National Institutions and Self-Insurance*

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Abstract

This paper studies the relationship between national institutions and farming practices in Africa. The analysis exploits detailed geospatial data to compare outcomes across nearby plots exposed to the same underlying agroclimatic risk but belonging to adjacent countries with different national institutions. We document systematic cross-border differences in rural economic activity. In countries with worse national institutions, farmers grew lower risk crops, diversified land across more different crops, devoted more total land to agriculture, and were more likely to hold livestock. These patterns are consistent with a setting in which differences in property rights enforcement affect how farmers respond to agroclimatic risk. The findings contrast with prior research showing no systematic cross-border differences in luminosity in Africa (Michalopoulos and Papaioannou, 2014), and demonstrate how standard measures of economic development may fail to capture the subtle ways in which nations influence rural economic activity.

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1 Introduction

How do national institutions affect economic activity and comparative development? This is a fundamental question in the social sciences that has received considerable attention from economists and political sciences. In an influential paper, Michalopoulos and Papaioannou (2014) exploit the historically exogenous partitioning of ethnic groups across countries in Africa to examine the role national institutions on subnational development. Strikingly, they find that differences in countrywide institutions have no impact on within-ethnicity differences in development – as proxied by luminosity – across national borders. Instead, their findings suggest that, in Africa at least, levels of economic development are similar across national borders, implying a limited influence of contemporary institutions in the hinterland.

In this paper, we re-examine the question of whether economic activity is similar across national borders in Africa. Whereas Michalopoulos and Papaioannou (2014) focus solely on luminosity, we explore cross-border differences across a range of rural outcomes including total farmland, decisions over which crops to cultivate, cattle ownership, and measures of household wealth.

Our analysis draws on several different data sources. Detailed data from the Global Agro-Ecological Zones (GAEZ) project provide information on total farmland based on remote sensor imaging, as well as information on cultivation by crop at the 5 arc-minute plot-level (roughly 10km by 10km at the equator). We also use data on household cattle ownership and wealth proxies from the Demographic and Health Surveys (DHS), along with geographic information that allows us to identify households located near national borders. We use these data to construct measures of local measures of total land cultivation, crop diversification, crop yields, and household ownership of cattle and other assets.

The data also allow us to assess farmers' tolerance towards crop failure risk. Crop failure is a major source of rural income insecurity in Africa (Fafchamps et al., 1998; Kazianga and Udry, 2006). We use information on historical potential yields to calculate each crop's probability of failure, given local agroclimatic conditions.[1] On the vast majority of plots, there is a *statewise dominant* ordering of crop failure risk, allowing us to rank crops from 'safest' to 'riskiest' based on their individual probability of failure.[2] We combine this ranking with data on *which* crops are cultivated to investigate cross-border differences in farmers' willingness to grow 'safer' versus 'riskier' crops.

Our analysis follows the empirical approach of Michalopoulos and Papaioannou (2014), comparing outcomes across nearby plots that fall within a common historical ethnic homeland, but belong to different countries with different formal institutions as measured by the '*Rule of Law*' (Kauffman, Kraay, and Matruzzi, 2008).[3] This within-ethnic homeland estimation strategy was first adopted by Michalopoulos and Papaioannou (2013, 2014), and was also used by Anderson (2018). We estimate regression discontinuity (RD) models that compare differences in economic outcomes across countries, in the immediate vicinity of the national border. In support of our identifying assumption, we show that agroclimatic conditions trend smoothly across national borders, consistent with the exogenous partition of African countries during colonization.

The results reveal systematic cross-border differences across a range of agricultural outcomes. In countries with worse national institutions, significantly more land was devoted to agriculture. In these countries, farmers were more likely to grow 'safer' crops that had lower failure risk, but were equally likely to grow 'riskier' crops. These patterns are consistent with cross-border differences in farmers' tolerance of crop failure risk.[4] Farmers in countries with

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[1] By focusing on crop failure risk, we avoid issues related to unmeasured local price responses, which may offset the revenue effects of less severe local agroclimatic shocks (Allen and Atkin, 2018). Importantly, GAEZ calculates annual potential yields for every crop at the plot-level, so we are able to construct measures of potential crop failures *regardless* of whether the crop was actually grown.

[2] The *statewise dominant* ordering implies that the probability that all crops fail is equal to the probability that the 'safest' crop fails. As a result, we can ignore the covariance structure of crop failure risk, since there is no scope to insure one crop's risk of failure against another as in the standard portfolio problem (Markowitz, 1952).

[3] The protection of property rights features prominently in most *institutionalist* theories of development, and the '*Rule of Law*' index is a commonly used measure of institutional quality.

[4] In a simple model of agricultural decision-making, we show that at the margin, differences in farmers' tolerance towards failure risk will affect decisions to grow safer crops, but will not influence cultivation decisions for higher-risk crops, which depend solely on the expected return.

worse institutions also devoted more land to drought-resistant crops, diversified land across a larger number of different crops, and were more likely to hold cattle.

The results are similar across a range of alternative RD functional form specifications and bandwidth choices. The findings are robust to the replacement of border-ethic homeland fixed effects controls with border fixed effects. Moreover, we find consistent broad patterns across several different data sources – GAEZ plot-level data and satellite land cover data, district-level data (Monfreda, 2008), and survey data from DHS – all of which lend further credibility to the findings.

Our findings establish systematic cross-border differences across a range of rural economic outcome in Africa. These patterns contrast with the noneffects in Michalopoulos and Papaioannou (2014). One explanation is that luminosity is a noisy proxy for economic development in sparsely populated areas (Chen and Nordhaus, 2011; Keola, Andersson and Hall, 2015), so it may fail to capture important differences in rural economic activity across national borders. Nevertheless, we also find no link between 'Rule of Law' and several *other* development indicators including agricultural yields, access to electricity, and proxies for household wealth. Taken together, our results demonstrate how standard measure of development may fail to capture the subtle ways in which nations influence rural economic activity.

We explore a variety of mechanisms that might account for the cross-border outcome differences. We find little evidence that the results are driven by differences in market access. The main findings are virtually unchanged when we control for proximity to urban areas, consistent with the porous nature of African borders (Aker et al., 2014). We also find no significant differences in the quality of *cultivated* land across borders, so the observed land-use patterns do not appear to be driven by differential sorting farmers onto better/worse quality land.

The estimated cross-border differences in outcomes do not imply that the 'Rule of Law' has a causal impact on rural economic decision-making, since the quality of institutions may vary with other drivers of national development.[5] Instead, our results establish that countries

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[5] For example, Bubb (2013) finds that property rights institutions are determined by local economic conditions. Similarly, Alesina et al. (2016) find a link between a country's ethnic composition and the national

do matter for rural development, whether the effects arise from property rights enforcement or some other national feature correlated with the 'Rule of Law'.

