as lakes, i.e. „major“, is defined as in Henderson et al. (2018): we select all natural rivers within size categories 1-5 (scale 1-7) as defined in Natural Earth (2019) and lakes with a surface area of over 5,000 sq. kilometers (Lehner and Döll 2004).} We also add in individual-level covariates Age, \textit{ squared Age} and a dichotomous indicator of gender, Female (0/1). The importance of urbanization-agglomeration aspects, argued to be particularly relevant in African contexts (Young 2013; Motamed et al. 2014; Chauvin et al. 2017; Jedwab et al. 2017; Gollin et al. 2017; Flückiger and Ludwig 2018; Henderson et al. 2018), is encapsulated by three distinct indicators of urbanization: Primate City (0/1), a dummy indicating whether individuals live within 25 kilometers of a capital or primate city, \textit{ Population Density} (CIESIN 2017), a continuous measure of population density (per sq. kilometer), as well as Urban (0/1), a dichotomous indicator included in the Afrobarometer survey.

Descriptive statistics for all variables are presented in Table A1, part a) and b), of the Appendix.

**Empirical Strategy**

We employ the following regression control approach to analyze the link between coastal proximity and individual economic welfare:
\[ Y_{i,c,t} = \alpha + \beta \log(Distance to Harbor)_{i,c,t} + \gamma X'_{i,c,t} + \delta_{c,t} + \varepsilon_{i,c,t} \] (1)

\( Y_{i,c,t} \) represents the respective welfare indicator of individual \( i \) in country \( c \), surveyed at survey-sampling period \( t \). \( \beta \) captures the influence of the logged (within-country) distance to major harbors such that the link between distance and the respective welfare indicator can be interpreted as a semi-elasticity. Standard errors are clustered at level of the survey enumeration area, i.e. at the survey cluster level. Binary dependent variables are estimated with a simple Linear Probability Model (LPM) specification.\(^{13}\) \( X \) represents a matrix of control variables which allows us to account for all influences potentially conflating the relationship between coastal distance and individual economic welfare. In contrast to the cross-country (cross-regional) literature, our setting allows us to account for country-time fixed effects \( \delta_{c,t} \) such that we can explore a within-country estimate of distance to harbor on (individual) outcomes net of time-specific influences as well as country-specific influences at specific points in time, such as the Kenyan Post-Election Crisis of 2007-2008. \( \varepsilon_{i,c,t} \) is an idiosyncratic error term.

We explore potential mechanisms and factors affecting the link between coastal proximity and individual living standards both via a “bad control” approach as well as a formal mediation analysis, after establishing the relevance of coastal proximity for individual living standards. Numerous robustness checks for the persistence of the observed links are offered (mostly relegated to the Appendix).

III. RESULTS

Table 1 presents the main estimation results employing our three distinct individual welfare indicators as dependent variables. We report a parsimonious specification including country-

\(^{13}\) Results for binary dependent variables estimated via Probit yields qualitatively identical and quantitatively similar marginal effects.
time fixed effects in the odd numbered columns. Even numbered columns include the full set of controls and represent our stringent settings.14

The results systematically indicate that distance to harbors is inversely related to individual economic welfare throughout all specifications.15 To facilitate the interpretation of the quantitative relevance of the main explanatory variable of interest, \( \log(\text{Distance to Harbor}) \), we report the predicted change of the respective dependent variable when moving from the minimum distance in the sample (i.e. effectively living by a major port) to living as far as 564 kilometers away from the harbor (3rd quartile of sample) and compare the predicted change of each individual welfare indicator to the respective sample mean reported in brackets. The results show that distance to harbors is statistically significantly and negatively related to cash employment (columns 1 and 2) and positively, statistically significantly, related to deprivation (columns 3 and 4). Quantitatively, increasing individuals’ distance to major ports to the 3rd quartile in the sample translates into a 5.5 percentage-point decrease in the probability of having part- or full-time cash-employment (column 2) and can explain 17% of the occurrence of monetary-, medicinal- as well as food- and water- related shortages compared to the mean in the sample (column 4). Coastal remoteness is significantly related to having fewer (wealth) possessions: increasing individuals’ distance to the 3rd quartile corresponds to a 12 percentage-point decrease in the probability of owning a radio, a tv or a motor vehicle, accordingly, a 23% reduction compared to the mean in the sample (column 6). Importantly, the results for our indices of deprivation (columns 3 and 4) and possessions (columns 5 and 6) also hold when analyzing the variables that compose our indices separately (see Table A3).

14 See Table A1 for coefficient estimates of all control geographic variables.
15 The variation in the number of observation stems from missing values. Holding sample size constant by eliminating observations for which not all dependent variables are available does not change our main insights as shown in the Appendix.
|                     | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|---------------------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| log(Distance to Harbor) | -0.018*** (0.001)    | 0.073*** (0.004)                                                        | -0.037*** (0.001)                             |
|                     | -0.009*** (0.002)    | 0.035*** (0.006)                                                        | -0.019*** (0.002)                             |
| Sample Mean of Dependent Var. | 0.39 | 1.28 | 0.51 |

**Basic Controls**

- **Age**: 0.031*** (0.001), 0.011*** (0.001), 0.012*** (0.000)
- **Age^2**: 0.000*** (0.000), 0.000*** (0.000), 0.000*** (0.000)
- **Female (0/1)**: -0.106*** (0.003), 0.020*** (0.004), -0.083*** (0.002)

**Urbanization Controls**

- **Urban (0/1)**: 0.055*** (0.004), -0.284*** (0.010), 0.134*** (0.003)
- **Primate City (0/1)**: 0.029*** (0.007), -0.084*** (0.016), 0.029*** (0.006)
- **Population Density**: -0.001 (0.000), 0.004*** (0.001), -0.001* (0.000)

**Trade-related Controls**

- **Navigable River (0/1)**: -0.013 (0.009), -0.121*** (0.021), 0.029*** (0.008)
- **Major Lake (0/1)**: 0.010 (0.012), 0.033 (0.024), -0.023*** (0.008)

**Full Geographic Controls**

- **Country-Time FE**: NO, YES, NO, YES, NO, YES
- **Observations**: 123,793, 122,238, 128,609, 126,982, 103,889, 102,990
- **R-Squared**: 0.09, 0.14, 0.17, 0.20, 0.15, 0.22

Notes: Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum- and 3rd quartile harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Robustness Checks and Extensions

We conduct a large array of robustness checks on our main results and summarize them in Table A4 of the Appendix. All interpretations regarding the relevance of coastal proximity for individual living standards remain robust: (a) We re-estimate our main results by altering the distance specification to a simple “beeline” (“as the crow flies”) measure. (b) We use a different conceptualization of coastal proximity by regressing our outcome variables on individuals’ distance to the coastline instead of port locations, using log(Distance to Coastline). (c) Accordingly, we test beeline distances to the coastline with, log(Beeline Distance to Coastline).

We add dummies for living within 25 kilometers to a major harbor (d) or the coast (e), Harbor (0/1) and Coast (0/1) to separate the distance effect from a pure “coastal access” effect. (f) We keep observations constant across rows and columns. (g) We exclude distances larger than the 80th percentile (629 kilometers) from the sample. (h) We exclude localities marked with a precision code of 2 and larger in the Afrobarometer survey (scale 1-8) from our sample. (i) We include survey sampling weights. (j) We employ clustering at the country-sample level. Moreover, we check the main coefficient’s stability to potentially excluded controls via Oster tests (Oster 2019) in Table A14.

All robustness checks corroborate our general findings of a negative, independent, statistically significant relationship between coastal proximity and individual living standards. The results reiterate the relevance of coastal proximity, in varying conceptualizations, in predicting individual economic welfare.

Next to the above-mentioned robustness tests, we extend our analysis and (a) expand our main sample to include individuals living in landlocked countries (see “Extended Sample” in

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16 We also investigate differing effects across distance in Figure A1. Distance to harbors is systematically related to living standards.
Figure 1) and also (b) analyze the persistence of our estimated effects over time. For (a), we include individuals living in landlocked countries, to explore a potential “placebo” group compared to individuals living in coastal countries. This allows us to compare the effect of sheer coastal distance within countries from a landlockedness-effect, the one often explored in the literature (see e.g. UN-OHRLSS 2013; Carmignani 2015). The idea is that differences in individual coastal proximity within landlocked countries should influence individual welfare to a lower degree given that national borders need to be crossed, creating further, potentially large, restrictions.\footnote{As expected, Table A15 suggests that the relevance of individual distance to harbors tends to be less pronounced for individuals living in landlocked countries. (b) The relative importance of trade-related factors of geography might be expected to change along a country’s developmental path (see Henderson et al. 2018). Hence, we estimate differential effects using an interaction effect constituted of log(Distance to Harbor) and Young (0/1), which indicates respondents below the median age in the sample (33). The results in Table A16 of the Appendix show a clear pattern. The negative effect of distance becomes less stark for younger generations, potentially hinting at a reduction in the relevance of trade-related aspects over time (see Henderson et al. 2018).} As expected, Table A15 suggests that the relevance of individual distance to harbors tends to be less pronounced for individuals living in landlocked countries. (b) The relative importance of trade-related factors of geography might be expected to change along a country’s developmental path (see Henderson et al. 2018). Hence, we estimate differential effects using an interaction effect constituted of log(Distance to Harbor) and Young (0/1), which indicates respondents below the median age in the sample (33). The results in Table A16 of the Appendix show a clear pattern. The negative effect of distance becomes less stark for younger generations, potentially hinting at a reduction in the relevance of trade-related aspects over time (see Henderson et al. 2018).\footnote{We thank an anonymous referee for pointing out this additional extension.}
Table 2: Exploring Potential Mechanisms of Influence of Coastal Proximity

| Dependent Variable | Most important Issue: Education: (0/1) | Most important Issue: Educational Level: (0-9) | Most important Issue: Urban: (0/1) | Most important Issue: Institutions: (0/1) | Most important Issue: Institutions Score: (1-4) | Most important Issue: Infrastructure: (0/1) | Infrastructure Present in Enumeration Area: [Electricity Grid / Piped Water / Sewage / School / Paved Road / Health Clinic] | Helps your Country: REC: (0-3) | Helps your Country: AU: (0-3) |
|-------------------|----------------------------------------|-----------------------------------------------|----------------------------------|------------------------------------------|--------------------------------------------|---------------------------------|-------------------------------------------------|-----------------|-----------------|
| log(Distance to Harbor) | 0.001 | -0.106*** | -0.071*** | 0.002 | 0.025*** | 0.005*** | -0.009*** | 0.034*** | 0.046*** |
| (0.001) | (0.012) | (0.007) | (0.001) | (0.003) | (0.001) | (0.003) | (0.009) | (0.008) | |
| Discrete Change of Distance from Harbor to the 3rd Quartile (564km) | 0.007 | -0.670 | -0.449 | 0.010 | 0.158 | 0.030 | -0.056 | 0.214 | 0.293 |
| (0.06) | [3.40] | [0.46] | [0.09] | [2.81] | [0.06] | [0.56] | [1.80] | [1.68] | |
| Sample Mean of Dependent Var. | Basic Controls: YES | YES | YES | YES | YES | YES | YES | YES | YES |
| | Urbanization Controls: YES | YES | YES | YES | YES | YES | YES | YES | YES |
| | Trade-related Controls: YES | YES | YES | YES | YES | YES | YES | YES | YES |
| | Full Geographic Controls: YES | YES | YES | YES | YES | YES | YES | YES | YES |
| | Country-Time FE: YES | YES | YES | YES | YES | YES | YES | YES | YES |
| | Observations: 120,461 | 126,555 | 127,075 | 120,461 | 126,683 | 120,461 | 116,174 | 35,409 | 47,298 |
| | R-Squared: 0.03 | 0.29 | 0.30 | 0.06 | 0.21 | 0.04 | 0.43 | 0.11 | 0.07 |

Notes: Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in column (7) includes individuals from rounds 2 through 7 of the Afrobarometer, column (8) and (9) includes data from rounds 2, 4, 5 and 6. We also report estimated interquartile differences in the respective dependent variables between minimum- and 3rd quartile harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Mechanisms Explaining the Relevance of Coastal Proximity

Table 2 explores potential mechanisms through which coastal proximity may influence individual economic welfare. Following the literature, we focus on the link between coastal proximity and human capital, urbanization, institutional quality, infrastructural development and the perceived relevance of trade to investigate potential (indirect) channels that explain the spatial economic disparity given by individual geographic distance to harbors (see Breinlich et al. 2014 for an overview).