The cross-border patterns in rural outcomes are consistent with predicted household responses to the quality of national institutions, even if we cannot rule out the influence of national features correlated with the 'Rule of Law'. In a simple model of agricultural decision-making, we show that poor property rights enforcement, by allowing for increased expropriation of non-farm income and household wealth, leads to increased agricultural land use, more cultivation of lower-risk crops, and more crop diversification. Intuitively, higher levels of wealth expropriation reduce the household's buffer against agroclimatic shocks, causing them to allocate more land to safe crops. Similarly, greater expropriation of non-farm income decreases the return for formal employment, which causes agents to spend more time in agricultural production. As a result, a larger share of household income is vulnerable to agroclimatic shocks, so farmers must allocate land to safe crops.

Our analysis highlights how formal institutions can shape rural decision-making *indirectly* through property rights protection in urban and semi-urban areas. Indeed, the mechanisms we identify may operate even if the reach of formal institutions does not extend into the hinterland (Herbst, 2000). Since the World Bank's 'Rule of Law' measure is constructed based on the conditions in urban rather than rural areas, it is unsurprising that the cross-border estimates align with the predicted responses to non-farm income expropriation.[6]

This paper makes three contributions to the literature. First, we contribute to the literature that documents the influence of pre-colonial and modern states on contemporary outcomes in Africa. Researchers have identified impacts of pre-colonial states on a range of contemporary outcomes (Gennaioli and Rainer, 2007; Michalopoulos and Papaioannou, 2013; Lowes et al., 2017). Nevertheless, evidence on the influence of the modern state has been mixed. Michalopoulos and Papaioannou (2014) find no systematic relationship between national institutions and

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provision of public goods.

[6] The 'Rule of Law' index is based on information provided by external expert reports on the country's commercial and business conditions. Prior to the addition of information from the IFAD Rural Sector Performance Assessments in 2004, no information on the rural policy environments was included in the index.

cross-border light intensity, whereas other scholars have documented important outcome differences across specific national borders (Bubb; 2013; Cogneau and Moradi, 2014). Our paper contributes to this literature by studying the influence of the modern state across *both* a large number of African countries *and* a wide range of rural outcomes. The systematic outcome differences suggest that modern state borders do, in fact, matter in Africa.

Our second contribution is to the large body of research that links formal institutional arrangements to economic development. Scholars have recognized the potential for institutions to shape economic outcomes (Porta et al., 1998, 1999; Acemoglu, Johnson, and Robinson, 2001, 2002). More specifically, we add to the literature that explores how political and legal institutions affect agents' responses to economic uncertainty. Prior research has largely focused on the distortions arising from investment decisions (Banerjee, Gertler, and Ghatak, 2002; Jacobi, Li, and Rozelle, 2002; Goldstein and Udry, 2008; Donovan, 2018). Our results highlight an alternative channel: agents' willingness to engage in risky ventures. This mechanism may contribute to the low rates of entrepreneurship in underdeveloped countries (McMillan and Woodruff, 2002; World Bank, 2016).

Third, the paper contributes to the literature on uncertainty in agriculture. Households cope with income uncertainty through precautionary savings (Deaton, 1990, 1991; Fafchamps et al., 1998), remittances from urban family members (Rapoport and Docquier, 2006), delayed technological adoption (Dercon and Christiaensen, 2011, Donovan, 2018), crop diversification (Kurosaki, and Fafchamps, 2002; Di Falco, and Chavas, 2009, Nicola, 2015); and cattle holdings (Rosenzweig and Wolpin, 1993; Dercon, 1998). There is ongoing debate of the effectiveness of these strategies in comparison to formal insurance (e.g., Binswanger-Mkhize, 2012; Mobarak and Rosenzweig, 2013). The lack of consensus may, in part, stem from the fact that the populations studied differ widely in both the underlying risk and institutional quality. Our cross-border research design allows us to compare economic outcomes across agents who faced common agroclimatic risk across a large number of countries in Africa.[7]

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[7] Our findings complement macroeconomic evidence that misallocation in agricultural is an important driver of cross-country income differences (Restuccia, Yang, and Zhu, 2008; Adamopoulos and Restuccia, 2018).

2 Data

Our analysis requires fine grained geospatial measures of rural economic activity across a large number of countries in Africa. We rely on several different data sources: data on land use and agroclimatic conditions from the Global Agro-Ecological Zones (GAEZ) project, district-level land use data compiled from Monfreda et al. (2008), and DHS data on cattle ownership and other household wealth proxies.

The GAEZ project provides information on total cropland in 2000 at the 5 arc-minute grid cell level, based on satellite land cover imaging.[8] GAEZ also provides information on cultivated area by crop.[9] We use these data to construct several measures of local agricultural activity: whether a plot is cultivated, whether particular crops are grown on a plot, and the number of different crops grown per hectare of cultivated land. We also use GAEZ data on yields to construct measures of crop yields per hectare of cultivated land.

GAEZ also provides estimates of annual potential yields by crop at the grid cell level, regardless of whether the crop is actually grown. These potential yields capture how specific crops respond to invariant local geographic conditions, and variable climatic conditions.[10] We use measure of potential crop yields in 2000 to assess whether agroclimatic conditions are similar on either side of national borders. Additionally, we use information on historical crop failures from 1986 to 2000 to measure whether crop failure risk differed across countries.[11]

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[8] Cropland includes land used for single or multi-season crops, as well as permanent crops (such as trees and shrub crops). The remote sensor imaging used to produce these estimates also typically includes fallow land, whether from crop cycling or shifting cultivation, as cropland (Vancutsem et al., 2013), so the GAEZ measure of land use likely includes both land that is being actively cultivated and land that is held temporarily idle for fallowing purposes.

[9] These crop-specific estimates are obtained through downscaling techniques that combine satellite land cover data and local agroclimatic conditions to assign agricultural statistics to a finer geographic resolution.

[10] Invariant conditions include soil type, elevation, and land gradient, while time-varying climatic conditions include rainfall, temperature, humidity, wind speed, and sun exposure. The GAEZ project is particularly careful in its treatment of weather conditions. Annual potential crop yields are derived based on an aggregation of daily weather conditions, and the model captures how potential yields of each crop are affected by weather conditions throughout the growing cycle.

[11] A crop failure is defined as zero potential yield of a particular crop in any given year. We focus on crop failure over the prior 15-year period to capture the disproportionate influence of recent history in the formation of subjective probability (Viscusi and Zeckhauser, 2006; Gallagher, 2014).

We use information on crop-specific failures to rank crops on every plot from "riskiest" to "safest" based on their individual failure risk given local agroclimatic conditions.[12] Importantly, on the vast majority of plots, the empirical crop failure distribution is *statewise dominant* (see Table B.1). Thus, we are able to ignore the covariance structure of crop failure when constructing the risk ranking.[13] We combine this ranking with information on *which* crops are cultivated to create indicators for whether the 'safest' versus 'riskiest' crop is grown on a given plot of land.[14]

We supplement the GAEZ grid cell data with district-level data on cultivated area by crop across 2,009 subnational districts in 40 African countries.[15] The district-level dataset on cultivated land by crop is not sensitive to downscaling techniques used to construct the GAEZ data.[16] Figure B.1 displays a map of the administration districts for the agricultural database. The level of geographic detail is greater in areas of agricultural production, whereas the larger political units typically cover regions in the Sahara. The median district area is approximately four times the size of the median U.S. county. Subnational data is reported for 40 of 42 countries, and available for a large number of crops (Table B.2).

Our last set of outcome variables come from the Demographic and Health Surveys (DHS). The DHS are a series of nationally representative household surveys. For each country, we use the largest available survey wave between 2006 to 2016. We use the GPS coordinates of participating households to identify survey clusters located within 50 km of a national border.

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[12] Specifically, we use data on historical crop failures from 1986 to 2000 to calculate the probability of crop failure on every plot. Excluding crops that are never grown anywhere at the border-pair level, we then rank crops from "riskiest" to "safest" based on their individual probability of failure.

[13] For any two crops, j and $j+1$, j statewise dominates $j+1$ if j provides a positive yield in all states in which $j+1$ in nonzero. In this scenario, there is no scope to exploit the covariance structure to insure failure risk of one crop against another as in the standard portfolio optimization problem (Markowitz, 1952).

[14] We also construct indicators for whether crops with a failure probability above or below 10 percent are cultivated.

[15] These data we compiled from Monfreda et al. (2008), who provide a comprehensive database on harvested area for 175 crops compiled from agricultural census statistics across 150 countries at subnational units, and 19,751 units two levels below the country. The primary sources for these data were national census statistics, supplemented with additional information from agricultural surveys.

[16] The quality of GAEZ's land use by crop may vary across countries, since the accuracy of the downscaling techniques depends on the size of the reporting districts in the underlying agricultural data, which differ across countries. This contrasts with GAEZ's data on total farmland, which is derived solely on satellite land cover.

For each household, we construct indicators for cattle ownership, access to electricity, and whether the household has a bank account.

To measure national institutions, we follow Michalopoulos and Papaioannou (2014) in using data on country values on the "Rule of Law" index from the World Bank's Governance Matters Database (Kauffman, Kraay, and Matruzzi, 2008). The World Bank compiles this measure based on an aggregate of various institutional quality measures that the World Bank categorizes based on principal components methods. This variable reflects institutional factors, such as the quality of the judiciary and the level of property rights enforcement, that have been found to be particularly relevant for land development (Alston, Libecap, and Schneider, 1996; De Soto, 2000), and farmers' investment decisions (Goldstein and Udry, 2008; Banerjee, Gertler, and Ghatak, 2002; Jacoby, Li, and Rozelle, 2002). To limit concerns of reverse causality, we rely on this measure in 1996, the first period in which it was recorded. Country values for the "Rule of Law" range from -2.5 to +2.5. Table B.3 reports the values for countries in the analysis.

Finally, information on historical ethnic homelands is from Murdock's (1959) Tribal Map of Africa. Drawing on numerous anthropological sources, Murdock (1959) identifies the historical spatial distribution of more than 500 ethnic homelands in Africa. Following Michalopoulos and Papaioannou (2014), we combine these data with contemporary African country borders to identify ethnic homelands that were partitioned into two different countries.

Our main sample consists in observations (grid cell plots, subnational districts, or DHS households) located within 50 km of a national border on land with non-zero agricultural potential.[17]

3 Empirical Strategy

Our main estimation strategy is a regression discontinuity (RD) design that compares outcomes across neighboring plots that belong to a common historical ethnic homeland but fall

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[17] We drop plots with zero potential yields across all crops that are primarily located in the Sahara.

within neighboring countries with different quality national institutions. We estimate the following model:

$$Y_{iebc} = \alpha_0 + \delta Rule\ of\ Law_{bc} + F(Dist_{iebc}) + \lambda_{eb} + \epsilon_{iebc}. \tag{1}$$

where Y_{iebc} denotes outcome on plot i that falls in the historical territory of ethnicity e, near border segment, b, in country c. The term λ_{eb} denotes a vector of historical ethnic homeland-border fixed effects that control for cultural factors which might influence economic activity today. The term $F(Dist_{iebc})$ denotes polynomial controls for plot distance to the border, which are allowed to differ on either side of the national border. The variable of interest, $Rule\ of\ Law_{bc}$, is a dummy equal to one if institutional quality – the Rule of Law – in country c is higher than its neighbor at border b. The coefficient of interest, β, captures the average difference in outcomes between neighboring countries with better and worse institutions, based on comparisons across neighboring plots within a common ethnic homeland that face similar agroclimatic conditions.

Our main analysis is based on a local linear specification (Gelman and Imbens, 2018), although we also report results based on alternative polynomial specifications. Our preferred specifications are reported for plots located within 50 km of the national border to correspond with Michalopoulos and Papaioannou (2014). We also report results based on a range of alternative bandwidth specifications as suggested by Imbens and Lemieux (2008). Two additional estimation details are worth noting. First, regressions for extensive margin outcomes (plot and crop cultivation) are unweighted to estimate the average effect for a plot. Regressions for intensive margin outcomes (crop diversification and crop yields per hectare) are weighted by total farmland to estimate the average effect per hectare of farmland. Second, standard errors are two-way clustered across both country and historical ethnic boundaries to account for arbitrary spatial correlation along both dimensions, following the approach of Cameron, Gelbach, and Miller (2011).

The identifying assumption is that rural economic activity would have been similar on either side of national borders absent any national differences associated with the quality of institutions. For this assumption to hold, we require that national borders were drawn independently of local conditions relevant for current agricultural outcomes. The arbitrary partitioning of African countries is supported by growing body of empirical research. Michalopoulos and Papaioannou (2014, 2016) document the plausibly exogenous formation in African borders, and show that there are no systematic differences across a range of factors related to economic potential through country borders.[18] This assumption is also supported by a large historical narrative that documents how the original drawing of these borders in the late nineteenth century was made by European colonizers with regard or knowledge of local geographic conditions (Asiwaju 1985; Wesseling 1996; Herbst 2000; Englebert 2009).

To further assess the validity of our approach, we estimate the relationship between national institutional quality, potential crop yields, and agroclimatic risk. These outcomes incorporate all location-specific factors relevant for agricultural production, so should capture any cross-border differences in underlying growing conditions relevant for farmers' decision-making. Tables B.4 and B.5 report the results for the ten most widely cultivated crops, without and with the RD linear polynomial controls. The coefficient estimates are all small and statistically insignificant, suggesting no systematic cross-border differences in average land quality. Similarly, we find no significant differences in the probability of crop failure (Tables B.6 and B.7), suggesting that farmers on either side of national borders also faced similar levels of underlying agroclimatic risk.[19] Taken together, these findings support our identification assumption that agricultural outcomes would have been similar across these nearby plots, absent country-specific factors related to the "Rule of Law".