Individual educational attainment has been linked to economic welfare at the cross-regional level (Skoufias and Katayama 2011; Gennaioli et al. 2013; Chauvin et al. 2017; Flückiger and Ludwig 2018). Individuals’ opinions regarding education, as shown in column (1), do not mirror these findings, as respondents living in more remote locations do not report education as the most important issue (facing the country/government) more often than individuals living closer to the coast. However, we do find that individuals’ actual educational attainment decreases substantially along coastal distance (column 2): moving from the minimum distance to the 3rd quartile within the sample reduces the level of education by .670, which corresponding to about 20% of the sample mean.

As shown by recent literature (Motamed et al. 2014; Henderson et al. 2018), levels of urbanization are negatively correlated with increased distance to coast in Africa, and can negatively impact individual economic welfare directly, or indirectly, via agglomeration economies (Skoufias and Katayama 2011; Bosker and Garretsen 2012; Young 2013; Gollin et al. 2017; Flückiger and Ludwig 2018; Henderson et al. 2018). Consistent with this literature, we also find a negative, statistically significant, and quantitatively large relationship between (coastal) remoteness and living in urban environments (column 3). Given the strong interconnection between coastal proximity and urbanization, we explore the differential effects of distance for individuals from urban environments in Table A17 separately, by estimating the interaction term $\log(\text{Distance to Harbor}) \times \text{Urban}(0/1)$. The results show that, while less
pronounced, the distance penalty remains a statistically significant predictor of individual living standards, for two of our three outcomes, for respondents living in urban surroundings.

Regarding institutions, we proceed similar to Mitton (2016; 107) and construct an index, *Institutions Score (1-4)*, which combines responses concerning individuals’ experiences with opinions on local authorities, offices and government. The results suggest that individuals living further away from the coast do not report institutions to be at the top of their concerns (column 4) nor is the institutional score negatively affected when living further away from major harbors (column 5). Recent literature has also suggested a weak link between institutions and differences in subnational development within countries (Radeny and Bulte 2012; Michalopoulos and Papaioannou 2014; Mitton 2016). In fact, individuals living in interior regions even seem to evaluate institutions more positively compared to coastal areas in our findings (column 5), a result which mirrors the one in Radeny and Bulte (2012) as well as Nunn and Wantchekon (2011), whereby distance to coast positively influenced levels of trust via lower intensity of slave trade.

Infrastructure has been highlighted as a relevant factor for regional development (Calderón and Servén 2010; Dinkelman 2011; Jedwab and Moradi 2016; Storeygard 2016; Bluhm et al. 2018; Donaldson 2018; Jetter et al. 2019). Consistent with this literature, our results at the individual level suggest that coastal proximity is negatively associated with respondents’ sentiments that infrastructure needs are issues of concern (see column 6 and 7). The actual access to basic infrastructure (as measured by our composite infrastructure index), is also negatively associated with distance to major ports.

Increased trade costs and reduced market access have been shown to be an inherent issue of remote areas in Africa (Bosker and Garretsen 2012; Atkin and Donaldson 2015; Henderson et al. 2018; Jedwab and Storeygard 2020). While trade volumes are necessarily an aggregate phenomenon, we find that survey respondents further away from the coast exhibit a higher tendency to report their respective Regional Economic Communities (RECs) or the African
Union (AU) as helpful to their country, which is consistent with them wishing to improve trade opportunities. Moreover, Table A18 shows that, the distance penalty is significantly increased for commercial farmers, i.e. farmers who mainly grow their produce for sale. Commercial farming is likely to depend on access to markets and trade opportunities, leaving commercial farmers more vulnerable to a distance penalty.

**Bad Controls and Mediation Analysis**

All results highlight coastal proximity as a statistically as well as an economically meaningful indicator of individual living standards and as a relevant predictor for diverse mechanisms that systematically relate and contribute to economic development and spatial inequalities. As coastal remoteness need not be destiny (Motamed et al. 2014), we aim to gauge the empirical importance of our controls as well as our potential mechanisms on our main explanatory variable by investigating the relevance of a bad controls problem (a) and by performing a formal mediation analysis (b).
Table 3: Bad Controls: Relevance of included Covariates

| Dependent Variable | Cash Employment (0/1) | How often gone without: Water / Food / Cash Income / Medical Care (0-4) | Possessions: Radio / TV / Motor Vehicle (0/1) |
|--------------------|----------------------|-------------------------------------------------|-------------------------------------------|
|                    | log(Distance to Harbor) | ∆ R-Squared | log(Distance to Harbor) | ∆ R-Squared | log(Distance to Harbor) | ∆ R-Squared |
| (1)                | (2)                  |                   | (3)                  |                   | (4)                  |                   |
| (a) No Controls    | -0.020*** (0.001)      | -               | 0.076*** (0.004)    | -               | -0.037*** (0.001)    | -              |
| (b) = (a) + Basic Controls | -0.020*** (0.001) | 0.054        | 0.075*** (0.004)    | 0.003        | -0.037*** (0.001)    | 0.026        |
| (c) = (b) + Urbanization Controls | -0.009*** (0.002) | 0.004        | 0.024*** (0.004)    | 0.021        | -0.014*** (0.001)    | 0.036        |
| (d) = (c) + Trade-related Controls | -0.009*** (0.002) | 0.000        | 0.024*** (0.004)    | 0.000        | -0.014*** (0.001)    | 0.000        |
| (e) = (d) + Geographic Controls | -0.009*** (0.002) | 0.001        | 0.024*** (0.004)    | 0.000        | -0.019*** (0.002)    | 0.003        |
| (f) = (e) + Educational Level | -0.006** (0.002) | 0.017        | 0.029*** (0.006)    | 0.035        | -0.015*** (0.002)    | 0.056        |
| (g) = (f) + Institutions Score | -0.006** (0.002) | 0.000        | 0.036*** (0.006)    | 0.016        | -0.015*** (0.002)    | 0.000        |
| (h) = (g) + Infrastructure | -0.006** (0.002) | 0.000        | 0.032*** (0.006)    | 0.011        | -0.014*** (0.002)    | 0.010        |

Notes: Odd columns present the coefficient (changes) of our main explanatory variable log(Distance to Harbor) when subsequently adding seven distinct (sets of) control variables to a parsimonious baseline regression constituted of our main coefficient and country-time fixed effects. Even column report the corresponding changes in the total R-squared compared to the previous specification, respectively. The results in each row come from separate regressions and observations are held constant across rows. Inclusion of mediating factors in (h), specifically variables on infrastructure, limits the sample to rounds 2 through 7 of coastal, sub-saharan African countries included in the Afrobarometer. Remaining changes in the number of observations across columns stem from differences in the response rates of dependent variables (see notes of Table 1). Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. Test statistics at the bottom of the table are produced from the full regression, i.e. specification (h). The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
a) **Bad Controls**

We add in all of our baseline covariates and the explored mechanisms in step-wise fashion and report the corresponding changes to our main coefficient, \( \log(\text{Distance to Harbor}) \), as well as changes in the residual variance. Results are presented in Table 3. Row (a) shows the coefficient of \( \log(\text{Distance to Harbor}) \) in a regression including country-time fixed effects only. Row (b) proceeds to add in our basic controls, i.e. Age, Age squared and Female (0/1), as is done in Table 1. Row (c) adds our three urbanization controls to the specification, and so on.\(^\text{19}\) The results show that, while the coefficient size of \( \log(\text{Distance to Harbor}) \) diminishes as expected, coastal proximity remains a statistically relevant predictor of individual living standards throughout all rows and columns. The covariates contributing most to the specifications, as seen by changes in the coefficient (odd column numbers) as well as changes in the R-squared (even column numbers), are Urbanization Controls, Educational Level and Infrastructure, which are the ones we will explore as potential mediators next.

b) **Mediation Analysis**

To further evaluate the link between coastal proximity, its potential channels of influence as well as individual welfare, we conduct a formal mediation analysis. We empirically decompose the total effect of coastal proximity and individual welfare into indirect effects, i.e. effects which run through the proposed mediating factors, and direct effects, i.e. effects of coastal proximity that are unrelated to the proposed channels.

We employ the following system of equations to conduct this analysis:

\[
Y_{i,c,t} = \alpha_1 + \beta_1 \log(\text{Distance to Harbor})_{i,c,t} + \theta M_{i,c,t} + \gamma_1 X'_{i,c,t} + \delta_{c,t} + \epsilon_{i,c,t} \quad (2)
\]

\[
M_{i,c,t} = \alpha_2 + \beta_2 \log(\text{Distance to Harbor})_{i,c,t} + \gamma_2 X'_{i,c,t} + \delta_{c,t} + \mu_{i,c,t}. \quad (3)
\]

\(^{19}\) We do not add sentiments of RECs or the AU to the list of covariates as their availability across survey rounds is sparse, observations size would drop by \(~50\%).
\( \beta_1 \) measures the direct effect of coastal proximity on our different welfare indicators \( Y \), and \( \beta_2 \) measures the effect of distance to harbor on the respective mediator \( M \) (e.g. education, urbanity, infrastructure). \( \theta \) represents the direct effect of the mediator \( M \) on the outcome variable such that the indirect effect is retrieved by multiplying \( \beta_2 \times \theta \) (Alwin and Hauser 1975; MacKinnon et al. 2007). The total effect is then given by a summation of the direct \( (\beta_1) \) and indirect effects \( (\beta_2 \times \theta) \). Figure A2 provides a visual representation of the mediation analysis. As before, \( X \) is a matrix including all our usual controls. We keep country-time fixed effects \( \delta_{c,t} \) to evaluate a stringent setting.