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[18] Alesina, Easterly, and Matuszeski (2011) also demonstrate that eighty percent of African country borders follow longitude and latitude lines, more than any other continent. The arbitrary assignment of African borders has also been used by a number of other researchers as a source of quasi-experimental variation (e.g., Miguel, 2004; Cogneau and Moradi, 2014).

[19] Additional results based on different bandwidths, as well as models that omit control for ethnic homeland-border fixed effects are all consistent with these underlying patterns (see Tables B.8 – B.13). Similarly, results from a McCrary (2008) test show that the density of GAEZ grid cells is continuous in the neighborhood of the national border (Figure B.2).

4 Results

4.1 Land Use and Crop Choice

In this section, we report estimates for the relationship between 'Rule of Law', land use, and farmers' crop choices.

Table 1 reports the estimated differentials in land use across national borders in Africa. The dependent variable is an indicator for whether the plot is cultivated. We report estimates on 'Rule of Law' from different versions of equation (1). In column (1), we include border-ethnic homeland fixed effects, to capture average within-group differences in land use within 50 km of the national borders. In column (2), we add linear controls for border distance to capture the local effect in the immediate vicinity of the national border. In columns (3) and (4), we further restrict the sample to grid cells within 25 km of the border.

The results show a clear link between the 'Rule of Law' and agricultural land. Across the various specifications, the estimates are all negative and statistically significant. The findings imply that there was more widespread agricultural activity in countries with weaker property rights, as reflected by the 'Rule of Law' index. Moreover, these cross-border differences remain even the immediate vicinity of the national border.

The estimates on 'Rule of Law' are sizeable. Combining the point estimates from column (2) with the average difference in measured institutional quality across neighboring countries (0.45), we calculate that a one point increase in the Rule of Law index – roughly the gap between countries at the 25th percentile (e.g., Chad or Nigeria) and countries at the 75th percentile (e.g., Malawi or Mali) – is associated with a 24 percent decrease in the probability of cultivation.

Next, we study the relationship between the 'Rule of Law' and farmers' crop choices. We construct indicators for 'low' risk and 'high' risk crops at every ethnic-border homeland pair, based on the frequency of historical potential crop yield failures from 1986 to 2000. We then estimate versions of equation (1), where the dependent variables are indicators for whether a plot is cultivated with 'low' risk or 'high' risk crops.

Table 2 reports the regression results for 'low' risk and 'high' risk categories. Across the different specifications, the estimates for 'low' risk crops are negative and statistically significant. In countries with lower scores on the 'Rule of Law' index, farmers were significantly more likely to grow low-risk crops. In contrast, we find no statistically significant relationship between the 'Rule of Law' and the probability of growing high-risk crops.[20]

The differential effects on low-risk crop cultivation is consistent with cross-border differences in self-insurance practices. Indeed, a simple model of agriculture-decision predicts that differences in farmers' tolerance towards failure risk should influence the decision to grow 'safe' crops, whereas the decision to cultivate 'risky' crops should depend solely on their expected return (see Appendix A.1). Intuitively, provided a 'risky' crop offers a large enough return, the household will always want to devote some land to it, and will manage the associated risk by devoting land to safer alternatives. Consistent with this evidence, Table B.14 also shows that farmers in countries with lower scores on the 'Rule of Law' index were more likely to grow cassava, millet, pulses, groundnut, potato, and sorghum; crops that are traditionally valued for their drought-resistant properties (FAO, 1997; McCann, 2005).

The results for land use and crop choice can be seen graphically in Figure 1. Each subfigure reports RD scatter plots of mean outcomes by 5-km distance bins, along with RD predicted values based on a third-order polynomial regression model. The left-hand side of the figure depicts outcomes for countries with relatively lower scores on the 'Rule of Law' index, while the right-hand side depicts countries with higher scores. For plot cultivation and low-risk crop cultivation, there is a large and discontinuous change in outcomes at the national border: In countries with better national institutions, rates of plot cultivation and low-risk crop cultivation are systematically lower (Figure 1(a),(b)). In contrast, cultivation rates for high-risk crops trend similarly across national borders (Figure 1(c)).

The broad patterns in Tables 1 and 2 are robust to a range of alternative specifications

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[20] The slightly negative estimates for 'high' risk crops likely reflect the extensive margin decrease in agricultural land use, which leads to a decrease in the probability that any crop is grown on a plot (whether low- or high-risk).

and controls. In Tables B.15 and B.16, we report the results using different bandwidths and RD polynomial specifications. The main findings are similar in sign and significance. Tables B.17 and B.18 report results from models that replace border-ethnic homeland fixed effects with border fixed effects. These estimates capture the average differences in outcomes across borders regardless of historical ethnic homeland boundaries, so will not be biased by measurement error in the original Murdock maps (see Herbst, 2000; Cogneau and Dupraz, 2015). The effects are similar in sign, significance, and magnitude. Similarly, the results are unaffected when we control for grid cell population density (Tables B.19), or when we use an alternative of 'low' and 'high' risk crops (see Table B.20).

Finally, we uncover similar patterns in farmers' crop choices in regressions with district-level land use data (Monfreda, 2008).[21] Table B.21 reports the results for 'Rule of Law' from a modified version of equation (1), in which the dependent variable is the log ratio of total land devoted to high-risk crops relative to total land devoted to both high- and low-risk crops.[22] Columns 1-2 report the results for the baseline set of districts. To further ensure similarity in the underlying land and agroclimatic conditions, columns 3-6 report the results for a restricted sample of border-district pairs that had the same high- and low-risk crops. Across the various specifications, the estimates for 'Rule of Law' are large and statistically significant, suggesting that farmers in countries with worse institutions devoted relatively more land to low-risk crops. Together, these findings support the main conclusions from the plot-level analysis that cross-country differences in farmers' crop choices were systematically related to the quality of national institutions.

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[21] These district-level regressions provide a sensitivity test against measurement error in the plot-level analysis due to downscaling techniques used in the construct of the GAEZ data. Given the higher level of aggregation, we focus on the share of land devoted to high- and low-risk crops, as opposed to extensive margin decision about whether a particular crop-type is grown.

[22] We omit ethnic homeland fixed effect from these models, given the imperfect geographic overlap between districts and ethnic homelands.

4.2 Crop Diversification and Agricultural Yields

In this section, we explore the link between 'Rule of Law', crop diversification, agricultural yields, and household ownership of cattle and other assets. Whereas the previous analysis focused on all grid cells – whether cultivated or uncultivated – this analysis is based on cross-border comparisons of cultivated land.

Table 3 reports the effects on crop diversification, measured as the log number of crops per hectare of farmland at the plot-level. Across the different specifications, we find large and generally significant cross-border differences in diversification. Farmers in countries with lower values for 'Rule of Law' grew more crops per hectare. These patterns hold even among producers operating in the immediate vicinity of the border. The results hold across a range of specifications, including different bandwidths and RD polynomial specifications (see Tables B.15, B.16).

Despite the stark cross-border differences in land use, crop choice, and crop diversification across country borders, we find no systematic link between institutional quality and crop yields. Table 4 reports the estimates for crop yields, where, for each crop, we measure total yields (in tons) per hectare of cultivated. Across the various crop types, the point estimates on 'Rule of Law' are consistently small in magnitude and statistically insignificant.[23]

Finally, we explore whether the patterns of crop diversification and crop yields can be attributed to selection onto different quality land across national borders, given that the analyses are both based on the subsample of *cultivated* plots. For example, if farmers exposed to better institutions discontinued operations on marginal quality land, we might observe systematic differences in crop yields and specialization arising from underlying land quality differences.

In Tables B.22 and B.23, we explore the role of selection in driving the results by estimating cross-border differences in potential crop yields across *cultivated* plots.[24] The point estimates

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[23] The results are similar across bandwidths and polynomial specifications. Nevertheless, caution should be drawn in interpreting these results, given limitations in reporting of agricultural production at the local level.

[24] For each grid cell, GAEZ reports both the overall potential yield by crop, as well as the potential yields on the subset of cultivated land.

across the different crops are small and statistically insignificant, suggesting no systematic differences in cultivated land quality across national borders.

4.3 Cattle Ownership and Household Asset Holdings

In this section, we use household-level data from the DHS to study the link between 'Rule of Law', and ownership of cattle and other assets.[25]

Table 5 (cols. 1-2) report the results for cattle ownership. The estimates are both negative, implying that households in countries with higher values for 'Rule of Law' were less likely to own cattle. The effect sizes increase in magnitude when we restrict the sample to landowners, suggesting that the cross-border differentials cannot be attributed to selection out of agriculture.

The negative effects for cattle ownership contrast with the estimates for *other* asset holdings. Across a range of outcomes – whether the household has electricity access, owns a cell phone, or has bank account – the estimates for 'Rule of Law' are either insignificant or positive. These estimates differ starkly from the sizeable negative effects for cattle ownership. Thus, it appears that mechanism underlying these cross-border differences cannot simply be wealth differences, since households in countries with worse institutions tend to have slightly lower rates of asset holdings, but higher rates of cattle ownership.

5 Interpretation and Mechanisms

The results in Section 4 reveal important differences in farmers' decision-making across national borders. In countries with worse institutions, significantly more land was devoted to agriculture, farmers were more likely to grow 'safer' crops and diversified land across a larger number of crops, and rural households were more likely to hold cattle.

The observed cross-border differences in crop choice, diversification, and cattle holdings suggest self-insurance motivations, and are consistent with the high level of agroclimatic insecurity

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[25] Because observations span the period 2006 to 2016, we use the values of the Rule of Law index in 2006 to measure relative property rights across countries. The results are not sensitive to this specification.

facing agricultural producers (Kazianga and Udry, 1996). Indeed, in countries with poor institutions, rural producers often lack access to credit and insurance markets and there is limited government-provided security (Binswanger and Rosenzweig, 1986). As a result, rural producers may engage in a range of self-insurance practices in an effort to mitigate the consequences of agroclimatic risk.

These cross-border differences contrast with the results of Michalopoulos and Papaioannou (2014), who find no systematic differences in luminosity across national borders in Africa. Nevertheless, we also document similar noneffects on several related development measures including agricultural yields, household electricity access, and other asset holdings. Taken together, our results highlight the importance of studying the relationship between national institutions and a broad set of economic indicators, since standard measures of development may fail to capture important local economic responses.[26]

5.1 Mechanisms

To conclude the analysis, we explore several mechanisms that might account for the cross-border differences in agricultural outcomes. Since countries with different formal institutional structures diverge along numerous dimensions, it is impossible to definitively assign a causal interpretation to any single mechanism. Instead, we view this exercise as providing suggestive rather than dispositive evidence for the potential drivers of the cross-border patterns. We focus on two broad explanations: differences in market access, and differences in the quality of non-farm property rights enforcement.

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[26] For example, the absence of cross-border crop yield differences could reflect unmeasured differences in labor inputs across countries. If farmers in countries with worse institutions faced more severe subsistence food requirement, they may have diverted land to ‘safer’ and less productive crops to mitigate agroclimatic risk and simultaneously increased labor inputs to compensate for the forgone output.

5.1.1 Market Access

The cross-border differences in agricultural outcomes may be driven by differences in market access. These differences could arise, for example, if higher urbanization rates in more developed countries provided farmers access to larger markets in which to sell their products.

To explore the role of market access, we estimate versions of equation (1) that control for distance to the nearest large urban areas. Table B.24 reports the results for the main outcome variables of interest. The main estimates are virtually unaffected by these controls. We also find no relationship between the 'Rule of Law' and decisions to grow cash crops, which should be particularly responsive to changes in market conditions. The estimates for banana, coconut, cocoa, coffee, tea, sugarcane, and palm oil are all insignificant (Table B.25). Notably, these crops that are traditionally grown for sale on domestic or foreign markets (FAO, 1997; Achterbosch et al., 2014; Chauvin et al., 2012). Similarly, farmers in countries with better institutions were also significantly *less* likely to grow revenue-maximizing crops according to international prices.

Taken together, these findings suggest that differences in market access are unlikely to account for the large disparities in rural economic outcomes across national borders. The lack of evidence for a market access mechanism is also consistent with research by Aker et al. (2014), who document the porous nature of national borders in Africa.

5.1.2 Non-Farm Property Rights Protection and Agricultural Outcomes

To understand whether the results may reflect cross-country differences in property rights enforcement, we formalize a model of agricultural production, in which risk-averse agents choose how to allocate time between farming and non-farm labor, and how to allocate land across a 'risky' versus 'safe' crop (see Appendix - Section A.1). We apply this framework to study how better quality national institutions, by protecting non-farm income and wealth from expropriation, can alter agricultural decision-making.[27] The analysis compares individuals who face a

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[27] We model expropriation as a tax on either non-farming income or household wealth (e.g. Tilly, 1985; Murphy, Shleifer, and Vishny, 1993; Grossman and Kim, 1995), although the effects could reflect any channel through which better quality institutions contribute to higher income or wealth levels.

common underlying risk of crop failure and have access to the same output markets, but are subject to different levels of property rights enforcement.

The model delivers the following predictions regarding the impact of wealth and non-farming income expropriation on agricultural outcomes:

(1) Greater *expropriation of non-farm income* leads to (a) an increase in the share of land allocated to the 'safe' crop, and (b) an increase in total agricultural land.

(2) Greater *expropriation of wealth* leads to (a) an increase in the share of land allocated to the 'safe' crop, and (b) a decrease in total agricultural land.

(3) The extensive margin decision to grow the 'safe' crop follows the predictions in (1) and (2), while the extensive margin decision to grow the 'risky' crop is independent of expropriation rates.

Greater expropriation of *non-farm income* lowers the return to formal employment, causing individuals to allocate more time to arm labor, which increases total agricultural land. Because a larger share of earnings is vulnerable to agroclimatic shocks, individuals will devote land to less risky crops. Greater expropriation of *wealth* should cause a similar reallocation to 'safer' crops, since household assets act as a buffer against agroclimatic shocks. Meanwhile, the predicted impact on total agricultural land is negative, since a decline in household assets incentivizes households to increase formal employment to reduce exposure to agroclimatic risk.