Table 4 reports the coefficients of the total, direct and indirect effects of coastal proximity on individual economic welfare. Estimations are performed via structural equation modelling (SEM). To save space, we present the mechanisms on which distance to harbor had the largest impact in Table 2 and Table 3, Education Level, Urbanization Controls and Infrastructure and estimate their mediating effect on our three main outcome variables (results for our proxies of Institutions and Trade are relegated to Table A19 in the Appendix).

The results in Table 4 suggest that a substantial part of the total effect of distance to harbors is mediated by educational attainment. Including respondents’ level of schooling in the main specification (equation 2) reduces the coefficient size of the direct effect of coastal proximity by 28% (see proportion mediated at the bottom of the table) on average, i.e. across outcome variables. Hence, coastal proximity matters for educational outcomes, and through education, it matters for individuals’ living standards, subsequently. The direct effect of education on living standards is quantitively large and statistically significant throughout all estimations, indicating a relevant effect of education on economic welfare on its own. These results are in line with cross-country and subnational evidence, identifying educational

\[20\] Slight deviations in coefficients between the total effect in Table 1 and Table 3 arise because of missing values of the respective mediator variables introduced.
differences as an important factor for explaining disparities in economic development (Skoufias and Katayama 2011; Gennaioli et al. 2013; Chauvin et al. 2017; Flückiger and Ludwig 2018).

Similar insights arise for the role of urbanity in explaining relevant parts of distance’s effect on living standards, mediating 33% of the effect on average. The mediator Urban (0/1) is therefore picking up a substantial part of the total effect of coastal distance, in similar magnitude as do educational differences.

It is important to note that while both education and urbanization absorb variation in explaining individual living standards on their own (Table 3), as well as through their mediation of coastal proximity (Table 4), empirically, we cannot fully separate them. Indeed, existing literature has provided evidence suggesting that they are interrelated and mutually reenforced (Skoufias and Katayama 2011; Chauvin et al. 2017; Flückiger and Ludwig 2018).

Infrastructure, proxied by our composite measure Infrastructure Present in Enumeration Area: [Electricity Grid / Piped Water / Sewage / School / Paved Road / Health Clinic] (0/1), while relevant, does not show for an influence in similar magnitudes as do education or urbanization, mediating only an average of 11% of the effect. Table A19 explores the role of institutions as a mediator in explaining the distance penalty. Contrary to human capital and urbanity, the pronounced gap in individual living standards across distances does not seem to be associated with perceived differences in (local) institutional quality when controlling for country-time fixed effects. Also, our evidence for a positive, direct effect of institutional quality on individual economic welfare is mixed (see row 4), consistent with findings from other subnational contexts focusing on regions instead of individuals (Gennaioli et al. 2013; Michalopoulos and Papaioannou 2014; Mitton 2016).
Table 4: Mediation Analysis: Direct and Indirect Links of Distance to Harbor

| Dependent Variable | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|--------------------|-----------------------|---------------------------------------------------------------|----------------------------------|
| Mediator: Education (0-9) | (1) | -0.008*** | 0.035*** | -0.19*** |
| Mediator: Urban (0/1) | (2) | -0.012*** | 0.055*** | -0.028*** |
| Mediator: Infrastructure (0/1) | (3) | -0.009*** | 0.037*** | -0.019*** |
| Mediator: Education (0-9) | (4) | 0.036*** | -0.019*** | 0.017*** |
| Mediator: Urban (0/1) | (5) | 0.057*** | -0.013*** | 0.002*** |
| Mediator: Infrastructure (0/1) | (6) | 0.038*** | -0.019*** | 0.002*** |
| Mediator: Education (0-9) | (7) | 0.028*** | 0.038*** | 0.017*** |
| Mediator: Urban (0/1) | (8) | 0.057*** | 0.038*** | 0.017*** |
| Mediator: Infrastructure (0/1) | (9) | 0.038*** | 0.038*** | 0.017*** |

Notes: This table presents results from a formal mediation analysis testing the influence of three potential mediators of log(Distance to Harbor) on our three main outcome variables, respectively. Row one presents the baseline effect, its counterpart is depictable in Table 1. Row two shows the direct effect of our main explanatory variable, i.e. the effect of distance not attributable to the mediating factor, while row 3 depicts the part of the effect which runs precisely via its influence on the mediator. Row four shows the direct effect of the mediator on the respective outcome variable. Results in each column come from a separate SEM regression. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used is comprised of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. The sample used in columns (3), (6), (7), (8) and (9) do not include individuals surveyed in round 1 and 2 of the Afrobarometer, as questions on infrastructure [household items] were not asked in this round. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey-enumeration area level. * p < .1, ** p < .05, *** p < .01.
The relevance of coastal proximity on economic development has been often ascribed to trade-related factors, especially among “late developers” (see Henderson et al. 2018). Table A19 explores this link, estimating the direct and indirect effect of regional and supra-regional institutions fostering trade, as measured by respondents’ evaluation of the African Union (AU) and their “corresponding” Regional Economic Community (REC), respectively. The results show that more positively perceived trade organizations correlate positively with individual living standards (row 4), which emphasizes a potential need of trade facilitation independent of individuals distance harbors or (global) markets.

IV. CONCLUSION
We systematically investigate the role of coastal proximity in explaining intra-national differences in individual living standards across sub-Saharan Africa economies using an extensive dataset covering up to 128,609 observations distributed across 11,261 localities over 20 years. We employ geo-referenced individual data to complement the existing literature that focused on outcomes at the national or regional level. Analyzing individuals’ distance to harbors and their corresponding living standards allows us to test whether the insights of the cross-country and cross-regional contexts also apply at the individual level. Moreover, we can utilize the comprehensiveness of our dataset to explore a large set of indicators and potential channels of influence to gauge the relevance of coastal proximity and to investigate the mechanism through which it may matter for individual living standards.

Our results show that coastal proximity, as measured by geographical distance to harbors, predicts a relevant part of individual living standards and remains a strong predictor of individual economic welfare controlling for individual-level covariates, country-time specific influences via fixed-effects, as well as an extensive set of further established geographical influences of development.
Exploring potential channels, we find that human capital, urbanization, as well as access to infrastructure mediate relevant parts of the link between coastal proximity and economic development. This highlights that even though coastal proximity is a relevant indicator for individual living standards across Africa, coastal proximity need not be “destiny”. Fostering education as well as infrastructural outlays might help in mitigating problems associated with coastal remoteness. Nevertheless, the systematic robustness of coastal proximity as a predictor for individual living standards even in stringent settings suggests that there are relevant development costs of remoteness alone that need to be addressed (see also UN-OHRRLLS 2013).
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ONLINE APPENDIX

Coastal Proximity and Individual Living Standards: Econometric Evidence from Geo-Referenced Household Surveys in sub-Saharan Africa

Figure A1: Coastal Proximity and Individual Living Standards: Distance Bins

Notes: The plot depicts point estimates as well as their corresponding 95% confidence intervals produced from three separate regressions of the three main outcome variables - distinguished by black, grey and dashed-grey figures - on all harbor distance increments shown on the X-axis, and including country-sample fixed effects. Coefficients are interpreted as the average change in the outcome variable for individuals living within the distance increments to living within 50 km to the harbor. Results are produced using the sample of coastal, sub-Saharan African countries from round 1 through round 7 of the geo-coded Afrobarometer surveys, except for the dashed estimates (Possessions), given that this question is available only from round 2 and onwards. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. Standard errors are clustered at the survey-enumeration level.
Figure A2: Mediation Analysis
### Table A1 a): Summary Statistics

| Distribution across Sample | Mean | St. Dev | Min. | 1st Quartile | Median | 3rd Quartile | Max. | N  |
|----------------------------|------|---------|------|-------------|--------|-------------|------|----|

#### Basic Characteristics

| Age            | 36   | 14     | 18   | 25          | 33     | 44          | 130  | 127,462 |
|----------------|------|--------|------|-------------|--------|-------------|------|---------|
| Female (0/1)   | 0.50 | 0.5    | 0    | 0           | 1      | 1           | 1    | 128,747 |
| Educational Level (0-9) | 3.40 | 2.2    | 0    | 2           | 4      | 5           | 9    | 128,211 |

#### Trade-related Covariates

| Distance to Harbor (in km) | 345  | 289    | 0.02 | 82          | 282    | 564         | 1,346 | 128,804 |
| Distance to Coast (in km)  | 2.78 | 2.76   | 0.06 | 1.2         | 1.9    | 2.54        | 1111  | 128,808 |
| Distance to Navigable River (in km) | 2.96 | 2.97   | 0.11 | 2.39        | 2.67   | 5.69        | 1249  | 128,808 |
| Distance to Major Lake (in km) | 814  | 685    | 0.11 | 2.39        | 2.67   | 5.69        | 1249  | 128,808 |

#### Urbanization Covariates

| Urban (0/1) | 0.46 | 0.5   | 0    | 0           | 0      | 1           | 1    | 128,656 |
| Primate City < 25km (0/1) | 0.19 | 0.4   | 0    | 0           | 0      | 0           | 1    | 128,804 |
| Population Density (per sq. km) | 1.99 | 3     | 0    | 0           | 0.1    | 1.3         | 1.3  | 128,848 |

#### Geographical Covariates

| Absolute Latitude | 12    | 1.6    | 0    | 6           | 8      | 16          | 35   | 128,868 |
| Elevation (in m)  | 543.01| 595.5  | 0.0  | 48.0        | 276.0  | 1094.0      | 3914.0 | 128,860 |
| Terrain ruggedness (standardised) | 0.00 | 1.0   | 0.7  | -0.6        | -0.3   | 0.1         | 17.1 | 128,860 |
| Land Suitability  | 0.46  | 0.2    | 0.0  | 0.3         | 0.4    | 0.6         | 1.0  | 128,802 |
| Average Monthly Temperature (in Celsius) | 26   | 3.8   | 8    | 24          | 28     | 29          | 33   | 128,860 |
| Average Monthly Rainfall (in mm) | 108  | 63    | 1    | 68          | 94     | 127         | 384  | 128,860 |
| Growing Days (0-365) | 231  | 82    | 0    | 178         | 244    | 296         | 365  | 128,868 |
| Malaria Ecology Index | 12   | 10    | 0    | 0           | 13     | 23          | 33   | 128,802 |
| Mediterranean (0/1) | 0.02 | 0.1   | 0    | 0           | 0      | 0           | 1    | 128,868 |
| Desert (0/1)       | 0.04  | 0.2   | 0    | 0           | 0      | 0           | 1    | 128,868 |
| Mangroves (0/1)    | 0.04  | 0.2   | 0    | 0           | 0      | 0           | 1    | 128,868 |
| Tropical Forest (0/1) | 0.31 | 0.5   | 0    | 0           | 0      | 0           | 1    | 128,868 |
| Tropical Grassland (0/1) | 0.51 | 0.5   | 0    | 0           | 1      | 1           | 1    | 128,868 |
| Temperate Grassland (0/1) | 0.01 | 0.1   | 0    | 0           | 0      | 0           | 1    | 128,868 |
| Montane Grassland (0/1) | 0.07 | 0.3   | 0    | 0           | 0      | 0           | 1    | 128,868 |