These model's predictions underscore the role of wealth and non-farming income in shielding farmers from the consequences of agroclimatic risk. In addition, the model predicts that expropriation will influence the decision to grow crops with low failure risk, but have no impact on the decision to grow high-risk crops. Provided that a high-risk crop offers a large enough expected return it will be grown everywhere, regardless of expropriation rates on household wealth or income.[28]

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[28] Specifically, if the high-risk crop offers a greater expected return than either non-farm labor or the low-risk crop, it will always be grown. Intuitively, this result stems from the fact that it can never be optimal to allocate zero land to an asset with the highest expected return. This is because an agent whose portfolio does not contain the high-risk crop can always increase expected utility by reallocating a small fraction of his portfolio

A key insight from the model is that the effects depend crucial on *which* assets are expropriated. These findings have relevance, since the 'Rule of Law' index is derived from urban property rights indicators. Interestingly, the empirical patterns are consistent with effects arising through both expropriation of both non-farm income and household wealth. The cross-border differences in total agricultural land are consistent with non-farm income expropriation, while the cross-border differences in low-risk crop cultivation could be driven by either wealth or non-farming income expropriation. We also find no systematic cross-border differences in high-risk crop cultivation, consistent with the theoretical predictions.

6 Conclusion

This paper studies the link between national institutions on local economic activity in Africa. Drawing on detailed geospatial data on a range of agricultural outcomes, we compare outcomes across producers who faced similar agroclimatic conditions but were exposed to different formal institutions, as measured by the 'Rule of Law' index. We find a systematic relationship between the quality of national institutions and rural economic decision-making: in countries with worse institutions farmers devoted more land to agriculture, were more likely to grow low-risk crops, and were more likely to own cattle.

Our findings highlight the interaction between formal institutions, underlying risk, and economic decision-making. We demonstrate how better quality institutions can shield individuals from the consequences of environmental risk. While the efficiency gains from property rights and contract enforcement may be especially large in agriculture, where producers are exposed to high levels of agroclimatic risk, the findings may apply more broadly to other sectors. Understanding the relationship between property rights enforcement, entrepreneurship, and growth may be an interesting area for future research.

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away from a safe (but lower return) asset. In this case, the expected utility loss from a marginal increase in portfolio risk is always more than compensated by the benefits from the increase in the expected utility of the new portfolio's value.

Finally, our findings highlight how standard measures of development may fail to capture differences in economic activity at the local level. These limitations may soon be addressed, given newly available sources of geospatial data on a variety of local outcomes. Combining these measures with machine-learning techniques may allow researchers to develop better proxies for economic development at the local level.

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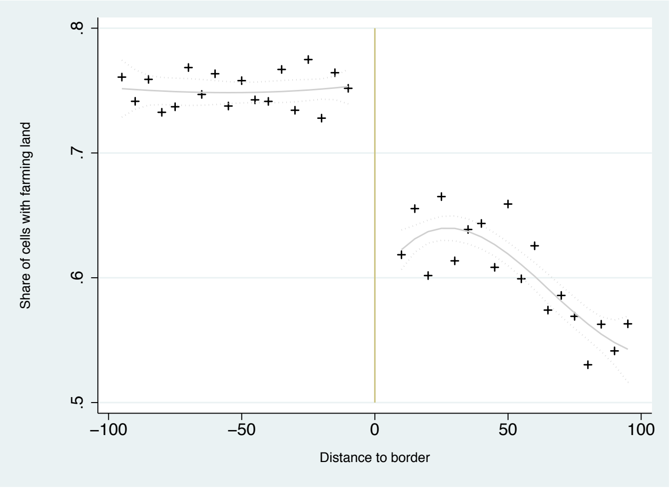
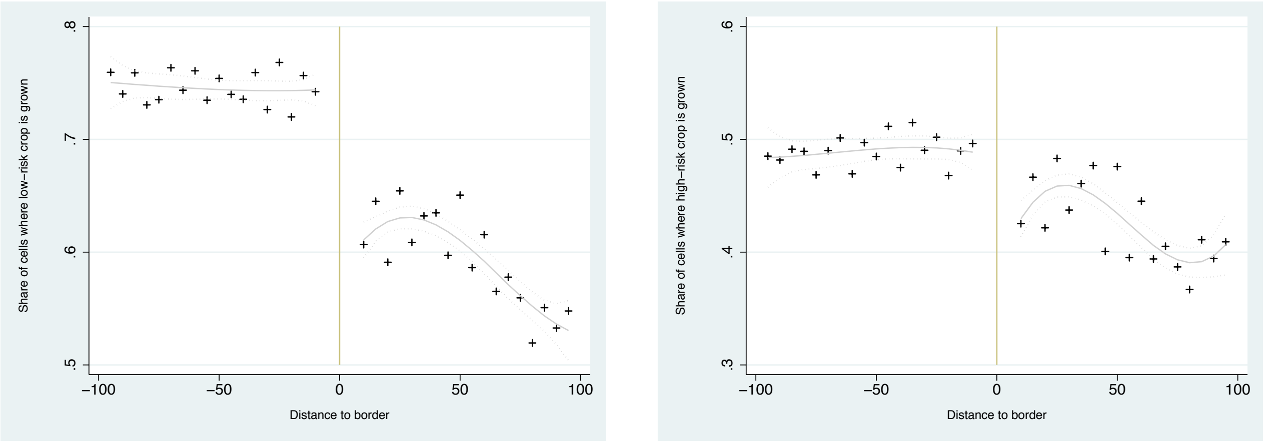
7 Figures and Tables

Figure 1: **Probability of Crop Cultivation, by Distance to the National Border**



(a) Cultivation of Any Crop



(b) Cultivation of Low-Risk Crops

(c) Cultivation of High-Risk Crops

Notes: This table presents the probability of plot cultivation and cultivation of low- and high-risk crops by distance to the national border. Low- and high-risk crops are identified based on the historical frequency of potential yield failure from 1986 to 2000 at the border-ethnic homeland pair. Relatively high institutional quality countries are depicted on the right-hand side of the figure. Average probabilities are grouped by 5 km distance bins. The solid line depicts the predicted probability based on a third-order RD polynomial (dashed lines denote the 95% confidence intervals).

Table 1: **Land use**

	Dep. Var.: Plot is cultivated			
	(1)	(2)	(3)	(4)
Rule of Law	-0.102*	-0.106**	-0.105**	-0.136***
	(0.052)	(0.051)	(0.052)	(0.051)
Border x Ethnic FE	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear
R2	0.427	0.427	0.428	0.428
# Observations	30530	30530	13655	13655
# Country pairs	76	76	76	76
Max distance to border (km)	50	50	25	25
Mean Dep. Var.	0.69	0.69	0.68	0.68

NOTES. This table reports the effects of *Rule of Law* on the probability of plot cultivation from equation (1). The dependent variable is an indicator for whether the plot is cultivated. Its mean is reported at the bottom of the table. All regression models are unweighted. All models include interactions of border-country pair and ethnic homeland fixed effects. The sample comprises plots located between 10 and *Max. distance to the border (km)*. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 2: **Probability of growing low and high risk crops**

	Dep. Var.: Lowest risk crop is grown				*Dep. Var.: Highest risk crop is grown*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of Law	-0.104*	-0.106**	-0.106**	-0.140***	-0.041	-0.026	-0.034	-0.072
	(0.052)	(0.052)	(0.052)	(0.051)	(0.048)	(0.052)	(0.049)	(0.055)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear	No	Linear	No	Linear
R2	0.419	0.419	0.418	0.418	0.365	0.365	0.352	0.352
# Observations	30530	30530	13655	13655	30530	30530	13655	13655
# Country pairs	76	76	76	76	76	76	76	76
Max distance to border (km)	50	50	25	25	50	50	25	25
Mean Dep. Var.	0.68	0.68	0.67	0.67	0.47	0.47	0.46	0.46

NOTES. This table reports the effects of *Rule of Law* on the probability of cultivating lowest and highest risk crops from equation (1). The dependent variable is an indicator variable equal to 1 if a crop with the lowest (resp. highest) probability of crop failure is cultivated on the plot, within the subset of crops cultivated on at least one plot in the border x ethnic homeland area, and zero otherwise (see text for details). All regression models are unweighted. All models include interactions of border-country pair and ethnic homeland fixed effects. The sample comprises plots located between 10 and *Max. distance to the border (km)*. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 3: **Crop Diversification**

	Log # crops per 1000 hectares of cultivated land			
	(1)	(2)	(3)	(4)
Rule of Law	-0.344**	-0.382*	-0.331*	-0.269
	(0.171)	(0.198)	(0.178)	(0.225)
Border x Ethnic FE	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear
R2	0.623	0.624	0.655	0.655
# Observations	21089	21089	9382	9382
# Country pairs	75	75	75	75
Weights	Yes	Yes	Yes	Yes
Max distance to border (km)	50	50	25	25
Mean Dep. Var.	3.24	3.24	3.19	3.19

NOTES. This table reports the effect of *Rule of Law* on crop diversification from equation (1). The dependent variable is the log of the number of crops per 1000 hectares of cultivated land. The weight of a plot is the share of plot that is cultivated. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises cultivated plots located between 10 and *Max. distance to the border (km)*. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 4: **Crop yields per hectare of cultivated land**

	Dep var: Crop yield per hectare									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	1.274	-0.124	0.041	-0.100	-0.088	-0.032	0.752	0.003	-0.085	-0.165
	(1.169)	(0.102)	(0.097)	(0.076)	(0.103)	(0.077)	(1.233)	(0.032)	(0.126)	(0.151)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	No	No	No	No	No	No	No	No	No	No
R2	0.512	0.781	0.730	0.629	0.711	0.647	0.747	0.673	0.715	0.683
# Observations	27907	10853	17598	24408	26414	19893	29118	32555	13483	22291
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Crop	Cassava, yam	Cocoa, coffee, tea	Cotton	Groundnut	Maize	Millet	Potato, sweet potato	Pulses	Rice	Sorghum
Mean Dep. Var.	8.29	0.50	0.86	0.86	1.26	0.67	7.15	0.23	1.36	0.87

NOTES. This table reports the effect of Rule of Law on actual crop yields for each of the 10 most widely cultivated crops the set of the 10 most cultivated crops from equation (1). The dependent variable is crop yield measured in tons per hectare of cultivated land. All models include controls for the interaction of border-country fixed effects. All regression are weighted by the area cultivated. The sample comprises plots located between 10 and 50 km from the country border and ethnic homeland fixed effects. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 5: **Effect on cattle and wealth proxy variables**

	owns livestock		*owns fridge*		*owns cell phone*		*has electricity*		*has bank account*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.045	-0.090	-0.008	0.003	0.035	0.077	-0.013	0.034	0.050	0.058
	(0.044)	(0.031)***	(0.011)	(0.011)	(0.068)	(0.061)	(0.049)	(0.036)	(0.045)	(0.047)
	[0.014]***	[0.015]***	[0.006]	[0.005]	[0.014]**	[0.016]***	[0.009]	[0.009]***	[0.011]***	[0.011]***
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.102	0.098	0.114	0.061	0.116	0.098	0.183	0.131	0.122	0.127
# Observations	44018	34178	44006	34170	44013	34174	44003	34163	43949	34133
# Country pairs	21	21	21	21	21	21	21	21	21	21
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Sample of households	All	Own land	All	Own land	All	Own land	All	Own land	All	Own land
Mean Dep. Var.	0.57	0.65	0.06	0.03	0.54	0.49	0.15	0.09	0.19	0.15

NOTES. This table reports the effect of Rule of Law on the probability of owning cattle (Columns 1 and 2), owning a fridge (Columns 3 and 4), owning a cell phone (Columns 5 and 6), having electricity (Columns 7 and 8), having a bank account (Columns 9 and 10), from equation (1). Estimations use household-level Demographic and Health Surveys (DHS) datasets for African countries that contain information on geographic location. The sample of observations comprises DHS clusters located between 10 and 50 km from the country border. Estimations in odd columns use the sample of all households. Estimations in even columns only use the sample of households that own land for farming. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. In parentheses we report standard errors that are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). In brackets we report standard errors from Seemingly Unrelated Regressions that adjust for multiple hypothesis testing. ***, **, * denote significance at the 1%, 5%, and 10% level based on two-way clustered standard errors.

A Appendix

A.1 A Model of Property Rights Enforcement and Farming

To understand the relationship between property rights enforcement and agricultural activity, we develop a stylized model of farmers' decision-making. The model clarifies how property rights enforcement, by protecting households from various sources of non-farm expropriation, can spillover to influence agricultural activity. The model also demonstrates how the responses in the agricultural sector depend crucially on *which* assets – household wealth or non-farm income – are expropriated. We compare these predicted effects to the observed cross-border differences rural outcomes documented in Section 4.

A.1.1 Setup

We consider a household that chooses how to allocate total time, normalized to one, between non-farm labor (ℓ) and farming ($1-\ell$).[29] The household earns a wage, w, for non-farm labor, and has wealth, y. Agricultural land can be allocated across two different crop varieties: a "safe" crop that yields a return v_s in all conditions, and a "risky" crop that yields a return v_r in normal growing conditions, but will fail with probability p.[30] Denote θ and $(1-\theta)$ the share of land devoted to the "safe" and "risky" crop, respectively. We assume that $pv_r > v_s$ and $pv_r > w$, so that the "risky" crop offers a higher expected return than both risk-free alternatives.