Notes: The table depicts summary statistics corresponding to the main sample used in the estimations across the paper. Data encompasses individual-level responses from 17 coastal countries in sub-Saharan Africa and come from the 1999-2001, 2002-2004, 2005-2006, 2008-2009, 2011-2013, 2014-2015 and 2016-2018 (i.e. Round 1 through Round 7) ge-referenced Afrobarometer survey rounds. Variation in the number of observations size stem from differences in response rates of variables as well as changes in questions asked across surveys. Geographic covariates come from an array of sources described in the data section of the paper.
Table A1 b): Summary Statistics contd.

| Dependent Variables | Mean | St. Dev | Min. | 1st Quartile | 2nd Quartile | 3rd Quartile | 4th Quartile | N  |
|---------------------|------|---------|------|--------------|--------------|--------------|--------------|----|
| Cash Employment (0/1) | 0.39 | 0.49    | 0    | 0.40         | 0.38         | 0.40         | 0.38         | 123,857 |
| How often: Gone without Food (0-4) | 1.28 | 0.99    | 0    | 1.20         | 1.33         | 1.28         | 1.30         | 128,673 |
| How often: Gone without Water (0-4) | 1.14 | 1.36    | 0    | 1.04         | 1.21         | 1.16         | 1.15         | 128,491 |
| How often: Gone without Cash Income (0-4) | 1.90 | 1.36    | 0    | 1.80         | 1.95         | 1.90         | 1.94         | 122,427 |
| How often: Gone without Medical Care (0-4) | 1.15 | 1.26    | 0    | 1.05         | 1.22         | 1.16         | 1.18         | 128,169 |
| Possessions: TV (0/1) | 0.48 | 0.50    | 0    | 0.65         | 0.46         | 0.46         | 0.33         | 103,646 |
| Possessions: Radio (0/1) | 0.75 | 0.43    | 0    | 0.77         | 0.74         | 0.74         | 0.73         | 103,902 |
| Possessions: Motor Vehicle (0/1) | 0.30 | 0.46    | 0    | 0.32         | 0.28         | 0.31         | 0.29         | 103,452 |

Pathways

| Most Important Issue: Education (0/1) | 0.06 | 0.24    | 0    | 0.06         | 0.07         | 0.06         | 0.06         | 122,062 |
| Most Important Issue: Institutions (0/1) | 0.09 | 0.29    | 0    | 0.10         | 0.07         | 0.10         | 0.10         | 122,062 |
| Most Important Issue: Infrastructure (0/1) | 0.06 | 0.24    | 0    | 0.05         | 0.08         | 0.06         | 0.05         | 122,062 |
| Present in EA: Electricity Grid (0/1) | 0.64 | 0.48    | 0    | 0.82         | 0.61         | 0.61         | 0.53         | 116,989 |
| Present in EA: Piped Water (0/1) | 0.55 | 0.50    | 0    | 0.74         | 0.50         | 0.55         | 0.40         | 116,304 |
| Present in EA: Sewage (0/1) | 0.29 | 0.45    | 0    | 0.41         | 0.26         | 0.30         | 0.18         | 115,159 |
| Present in EA: School (0/1) | 0.43 | 0.49    | 0    | 0.54         | 0.41         | 0.42         | 0.33         | 116,975 |
| Present in EA: Health Clinic (0/1) | 0.86 | 0.35    | 0    | 0.88         | 0.88         | 0.83         | 0.84         | 116,668 |
| Institutions Score (1-4) | 2.81 | 0.53    | 1    | 2.72         | 2.75         | 2.85         | 2.91         | 128,347 |
| Helps your Country: REC (0-4) | 1.80 | 0.97    | 0    | 1.72         | 1.79         | 1.81         | 1.86         | 35,710 |
| Helps your Country: AU (0-4) | 1.68 | 0.99    | 0    | 1.64         | 1.64         | 1.71         | 1.71         | 47,726 |
| Occupation: Commercial Farmer (0/1) | 0.01 | 0.10    | 0    | 0.01         | 0.01         | 0.01         | 0.01         | 37,349 |

Notes: The table depicts summary statistics corresponding to the main sample used in the estimations across the paper. Data encompasses individual-level responses from 17 coastal countries in sub-Saharan Africa and come from the 1999-2001, 2002-2004, 2005-2006, 2008-2009, 2011-2013, 2014-2015 and 2016-2018 (i.e. Round 1 through Round 7) geo-referenced Afrobarometer survey rounds. Variation in the number of observations size stem from differences in response rates of variables as well as changes in questions asked across surveys. Geographic covariates come from an array of sources described in the data section of the paper.

1 Not asked in survey rounds 1 and 2. ‡ Not asked in survey round 1. * Only asked in survey rounds 2, 4 and 6. ** Only asked in survey rounds 2, 4, 5 and 6. *** Only asked in survey rounds 1,2, and 3.
Table A2: Coastal Proximity and Individual Living Standards: Full Table

| Dependent Variable | Cash Employment (0/1) | How often gone without: | Cash Income / Medical Care (0-4) | Possessions: | (0/1) |
|--------------------|-----------------------|-------------------------|-------------------------------|--------------|-------|
|                    | (1)                   | (2)                     | (3)                           | (4)          | (5)   | (6)   |
| log(Distance to Harbor) | -0.018*** (0.001) | -0.009*** (0.002) | 0.073*** (0.004) | -0.007*** (0.006) | -0.019*** (0.001) |
| Discrete Change of Distance from Harbor to the 3rd Quartile (564km) | -0.115 | -0.055 | 0.460 | 0.223 | -0.234 | -0.120 |
| Sample Mean of Dependent Var. | [0.39] | [1.28] | [0.51] | |

**Basic Controls**

|                      | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------|-----|-----|-----|-----|-----|-----|
| Age                  | 0.031*** (0.001) | 0.011*** (0.001) | 0.012*** (0.000) |
| Age²                 | 0.000*** (0.000) | 0.000*** (0.000) | 0.000*** (0.000) |
| Female (0/1)         | -0.106*** (0.003) | 0.020*** (0.004) | -0.083*** (0.002) |

**Urbanization Controls**

|                      | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------|-----|-----|-----|-----|-----|-----|
| Urban (0/1)          | 0.055*** (0.004) | -0.284*** (0.003) | 0.134*** (0.003) |
| Primate City (0/1)   | 0.029*** (0.007) | -0.064*** (0.006) | 0.029*** (0.006) |
| Population Density   | -0.001 (0.000) | 0.004*** (0.000) | -0.001* (0.000) |

**Trade-related Controls**

|                      | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------|-----|-----|-----|-----|-----|-----|
| Navigable River (0/1)| -0.013 (0.009) | -0.121*** (0.021) | 0.029*** (0.016) |
| Major Lake (0/1)     | 0.010 (0.012) | 0.013 (0.024) | -0.023*** (0.008) |

**Full Geographic Controls**

|                      | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------|-----|-----|-----|-----|-----|-----|
| Abs. Latitude        | -0.002 (0.001) | -0.015*** (0.002) | 0.001 (0.001) |
| Elevation (km)       | -0.016 (0.013) | -0.115*** (0.028) | 0.038*** (0.012) |
| ruggedness (standardized) | -0.004 (0.004) | 0.015* (0.008) | -0.066** (0.003) |
| Land Suitability (0-1) | 0.021* (0.012) | 0.189*** (0.027) | 0.011 (0.009) |
| Monthly Temperature (Celsius) | -0.009*** (0.002) | 0.020*** (0.005) | -0.001 (0.002) |
| Monthly Rainfall (Standardized) | -0.003 (0.004) | 0.003 (0.004) | -0.001 (0.003) |
| Growing Days (0-365) | 0.000 (0.000) | -0.004*** (0.000) | 0.000* (0.000) |
| Malaria Index        | 0.000 (0.000) | 0.004*** (0.001) | -0.001*** (0.000) |
| Mediterranean (0/1)  | 0.014 (0.017) | 0.038 (0.064) | 0.038 (0.013) |
| Desert (0/1)         | 0.028 (0.035) | 0.170** (0.077) | 0.024 (0.030) |
| Mangroves (0/1)      | 0.017 (0.034) | 0.129* (0.074) | -0.005 (0.028) |
| Tropical Forest (0/1) | 0.041 (0.032) | 0.037 (0.072) | 0.025 (0.027) |
| Tropical Grassland (0/1) | 0.029 (0.032) | 0.070 (0.071) | 0.017 (0.027) |
| Temperate Grassland (0/1) | 0.046 (0.039) | 0.146* (0.089) | 0.016 (0.032) |
| Montane Grassland (0/1) | 0.012 (0.034) | 0.229*** (0.036) | -0.007 (0.028) |

**Notes:** Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-Saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum- and 3rd quartile harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
## Table A3: Coastal Proximity and Individual Living Standards: De-Composed Indices

| Dependent Variable | How often gone without: | How often gone without: | How often gone without: | How often gone without: | Possessions: | Possessions: | Possessions: |
|--------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------|-------------|-------------|
|                    | [Cash Income] (0-4)     | [Water] (0-4)           | [Food] (0-4)            | [Medical Care] (0-4)    | [Radio] (01) | [TV] (01)   | [Motor Vehicle] (01) |
|                    | (1)                    | (2)                     | (3)                     | (4)                     | (5)         | (6)         | (7)         |
| log(Distance to Harbor) | 0.095***               | 0.051***               | 0.069***               | 0.015*                 | -0.038***   | -0.019***   | -0.085***   |
|                     | (0.004)                | (0.007)                | (0.005)                | (0.009)                | (0.004)     | (0.007)     | (0.001)     |
|                    | 0.036***               | 0.023***               | 0.096***               | 0.053***               | -0.017***   | -0.039***   | 0.000       |
|                    | (0.004)                | (0.007)                | (0.004)                | (0.007)                | (0.001)     | (0.002)     | (0.001)     |
| Discrete Change of Distance from Harbor to the 3rd Quartile (564km) | 0.599 | 0.322 | 0.433 | 0.093 | 0.230 | 0.143 | 0.664 | 0.334 | -0.121 | -0.109 | -0.535 | -0.248 | -0.050 | -0.003 |
| Sample Mean of Dependent Var. | [1.90] | [1.14] | [0.97] | [1.15] | [0.75] | [0.48] | [0.30] |

### Basic Controls

| Variable | Coefficient | Standard Error | t-value | p-value |
|----------|-------------|----------------|---------|---------|
| Age      | 0.007***    | (0.001)        |         |         |
| Age²     | 0.000***    | (0.000)        |         |         |
| Female   | 0.043***    | (0.006)        |         |         |

### Urbanization Controls

| Variable | Coefficient | Standard Error | t-value | p-value |
|----------|-------------|----------------|---------|---------|
| Urban    | -0.287***   | (0.012)        |         |         |
| Primate City | -0.144*** | (0.021)        |         |         |
| Population Density | 0.007*** | (0.001)        |         |         |

### Trade-related Controls

| Variable | Coefficient | Standard Error | t-value | p-value |
|----------|-------------|----------------|---------|---------|
| Navigable River | -0.125*** | (0.023)        |         |         |
| Major Lake | 0.060*     | (0.022)        |         |         |

### Full Geographic Controls

| Variable | YES | NO |
|----------|-----|----|
| Country Time FE | YES | YES |
| Observations | 122,363 | 128,427 |
| R-Squared | 0.17 | 0.19 |

Notes: This table reports results for all items of our two main composite living standards indices tested in Table 3. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (9) through (14) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum-, and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.

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Table A4: Coastal Proximity and Individual Living Standards: Summary of Robustness Tests

| Coefficient on log(Distance to Harbor) - if not indicated otherwise | Dependent Variable |
|---------------------------------------------------------------|-------------------|
|                                                               | Cash Employment (0/1) | How often gone without: | Possessions: |
|                                                               |                     | [Water / Food / Cash Income / Medical Care] (0-4) | [Radio / TV / Motor Vehicle] (0/1) |
| (1)                                                               | (2)               | (3)                              | (4)                                 | (5)                              | (6) |
| 
| **Baseline Coefficient**                                        |                   |                                 |                                     |                                  |
| -0.018***                                                       | -0.009***          | 0.073***                         | -0.035***                           | -0.037***                       | -0.019*** |
| (0.001)                                                         | (0.002)            | (0.004)                          | (0.006)                             | (0.001)                         | (0.002) |
| (a) log(Beeline Distance to Harbor) (see Table A5)             |                   |                                 |                                     |                                  |
| -0.019***                                                       | -0.011***          | 0.071***                         | 0.033***                            | -0.037***                       | -0.019*** |
| (0.001)                                                         | (0.003)            | (0.004)                          | (0.006)                             | (0.001)                         | (0.002) |
| (b) log(Distance to Coastline) (see Table A6)                  |                   |                                 |                                     |                                  |
| -0.014***                                                       | -0.008***          | 0.050***                         | 0.031***                            | -0.026***                       | -0.010*** |
| (0.001)                                                         | (0.002)            | (0.003)                          | (0.005)                             | (0.001)                         | (0.002) |
| (c) log(Beeline Distance to Coastline) (see Table A7)          |                   |                                 |                                     |                                  |
| -0.014***                                                       | -0.011***          | 0.048***                         | 0.027***                            | -0.026***                       | -0.011*** |
| (0.001)                                                         | (0.002)            | (0.003)                          | (0.005)                             | (0.001)                         | (0.002) |
| (d) Including Harbor <25km Dummy (see Table A8)                |                   |                                 |                                     |                                  |
| -0.028***                                                       | -0.021***          | 0.038***                         | 0.037***                            | -0.028***                       | -0.023*** |
| (0.002)                                                         | (0.003)            | (0.006)                          | (0.007)                             | (0.002)                         | (0.002) |
| (e) Including Coast <25 km Dummy (see Table A8)                |                   |                                 |                                     |                                  |
| -0.019***                                                       | -0.010***          | 0.060***                         | 0.031***                            | -0.033***                       | -0.018*** |
| (0.002)                                                         | (0.003)            | (0.005)                          | (0.006)                             | (0.002)                         | (0.002) |
| (f) Keeping Observations constant (see Table A9)               |                   |                                 |                                     |                                  |
| -0.019***                                                       | -0.008***          | 0.074***                         | 0.032***                            | -0.037***                       | -0.019*** |
| (0.001)                                                         | (0.003)            | (0.004)                          | (0.006)                             | (0.001)                         | (0.002) |
| (g) Excluding Distances > 629 km (see Table A10)               |                   |                                 |                                     |                                  |
| -0.015***                                                       | -0.005**           | 0.074***                         | 0.039***                            | -0.035***                       | -0.016*** |
| (0.002)                                                         | (0.003)            | (0.004)                          | (0.006)                             | (0.001)                         | (0.002) |
| (h) Excluding Low-Precision Localities (see Table A11)          |                   |                                 |                                     |                                  |
| -0.018***                                                       | -0.011***          | 0.062***                         | 0.029***                            | -0.034***                       | -0.018*** |
| (0.002)                                                         | (0.003)            | (0.005)                          | (0.008)                             | (0.002)                         | (0.003) |
| (i) Including Survey Weights (see Table A12)                   |                   |                                 |                                     |                                  |
| -0.018***                                                       | -0.006**           | 0.070***                         | 0.029***                            | -0.037***                       | -0.017*** |
| (0.002)                                                         | (0.003)            | (0.004)                          | (0.006)                             | (0.001)                         | (0.002) |
| (j) Country-Sample Clustering (see Table A13)                  |                   |                                 |                                     |                                  |
| -0.018***                                                       | -0.009*            | 0.073***                         | 0.035***                            | -0.037***                       | -0.019*** |
| (0.003)                                                         | (0.005)            | (0.008)                          | (0.009)                             | (0.003)                         | (0.003) |
| 
| **Basic Controls**                                              |                   |                                 |                                     |                                  |
| NO                                                              | YES                | NO                               | YES                                 | NO                               | YES |
| **Urbanization Controls**                                       |                   |                                 |                                     |                                  |
| NO                                                              | YES                | NO                               | YES                                 | NO                               | YES |
| **Trade-related Controls**                                      |                   |                                 |                                     |                                  |
| NO                                                              | YES                | NO                               | YES                                 | NO                               | YES |
| **Full Geographic Controls**                                    |                   |                                 |                                     |                                  |
| NO                                                              | YES                | NO                               | YES                                 | NO                               | YES |
| **Country-Time FE**                                             | YES                | YES                              | YES                                 | YES                              | YES |

Notes: This table summarizes the robustness checks on our main findings. Results in each row and column come from separate regressions with changes to the baseline estimates as indicated. a) Replaces the main explanatory variable of (logged) within-country distance used in Table 1 with a simple beeline (as the crow flies) distance to the nearest harbor. b) Replaces the main explanatory variable with a within-country distance to the country’s coastline. c) Replaces the main explanatory variable with a beeline (as the crow flies) distance to the coastline. (d) Adds a dummy indicator of living within 25 kilometers to a major harbor to our baseline specification. (e) Includes a dummy indicator of living within 25 kilometers to the coastline to our baseline specification. (f) Estimates the baseline specification but holds the number of observations constant across all columns, using the maximum amount of individuals for which all independent and dependent variables are available. Note that this drops rounds 1 and 2 of the Afrobarometer entirely, given that questions on ownership of household items were not asked in these rounds. (g) Estimates the baseline specification but excludes distances larger than the 80th percentile. (h) Estimates the baseline specification but excludes localities marked with a precision code of 2 or larger (scale 1-8). (i) Estimates the baseline specification but uses the included Afrobarometer survey weights. (j) Estimates the baseline specification but implements standard error clustering at the country-sample level, instead of the survey enumeration area level. We use the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer in all columns and rows. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum-, and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A5: Coastal Proximity and Individual Living Standards: “beeline” Distance to Harbor

| Dependent Variable                  | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|-------------------------------------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| log(Beeline Distance to Harbor)     | (1)                   | (2)                                                                      | (3)                                           |
|                                     | -0.019***             | -0.011***                                                                | 0.071***                                     |
|                                     | (0.001)               | (0.003)                                                                  | (0.004)                                      |
| Discrete Change of Distance from Harbor to the 3rd Quartile (506km) | -0.117                | -0.067                                                                   | 0.440                                        |
| Sample Mean of Dependent Var.       | [0.39]                | [1.28]                                                                   | [0.51]                                       |
| Basic Controls                      |                       |                                                                          |                                               |
| Age                                 | 0.031***              | 0.011***                                                                 | 0.012***                                     |
|                                     | (0.001)               | (0.001)                                                                  | (0.000)                                      |
| Age$^2$                             | 0.000***              | 0.000***                                                                 | 0.000***                                     |
|                                     | (0.000)               | (0.000)                                                                  | (0.000)                                      |
| Female (0/1)                        | -0.106***             | 0.020***                                                                 | -0.083***                                    |
|                                     | (0.003)               | (0.004)                                                                  | (0.002)                                      |
| Urbanization Controls               |                       |                                                                          |                                               |
| Urban (0/1)                         | 0.055***              | -0.285***                                                                | 0.135***                                     |
|                                     | (0.004)               | (0.010)                                                                  | (0.003)                                      |
| Primate City (0/1)                  | 0.026***              | 0.016**                                                                  | 0.020***                                     |
|                                     | (0.007)               | (0.016)                                                                  | (0.006)                                      |
| Population Density                  | -0.001                | 0.004***                                                                 | -0.001                                       |
|                                     | (0.000)               | (0.001)                                                                  | (0.000)                                      |
| Trade-related Controls              |                       |                                                                          |                                               |
| Navigable River (0/1)               | -0.012                | -0.125***                                                                | 0.031***                                     |
|                                     | (0.009)               | (0.020)                                                                  | (0.008)                                      |
| Major Lake (0/1)                    | 0.011                 | 0.033                                                                    | -0.023***                                    |
|                                     | (0.012)               | (0.024)                                                                  | (0.008)                                      |
| Full Geographic Controls            | NO                    | YES                                                                      | NO                                            |
| Country-Time FE                     | YES                   | YES                                                                      | YES                                           |
| Observations                        | 123,793               | 122,238                                                                  | 128,609                                      |
| R Squared                           | 0.10                  | 0.14                                                                     | 0.20                                          |
|                                    |                       |                                                                          | 0.15                                          |
| Notes: This table is equivalent to Table 1, but exchanges the within-country distance used in Table 1 with a beeline (as the crow flies) distance to the nearest harbor. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-Saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum- and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A6: Coastal Proximity and Individual Living Standards: Distance to Coastline

| Dependent Variable | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|--------------------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| log(Distance to Coastline) | -0.014*** (0.001) | 0.050*** (0.003) | 0.031*** (0.005) | -0.026*** (0.001) | -0.010*** (0.002) |
| Discrete Change of Distance from the Coast to the 3rd Quartile (468km) | -0.085 (0.003) | 0.303 (0.004) | 0.188 (0.005) | -0.161 (0.002) | -0.063 (0.002) |
| Sample Mean of Dependent Var. | [0.39] | [1.28] | [0.51] |

Basic Controls

|                | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|----------------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| Age            | 0.031*** (0.001)      | 0.011*** (0.001)                                                          | 0.012*** (0.000)                              |
| Age^2          | 0.000*** (0.000)      | 0.000*** (0.000)                                                          | 0.000*** (0.000)                              |
| Female (0/1)   | -0.106*** (0.003)     | 0.020*** (0.004)                                                          | -0.082*** (0.002)                            |

Urbanization Controls

|                | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|----------------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| Urban (0/1)    | 0.055*** (0.004)      | -0.285*** (0.010)                                                         | 0.136*** (0.003)                              |
| Primate City (0/1) | 0.033*** (0.007)   | -0.102*** (0.014)                                                         | 0.043*** (0.005)                              |
| Population Density | -0.001 (0.000) | 0.004*** (0.001)                                                          | 0.000 (0.000)                                 |

Trade-related Controls

|                | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|----------------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| Navigable River (0/1) | -0.011 (0.009)      | -0.130*** (0.021)                                                         | 0.032*** (0.008)                              |
| Major Lake (0/1)   | 0.012 (0.012)         | 0.026 (0.024)                                                             | -0.023*** (0.008)                             |

Full Geographic Controls

|                | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|----------------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------|
| Country-Time FE | YES                   | YES                                                                       | YES                                           |
| Observations   | 123,793               | 122,238                                                                  | 128,609                                      |
| R-Squared      | 0.09                  | 0.14                                                                      | 0.16                                          |

Notes: This table is equivalent to Table 1, but exchanges the within-country distance to harbors used in Table 1 with within-country distance to the coastline. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum- and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A7: Coastal Proximity and Individual Living Standards: “beeline” Distance to Coastline

|                    | Dependent Variable |
|--------------------|--------------------|
|                    | Cash Employment   | How often gone without: | Possessions: |
|                    | (0/1)              | [Water / Food / Cash Income / Medical Care] | [Radio / TV / Motor Vehicle] |
| (1) (2) (3) (4) (5) (6) |                   |                     |                     |
| log(Beeline Distance to Coastline) | -0.014*** | -0.011*** | 0.048*** | 0.027*** | -0.026*** | -0.011*** |
|                     | (0.001)           | (0.002)           | (0.003)    | (0.005)    | (0.001)    | (0.002)    |

Discrete Change of Distance from the Coast to the 3rd Quartile (426km)  
-0.087 -0.063 0.288 0.162 -0.158 -0.063  
Sample Mean of Dependent Var.  
Cash Income / Medical Care [0.39]  
Possessions: [0.128]  
[0.51]

Basic Controls

|                    | (1) (2) (3) (4) |
|--------------------|----------------|
| Age                | 0.031***       | 0.011***       | 0.012*** |
|                    | (0.001)        | (0.001)        | (0.000) |
| Age²               | 0.000***       | 0.000***       | 0.000*** |
|                    | (0.000)        | (0.000)        | (0.000) |
| Female (0/1)       | -0.106***      | 0.020***       | -0.082*** |
|                    | (0.005)        | (0.004)        | (0.002) |

Urbanization Controls

|                    | (1) (2) (3) (4) | (5) (6) |
|--------------------|----------------|--------|
| Urban (0/1)        | 0.055***       | -0.286*** | 0.136*** |
|                    | (0.004)        | (0.010)  | (0.003) |
| Primate City (0/1) | 0.031***       | -0.105*** | 0.043*** |
|                    | (0.007)        | (0.015)  | (0.005) |
| Population Density | -0.001         | 0.004***  | 0.000    |
|                    | (0.000)        | (0.001)  | (0.000) |

Trade-related Controls

|                    | (1) (2) (3) (4) |
|--------------------|----------------|
| Navigable River (0/1) | -0.010        | -0.130*** | 0.033*** |
|                    | (0.009)        | (0.021)   | (0.008) |
| Major Lake (0/1)    | 0.013          | 0.028     | -0.023*** |
|                    | (0.012)        | (0.024)   | (0.008) |

Full Geographic Controls

|                    | NO | YES | NO | YES | NO | YES |
|--------------------|----|-----|----|-----|----|-----|
| Country-Time FE    |    |     |    |     |    |     |
| Observations       | 123,793 | 122,238 | 128,609 | 126,982 | 103,889 | 102,990 |
| R-Squared          | 0.09 | 0.14 | 0.16 | 0.20 | 0.15 | 0.22 |

Notes: This table is equivalent to Table 1, but exchanges the within-country distance to harbors used in Table 1 with a beeline (as the crow flies) distance to the coastline. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum- and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A8: Coastal Proximity and Individual Living Standards: Adding Harbor/Coastal Dummies

| Dependent Variable | Cash Employment (0/1) | How often gone without: Cash Income / Medical Care (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|--------------------|----------------------|---------------------------------------------------------|---------------------------------------------|
| log(Distance to Harbor) | -0.021*** (0.003) | 0.037*** (0.007) | -0.023*** (0.002) |
|                      |                      | -0.010*** (0.003) | 0.031*** (0.006) |
|                      |                      | 0.037*** (0.007) | 0.018*** (0.002) |

Discrete Change of Distance from Harbor to the 3rd Quartile (564km)

| Sample Mean of Dependent Var. |
|-------------------------------|
| Cash Employment (0/1)         |
| How often gone without:      |
| [Water / Food / Cash Income / Medical Care] (0-4) |
| Possessions: [Radio / TV / Motor Vehicle] (0/1) |
| [0.39] [1.28] [0.51] |

Trade-related Controls

| Harbor (0/1) | 0.071*** (0.010) | 0.008 (0.025) |
|--------------|-------------------|---------------|
| Coast (0/1)  | -0.013* (0.008)   | -0.039** (0.018) | 0.006 |
|              | -0.013 (0.009)    | -0.121*** (0.021) |
|              | -0.122*** (0.020) | 0.029*** (0.008) |
| Navigable River (0/1) | 0.016 (0.012) | 0.032 (0.024) |
|              | -0.021*** (0.008) | -0.025*** (0.008) |
| Major Lake (0/1) | 0.016 (0.012) | 0.032 (0.024) |
|              | -0.021*** (0.008) | -0.025*** (0.008) |

Urbanization Controls

| Urban (0/1) | 0.056*** (0.004) | 0.055*** (0.004) |
|-------------|-------------------|-------------------|
| Primate City (0/1) | 0.044*** (0.008) | -0.085*** (0.016) |
|              | -0.078*** (0.016) | 0.034*** (0.006) |
|              | 0.135*** (0.003)  | 0.134*** (0.003)  |
|              | 0.028*** (0.006)  | 0.0035 |
| Population Density | 0.000 (0.000) | 0.004*** (0.001) |
|              | 0.004*** (0.001)  | -0.001* |
|              | 0.001 (0.000)     | -0.001* |

Basic Controls

| Age  | 0.031*** (0.001) | 0.031*** (0.001) |
| Age^2 | 0.000*** (0.000) | 0.000*** (0.000) |
| Female (0/1) | -0.106*** (0.003) | -0.106*** (0.003) |
|        | 0.020*** (0.004) | 0.020*** (0.004) |
|        | -0.083*** (0.002) | -0.083*** (0.002) |

Full Geographic Controls | Country-Time FE | Observations | R-Squared |
|-------------------------|----------------|--------------|-----------|
| YES                     | YES            | 122,238      | 0.15      |
| YES                     | YES            | 122,238      | 0.14      |
| YES                     | YES            | 126,982      | 0.20      |
| YES                     | YES            | 126,982      | 0.20      |
| YES                     | YES            | 102,990      | 0.22      |
| YES                     | YES            | 102,990      | 0.22      |

Notes: This table is equivalent to Table 1, but adds dummies indicating individuals living within 25km of the harbor or coast, in turn. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum- and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A9: Coastal Proximity and Individual Living Standards: Constant Observations

| Dependent Variable | Cash Employment (0/1) | How often gone without: | Possessions (0/1) |
|--------------------|-----------------------|-------------------------|------------------|
| log(Distance to Harbor) | (1) -0.019*** (0.001) | (2) -0.008*** (0.003) | (3) 0.074*** (0.004) |
| | (4) 0.032*** (0.006) | (5) -0.037*** (0.011) | (6) -0.019*** (0.002) |

Discrete Change of Distance from Harbor to the 3rd Quartile (547km)

-0.118 -0.049 0.463 0.201 -0.232 -0.118

Sample Mean of Dependent Var.
[0.39] [1.33] [0.51]

Basic Controls

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Age | 0.035*** (0.001) | 0.011*** (0.001) | 0.012*** (0.000) |
| Age² | 0.000*** (0.000) | 0.000*** (0.000) | 0.000*** (0.000) |
| Female (0/1) | -0.114*** (0.003) | 0.022*** (0.005) | -0.083*** (0.002) |

Urbanization Controls

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Urban (0/1) | 0.060*** (0.005) | -0.288*** (0.011) | 0.135*** (0.003) |
| Primate City (0/1) | 0.030*** (0.007) | -0.076*** (0.018) | 0.029*** (0.006) |
| Population Density | -0.001*** (0.000) | 0.003*** (0.001) | -0.001* (0.000) |

Trade-related Controls

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Navigable River (0/1) | -0.018* (0.010) | -0.143*** (0.022) | 0.029*** (0.008) |
| Major Lake (0/1) | -0.001 (0.012) | 0.030*** (0.003) | -0.023*** (0.008) |

Full Geographic Controls

| | NO | YES | NO | YES |
|---|---|---|---|---|
| Country-Time FE | YES | YES | YES | YES |
| Observations | 102,460 | 102,460 | 102,460 | 102,460 |
| R-Squared | 0.11 | 0.17 | 0.17 | 0.20 |

Notes: This table is equivalent to Table 1, but holds the number of observations constant across all columns, using the maximum amount of individuals for which all independent and dependent variables are available. Note that this drops rounds 1 and 2 of the Afrobarometer entirely, given that questions on ownership of household items were not asked in these rounds. Therefore, the sample used is comprised of coastal, sub-saharan African countries included in survey rounds 3 through 7 of the Afrobarometer. Results in each column come from separate regressions. We also report estimated interquartile differences in the respective dependent variables between minimum- and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the country-sample level. * p < .1, ** p < .05, *** p < .01.
**Table A10:** Coastal Proximity and Individual Living Standards: Excluding Large Distances

| Dependent Variable | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|--------------------|-----------------------|---------------------------------------------------------------------|-----------------------------------------------|
| log(Distance to Harbor) | (-0.015***) (0.002) | (0.074***) (0.004) | (0.039***) (0.006) |
| Discrete Change of Distance from Harbor to the 3rd Quartile (410km) | -0.093 | -0.032 | 0.444 | 0.232 | -0.207 | -0.097 |

Sample Mean of Dependent Var. | [0.39] | [1.27] | [0.53] |

**Basic Controls**

|              | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------|-----|-----|-----|-----|-----|-----|
| Age          | 0.032*** (0.001) | 0.011*** (0.001) | 0.012*** (0.000) |
| Age^2        | 0.000*** (0.000) | 0.000*** (0.000) | 0.000*** (0.000) |
| Female (0/1) | -0.101*** (0.003) | 0.027*** (0.005) | -0.087*** (0.002) |

**Urbanization Controls**

|              | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------|-----|-----|-----|-----|-----|-----|
| Urban (0/1)  | 0.050*** (0.005) | -0.296*** (0.011) | 0.131*** (0.004) |
| Primate City (0/1) | 0.033*** (0.007) | -0.076*** (0.016) | 0.033*** (0.006) |
| Population Density | -0.001** (0.000) | 0.004*** (0.001) | -0.001** (0.000) |

**Trade-related Controls**

|              | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------|-----|-----|-----|-----|-----|-----|
| Navigable River (0/1) | -0.008 (0.010) | -0.108*** (0.024) | 0.027*** (0.008) |
| Major Lake (0/1) | 0.042** (0.019) | 0.015*** (0.003) | -0.019 (0.016) |

**Full Geographic Controls**

|              | NO | YES | NO | YES | NO | YES |
|--------------|----|-----|----|-----|----|-----|
| Country-Time FE | YES | YES | YES | YES | YES | YES |
| Observations | 99,302 | 98,269 | 103,029 | 101,945 | 84,589 | 83,929 |

R-Squared | 0.10 | 0.15 | 0.18 | 0.22 | 0.15 | 0.21 |

Notes: This table is equivalent to Table 1, but excludes distances larger than the 80th percentile. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum, and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the country-sample level. * p < .1, ** p < .05, *** p < .01.
**Table A11**: Coastal Proximity and Individual Living Standards: Excluding Low-Precision Geo-clusters

| Dependent Variable | Cash Employment (0/1) | How often gone without: | Possessions: |
|--------------------|-----------------------|-------------------------|--------------|
| log(Distance to Harbor) | -0.018*** (-0.002) | -0.011*** (0.003) | 0.062*** (0.005) |
| | 0.062*** (0.005) | 0.029*** (0.008) | -0.034*** (0.002) |
| | -0.034*** (0.002) | -0.018*** (0.003) | -0.018*** (0.003) |

| Discrete Change of Distance from Harbor to the 3rd Quartile (542km) | -0.111 | -0.068 | 0.374 | 0.173 | -0.204 | -0.108 |
| Sample Mean of Dependent Var. | [0.40] | [1.21] | [0.51] |

**Basic Controls**

- Age: 0.034*** (0.001)
- Age²: 0.000*** (0.000)
- Female (0/1): -0.105*** (0.004)

**Urbanization Controls**

- Urban (0/1): 0.046*** (0.006)
- Primate City (0/1): 0.035*** (0.010)
- Population Density: -0.001 (0.001)

**Trade-related Controls**

- Navigable River (0/1): -0.012 (0.012)
- Major Lake (0/1): -0.002 (0.018)

| Full Geographic Controls | Country-Time FE | Observations | R-Squared |
|--------------------------|----------------|--------------|-----------|
| NO                       | YES            | 61,731       | 0.08      |
| NO                       | YES            | 60,869       | 0.14      |
| YES                      | YES            | 64,023       | 0.18      |
| NO                       | YES            | 63,122       | 0.21      |
| NO                       | YES            | 49,067       | 0.15      |
| NO                       | YES            | 48,594       | 0.23      |

Notes: This table is equivalent to Table 1, but excludes localities marked with a precision code of 2 or larger (scale 1-8). Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum-, and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the country-sample level. * p < .1, ** p < .05, *** p < .01.
Table A12: Coastal Proximity and Individual Living Standards: Including Survey Weights

| Dependent Variable | Cash Employment (0/1) | How often gone without: [Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|--------------------|-----------------------|-----------------------------------------------------------|-------------------------------------------------|
| log(Distance to Harbor) | -0.018*** (0.002) | -0.006** (0.003) | 0.070*** (0.004) | 0.029*** (0.006) | -0.037*** (0.001) | -0.017*** (0.002) |
| Discrete Change of Distance from Harbor to the 3rd Quartile (425km) | -0.112 (0.18) | -0.039 (0.12) | 0.446 (0.18) | 0.186 (0.12) | -0.232 (0.18) | -0.106 (0.12) |
| Sample Mean of Dependent Var. | [0.39] | [1.28] | [0.51] |

**Basic Controls**

- **Age**
  - 0.031*** (0.001)
  - 0.011*** (0.001)
  - 0.012*** (0.000)
- **Age^2**
  - 0.000*** (0.000)
  - 0.000*** (0.000)
  - 0.000*** (0.000)
- **Female (0/1)**
  - -0.105*** (0.003)
  - 0.021*** (0.005)
  - -0.083*** (0.002)

**Urbanization Controls**

- **Urban (0/1)**
  - 0.055*** (0.005)
  - -0.281*** (0.011)
  - 0.135*** (0.004)
- **Primate City (0/1)**
  - 0.030*** (0.008)
  - -0.060*** (0.017)
  - 0.030*** (0.006)
- **Population Density**
  - 0.000 (0.000)
  - 0.004*** (0.001)
  - -0.001 (0.000)

**Trade-related Controls**

- **Navigable River (0/1)**
  - -0.009 (0.010)
  - -0.111*** (0.022)
  - 0.027*** (0.008)
- **Major Lake (0/1)**
  - 0.019 (0.013)
  - 0.023 (0.025)
  - -0.020*** (0.009)

**Full Geographic Controls**

- **Country-Time FE**
  - YES
  - YES
  - YES
  - YES
  - YES
- **Observations**
  - 123,793
  - 122,238
  - 128,608
  - 126,982
  - 103,889
  - 102,990
- **R-Squared**
  - 0.10
  - 0.15
  - 0.16
  - 0.20
  - 0.15
  - 0.22

Notes: This table is equivalent to Table 1, but uses the included Afrobarometer survey weights to produce the estimates. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimums, and the 3rd quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
### Table A13: Coastal Proximity and Individual Living Standards: Country-Sample Clustering

| Dependent Variable | Cash Employment (0/1) | How often gone without: | Possessions: |
|--------------------|-----------------------|--------------------------|--------------|
|                    | (1)                   | (2)                      | (3)          | (4)          | (5)          | (6)          |
| log(Distance to Harbor) | -0.018*** (0.003) | -0.009* (0.005) | 0.073*** (0.008) | 0.035*** (0.009) | -0.037*** (0.003) | -0.019*** (0.003) |
| Discrete Change of Distance from Harbor to the 3rd Quartile (564km) | -0.115 | -0.055 | 0.460 | 0.223 | -0.234 | -0.120 |
| Sample Mean of Dependent Var. | [0.39] | [1.28] | [0.51] | 

**Basic Controls**

|                  | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Age              | 0.031***  | 0.011***  | 0.012***  |           |           |           |
| Age²             | 0.000***  | 0.000***  | 0.000***  |           |           |           |
| Female (0/1)     | -0.106*** | 0.020***  | -0.083*** |           |           |           |

**Urbanization Controls**

|                  | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Urban (0/1)      | 0.055***  | -0.264*** | 0.134***  |           |           |           |
| Primate City (0/1) | 0.029**  | -0.084*** | 0.029***  |           |           |           |
| Population Density | -0.001 | 0.004***  | -0.001    |           |           |           |

**Trade-related Controls**

|                  | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Navigable River (0/1) | -0.013 | -0.121*** | 0.029***  |           |           |           |
| Major Lake (0/1)     | 0.010    | 0.033     | -0.025**  |           |           |           |

**Full Geographic Controls**

|                  | NO | YES | NO | YES | NO | YES |
|------------------|----|-----|----|-----|----|-----|
| Country-Time FE  | YES | YES | YES | YES | YES | YES |
| Observations     | 123,793 | 122,238 | 128,609 | 126,982 | 103,889 | 102,990 |
| R-Squared         | 0.09 | 0.14 | 0.17 | 0.20 | 0.15 | 0.22 |

Notes: This table is equivalent to Table 1, but implements standard error clustering at the country-sample level, instead of the survey enumeration area level. Results in each column come from separate regressions and are estimated using the main sample of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in these rounds. We also report estimated interquartile differences in the respective dependent variables between minimum-, and the third quartile of harbor distances within the sample. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the country-sample level. * p < .1, ** p < .05, *** p < .01.
**Table A14: Coastal Proximity and Individual Living Standards: Oster (2019) Tests**

| Independent Variable | \( \beta^° \) Baseline Effect | \( \beta' \) Controlled Effect | \( R^°_2 \) Baseline | \( R'^2 \) Controlled | \([\beta', \beta^*] \) Identified Set |
|----------------------|-------------------------------|-------------------------------|---------------------|-----------------------|----------------------------------|
| Cash Employment      | -0.003 (0.002)                | -0.009*** (0.002)             | [0.00]              | [0.14]                | [-0.027, -0.009]                 |
| **How often gone without:** |                              |                               |                     |                       |                                  |
| [Water / Food / Cash Income / Medical Care] | 0.025*** (0.006)            | 0.035*** (0.006)              | [0.00]              | [0.20]                | [0.035, 0.055]                   |
| *Possessions [Radio / TV / Motor Vehicle]* | -0.030*** (0.002)         | -0.019*** (0.002)             | [0.02]              | [0.22]                | [-0.019, 0.002]                  |

Notes: This table presents result from a formal analysis of coefficient stability and influence of unobservables according to Oster (2019), analyzing changes in the estimate of our main explanatory variable "log(Distance to Harbor)" when adding the full set of controls as well as fixed-effects, using our three main outcome variables. Columns (1) and (2) present the uncontrolled \( \beta \), as well as the controlled \( \beta' \) and columns (3) and (4) depict their respective regression’s R-Squared. Column (5) shows the lower- and upper bound estimate of the identified set assuming \( R_{max} = 1 \) and \( \delta = 0.5 \). The bias-adjusted upper bound is calculated using \( \beta^* = \beta - \delta(\beta - \beta^*)(R_{max} - \hat{R}^2)/(\hat{R}^2 - R^°_2) \), the lower bound is given by \( \beta' \). Results are estimated using the main sample of coastal, sub-Saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. The sample used row 3 do not include individuals surveyed in Rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in this round. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey- enumeration area level. * \( p<.1 \), ** \( p<.05 \), *** \( p<.01 \).
Table A15: Coastal Proximity and Individual Living Standards: “Landlockedness” Interaction

| Distance to Harbor ('100km) | Cash Employment (0/1) | How often gone without: | Possessions: |
|-----------------------------|-----------------------|--------------------------|--------------|
|                             | (1)                   | (2)                      | (3)          |
|                             | (0-4)                 | (0-4)                    | (0/1)        |
|                             | 0.018***              | 0.003                    | 0.073***     |
|                             | (0.001)               | (0.002)                  | (0.004)      |
| Interaction:                |                       |                          |              |
| Distance to Harbor ('100km)* Landlocked (0/1) | 0.030**               | 0.019                    | 0.026        |
|                             | (0.013)               | (0.013)                  | (0.039)      |
|                             |                       |                          | 0.057*       |
|                             |                       |                          | (0.033)      |
|                             |                       |                          | 0.025*       |
|                             |                       |                          | (0.014)      |
|                             |                       |                          | 0.005        |
|                             |                       |                          | (0.010)      |

Isolated Effect of the Distance to Harbor in Landlocked Countries

Combined Effect:

| Distance + Interaction | 0.011 | 0.022* | 0.099** | 0.074** | -0.012 | -0.005 |
|------------------------|-------|--------|---------|---------|--------|--------|
|                        | [0.39] | [0.08] | [0.01]  | [0.03]  | [0.40] | [0.65] |

Basic Controls

|                      | NO    | YES    | NO      | YES    | NO     | YES    |

Urbanization Controls

|                      | NO    | YES    | NO      | YES    | NO     | YES    |

Trade-related Controls

|                      | NO    | YES    | NO      | YES    | NO     | YES    |

Full Geographic Controls

|                      | NO    | YES    | NO      | YES    | NO     | YES    |

Country-Time FE

|                      | YES   | YES    | YES     | YES    | YES    | YES    |

Observations

|                      | 204,717 | 200,128 | 212,037 | 207,211 | 169,590 | 166,242 |

R-Squared

|                      | 0.106 | 0.153 | 0.149 | 0.189 | 0.158 | 0.237 |

Notes: We analyze the differential effect of our main explanatory variable for individuals living in landlocked countries. Row one shows the uninteracted effect of log(Distance to Harbor), i.e., the distance effect of individuals in coastal countries, row two shows the differential effect for being landlocked. Row three depicts the combined effect of the two constituent terms, i.e., the effect of log(Distance to Harbor) for individuals living in landlocked countries. Results in each column come from separate regressions and are estimated using the sample of coastal and landlocked sub-Saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in this round. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
**Table A16: Coastal Proximity and Individual Living Standards: Generations (Young)**

### Interaction

| Dependent Variable | Cash Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|--------------------|-----------------------|-------------------------------------------------------------------------|---------------------------------------------|
|                    | (1)                   | (2)                                                                      | (3)                                         |
| log(Distance to Harbor) | -0.023***             | -0.014***                                                               | 0.069***                                   |
|                     | (0.002)               | (0.003)                                                                 | (0.004)                                    |
| Interaction: log(Distance to Harbor) * Young (0/1) | 0.006***             | 0.010***                                                               | 0.007*                                     |
|                     | (0.002)               | (0.002)                                                                 | (0.003)                                    |

**Isolated Effect of the Distance to Harbor for Individuals below median Age (33)**

| Combined Effect: log Distance + Interaction | Basic Controls | Urbanization Controls | Trade-related Controls | Full Geographic Controls | Country-Time FE | Observations | R-Squared |
|--------------------------------------------|----------------|-----------------------|------------------------|--------------------------|----------------|--------------|-----------|
|                                            | NO             | YES                   | NO                     | NO                       | YES            | 122,555      | 0.102     |
|                                            | NO             | YES                   | NO                     | NO                       | YES            | 122,238      | 0.145     |
|                                            | NO             | YES                   | NO                     | NO                       | YES            | 127,305      | 0.170     |
|                                            | NO             | YES                   | NO                     | NO                       | YES            | 126,982      | 0.201     |
|                                            | NO             | YES                   | NO                     | NO                       | YES            | 103,083      | 0.158     |
|                                            | NO             | YES                   | NO                     | NO                       | YES            | 102,990      | 0.218     |

Notes: We analyze the differential effect of our main explanatory variable for individuals above and below the median age within the sample. Row one shows the uninteracted effect of log(Distance to Harbor), i.e. the distance effect of individuals at and above the median age (33), row two shows the differential effect for being in the younger strata. Row three depicts the combined effect of the two constituent terms, i.e. the effect of log(Distance to Harbor) for individuals younger than the median age (33). Results in each column come from separate regressions and are estimated using the sample of coastal and landlocked sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/ independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in this round. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A17: Coastal Proximity and Individual Living Standards: Urban

| log(Distance to Harbor) | Interaction: Log(Distance to Harbor) * Urban (0/1) | Isolated Effect of the Distance to Harbor for Individuals living in Urban Environments |
|------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|
| (1)                    | (2)                                           | Combined Effect: Log Distance + Interaction                                         |
| (-0.023*** -0.025*** 0.026*** 0.039*** -0.027*** -0.029***) | (0.003) (0.003) (0.007) (0.008) (0.002) (0.003) | (-0.007*** -0.003 0.036*** 0.034*** -0.016*** -0.015***) [0.00] [0.23] [0.00] [0.00] [0.00] [0.00] |
| Basic Controls         | NO YES                                        | Basic Controls                                                                 |
| Urbanization Controls  | NO YES                                        | Urbanization Controls                                                           |
| Trade-related Controls | NO YES                                        | Trade-related Controls                                                          |
| Full Geographic Controls | YES YES                                       | Full Geographic Controls                                                        |
| Country-Time FE        | YES YES                                       | Country-Time FE                                                                |
| Observations           | 132.584 122.238 128.397 126.982 103.889 102.990 | Observations                                                                   |
| R-Squared              | 0.098 0.145 0.187 0.201 0.188 0.219           | R-Squared                                                                      |

Notes: We analyze the differential effect of our main explanatory variable for individuals living in urban environments. Row one shows the uninteracted effect of log(Distance to Harbor), i.e. the distance effect of individuals in rural settings, row two shows the differential effect for urban sample participants. Row three depicts the combined effect of the two constituent terms, i.e. the effect of log(Distance to Harbor) for individuals living in urban environments together with the corresponding p-value in brackets. Results in each column come from separate regressions and are estimated using the sample of coastal and landlocked sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in this round. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A18: Coastal Proximity and Individual Living Standards: Commercial Farmer

| Dependent Variable | How often gone without: | Possessions: |
|--------------------|-------------------------|--------------|
|                   | [Water / Food / Cash Income / Medical Care] | [Radio / TV / Motor Vehicle] |
| log(Distance to Harbor) | (0/1) | (0-4) | (0/1) |
| (1) | (2) | (3) | (4) | (5) | (6) |
| -0.015*** | -0.011** | 0.083*** | 0.045*** | -0.032*** | -0.023*** |
| (0.004) | (0.006) | (0.008) | (0.012) | (0.003) | (0.006) |

Interaction:

Log(Distance to Harbor) * Commercial Farmer (0/1)

| Interaction | (0/1) |
|-------------|-------|
| -0.047** | (0.022) |
| -0.047** | (0.022) |
| 0.063 | (0.041) |
| 0.088** | (0.040) |
| 0.005 | (0.018) |
| -0.001 | (0.018) |

Isolated Effect of the Distance to Harbor for Individuals working as Commercial Farmers

Combined Effect:

Log Distance + Interaction

| Combined Effect | Log Distance + Interaction |
|-----------------|---------------------------|
|                 | (0/1) | (0-4) | (0/1) | (0-4) | (0/1) | (0-4) |
|                 | 0.062*** | 0.058*** | 0.146*** | 0.134*** | 0.026*** | 0.025*** |
|                 | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |

Basic Controls | NO | YES | NO | YES | NO | YES |
Urbanization Controls | NO | YES | NO | YES | NO | YES |
Trade-related Controls | NO | YES | NO | YES | NO | YES |
Full Geographic Controls | NO | YES | NO | YES | NO | YES |
Country-Time FE | YES | YES | YES | YES | YES | YES |
Observations | 33,084 | 32,296 | 37,481 | 36,637 | 13,239 | 13,080 |
R-Squared | 0.061 | 0.095 | 0.106 | 0.146 | 0.117 | 0.222 |

Notes: We analyze the differential effect of our main explanatory variable for individuals working as commercial farmers, i.e. farmers who produce mainly for sale. Row one shows the uninteracted effect of log(Distance to Harbor), i.e. the distance effect of individuals not working as commercial farmers, row two shows the differential effect for commercial farmers. Row three depicts the combined effect of the two constituent terms, i.e. the effect of log(Distance to Harbor) for individuals working as commercial farmers together with the corresponding p-value in brackets. Results in each column come from separate regressions and are estimated using the sample of coastal and landlocked sub-saharan African countries included in survey rounds 1, 2, and 3 of the Afrobarometer for which this detailed occupational data is available. Remaining changes in the number of observations across columns stem from differences in the response rates of dependent/ independent variables. The sample used in columns (5) and (6) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items were not asked in this round. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey enumeration area level. * p < .1, ** p < .05, *** p < .01.
Table A19: Mediation Analysis: Direct and Indirect Links of Distance to Harbor

| Dependent Variable | Cash-Employment (0/1) | How often gone without: [Water / Food / Cash Income / Medical Care] (0-4) | Possessions: [Radio / TV / Motor Vehicle] (0/1) |
|--------------------|------------------------|-------------------------------------------------|-----------------------------------------------|
| **Mediator: Institutions Score (1-4)** | **Helps your country: REC (0-3)** | **Helps your country: AU (0-3)** | **Helps your country: REC (0-3)** | **Helps your country: AU (0-3)** |
| **Baseline (Total) Effect:** log(Distance to Harbor) | -0.009*** (0.002) | -0.008** (0.004) | -0.016*** (0.004) | 0.035*** (0.006) | 0.037*** (0.010) | 0.038*** (0.009) | -0.019*** (0.002) | -0.020*** (0.004) | -0.020*** (0.003) |
| **Direct Effect:** log(Distance to Harbor) | -0.009*** (0.002) | -0.009** (0.004) | -0.016*** (0.004) | 0.041*** (0.006) | 0.038*** (0.010) | 0.040*** (0.009) | -0.019*** (0.002) | -0.021*** (0.004) | -0.021*** (0.003) |
| **Indirect Effect:** Distance to Harbor via Mediator | 0.000 (0.000) | 0.000*** (0.000) | 0.000*** (0.000) | -0.000*** (0.000) | -0.001*** (0.000) | -0.002*** (0.000) | 0.000** (0.000) | 0.001*** (0.000) | 0.001*** (0.000) |
| **Direct Effect of Mediator:** Institutions / REC / AU | 0.001 (0.004) | 0.011*** (0.003) | 0.010*** (0.002) | -0.0216*** (0.008) | -0.037*** (0.006) | -0.039*** (0.005) | -0.007** (0.003) | 0.016*** (0.002) | 0.044*** (0.002) |
| **Proportion Mediated** | [0.00] | [0.05] | [0.03] | [0.15] | [0.04] | [0.05] | [0.01] | [0.04] | [0.04] |

Notes: This table presents results from a formal mediation analysis testing the influence of three potential mediators of log(Distance to Harbor) on our three main outcome variables, respectively. Rows one presents the baseline effect, its counterpart is depicted in Table 1. Row two shows the direct effect of our main explanatory variable, i.e. the effect of distance not attributable to the mediating factor while row three depicts the part of the effect which runs precisely via its influence on the mediator. Row four shows the direct effect of the mediator on the respective outcome variable. Results in each column come from a separate SEM regression. Changes in the number of observations across columns stem from differences in the response rates of dependent/independent variables. The sample used is comprised of coastal, sub-saharan African countries included in survey rounds 1 through 7 of the Afrobarometer. The sample used in columns (7), (8) and (9) do not include individuals surveyed in rounds 1 and 2 of the Afrobarometer, as questions on ownership of household items (infrastructure) were not asked in this round. Similarly, the sample in columns (2), (5), (8) only include individuals surveyed in rounds 2, 4, and 6 and the sample in columns (3), (6), (9) only include individuals surveyed in rounds 2, 4, 5 and 6. Binary dependent variables are estimated through a simple LPM (Linear Probability Model) specification. The standard errors reported are clustered at the survey-enumeration area level. * p < .1, ** p < .05, *** p < .01.