We assume that both non-farm labor and household wealth may be may subject to expropriation. Following previous research, we model expropriation as a tax (e.g. Tilly, 1985; Murphy, Shleifer, and Vishny, 1993; Grossman and Kim, 1995). Let τ_w and τ_y denote the expropriation rate for household income and wealth, respectively. These extortion rates, in turn, depend on the quality of formal institutions.[31]

Given this setup, the farmer's problem is given by:

$$\underset{\{\ell,\theta\in[0,1]\}}{\text{Max}} \quad p\cdot\log\Big((1-\tau_y)y+(1-\tau_w)w\ell+\big(\theta v_s+(1-\theta)v_r\big)(1-\ell)\Big)$$
$$+(1-p)\cdot\log\Big((1-\tau_y)y+(1-\tau_w)w\ell+\theta v_s(1-\ell)\Big).$$

A.1.2 Solution

We can characterize the farmer's solution for two alternative scenarios:

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[29] We interpret effects on $(1-\ell)$ synonymously with effects on total agricultural land. This interpretation is consistent with any agricultural production function in which labor and land are complementarity inputs.

[30] This risk profile aligns with setup aligns with the empirical "statewise dominant" structure of crop risk documented in Section 2. A generalized version of this theoretical setup, in which farmers have access to n different crop varieties with "statewise dominant" risk structure yields the same qualitative predictions.

[31] The influence of formal institutions need not arise directly through expropriation, but could reflect any channel through which better quality institutions contribute to higher formal sector wages or wealth levels.

$$\begin{cases}
\textbf{Case 1:} \quad v_s \geq (1-\tau_w)w \\
\ell^* = 0 \\
\theta^* = \dfrac{(1-p)v_s v_r - (pv_r - v_s)(1-\tau_y)y}{(v_r - v_s)v_s} & \text{if} \quad (1-\tau_y)y \leq \dfrac{(1-p)v_s v_r}{pv_r - v_s} \\
\theta^* = 0 & \text{if} \quad (1-\tau_y)y > \dfrac{(1-p)v_s v_r}{pv_r - v_s} \\
\textbf{Case 2:} \quad v_s < (1-\tau_w)w \\
\theta^* = 0 \\
\ell^* = \dfrac{(1-p)(1-\tau_w)wv_r - \big(pv_r - (1-\tau_w)w\big)(1-\tau_y)y}{\big(v_r - (1-\tau_w)w\big)(1-\tau_w)w} & \text{if} \quad (1-\tau_y)y \leq \dfrac{(1-p)(1-\tau_w)wv_r}{pv_r - (1-\tau_w)w} \\
\ell^* = 0 & \text{if} \quad (1-\tau_y)y > \dfrac{(1-p)(1-\tau_w)wv_r}{pv_r - (1-\tau_w)w}
\end{cases} \tag{A.1}$$

In both Case 1 and 2, the farmer's problem effectively collapses to an allocation decision between a risky asset that yields a higher expected return versus a risk-free asset. Since both non-farm labor and the "safe" crop are risk-free, the choice between these two assets (case 1 versus case 2) depends solely on their relative return (v_s versus $(1-\tau_w)w$).

When $v_s \geq (1-\tau_w)w$, the return to the "safe" crop is higher than the non-farm wage, so the farmer will devote all his time to agricultural work. For low values of household wealth, $(1-\tau_y)y$, the farmer will choose to diversify a share of land $\theta^* > 0$ away from the high-risk crop according to the middle expression. If household wealth is sufficiently high, the farmer will fully invest in the high-risk crop and set $\theta^* = 0$. Intuitively, even without access to formal insurance, higher wealth levels serves as a buffer against crop failure risk, allowing the household to specialize in in higher-return / high-risk agriculture.

When $v_s < (1-\tau_w)w$, the return to paid employment is higher than the return from the "safe" crop, so households will use non-farm labor as a form of insurance against agricultural risk. The problem is exactly analogous to Case 1. For low levels of wealth, households will choose $\ell^* > 0$ according, while for high values of wealth the household will set $\ell^* = 0$ and fully specialize in higher-return / high-risk agriculture.

A.1.3 Property Rights, Expropriation, and Agricultural Outcomes

We now consider the relationship between property rights enforcement, expropriation, and agricultural outcomes. Specifically, we study how differences in expropriation of household wealth and non-farm earnings affect decisions over which crops to cultivate and the total amount of land in agriculture. The following proposition describes the main theoretical predictions:

Proposition 1. *Assume that the high-risk crop offers a greater expected return than both risk-free alternatives: $pv_r > v_s$ and $pv_r > w$, and denote τ_y and τ_w the rates of expropriation of household wealth and non-farm earnings, respectively.*

(a) Total land in agriculture is non-increasing in wealth expropriation and non-decreasing in non-farm earnings expropriation : $\frac{\partial(1-\ell^*)}{\partial\tau_y} \leq 0$, $\frac{\partial(1-\ell^*)}{\partial\tau_w} \geq 0$.

(b) The share of land allocated to the risk-free crop is non-decreasing in both wealth and non-farm earnings expropriation: $\frac{\partial\theta^*}{\partial\tau_y} \geq 0$, $\frac{\partial\theta^*}{\partial\tau_w} \geq 0$.

(c) For any rates of wealth and non-farm earnings expropriation, households will always devote a positive share of land to the high-risk crop: $(1-\ell^*) > 0$ *and* $\theta^* < 1\ \forall\tau_y,\tau_w$. *In contrast, the extensive margin decisions to engage in non-farm work,* $\ell^* \in \{0,\ell^*\}$, *and to grow the low-risk crop,* $\theta^* \in \{0,\theta^*\}$, *depend on* τ_w *and* τ_y.

Proof.

(a) First we show that $\frac{\partial\ell}{\partial\tau_y} \geq 0$. From (A.1) it is clear that if $v_s \geq (1-\tau_w)w$ then $\ell^* = 0$ and $\frac{\partial\ell}{\partial\tau_y} = 0$. If $v_s < (1-\tau_w)w$ and we have an interior solution, $\ell^* > 0$, it is straightforward to see from the second equation in Case 2 that $\frac{\partial\ell}{\partial\tau_y} > 0$. Finally, note that the left-hand-side of the inequality $(1-\tau_y)y \lesseqgtr \frac{(1-p)(1-\tau_w)wv_r}{pv_r-(1-\tau_w)w}$ is decreasing in τ_y, so the probability of an interior solution, $\ell^* > 0$, is also increasing with τ_y.

Next we show that $\frac{\partial\ell}{\partial\tau_w} \leq 0$. Again if $v_s \geq (1-\tau_w)w$ then $\frac{\partial\ell}{\partial\tau_w} = 0$. If $v_s < (1-\tau_w)w$ and we have an interior solution, $\ell^* > 0$, then we can show from equation 2 of Case 2 that:

$$\frac{\partial\ell^*}{\partial W} = \frac{(1-p)v_rW\big(W+(1-\tau_y)y\big)+(1-\tau_y)y\big(v_r-W\big)\big(pv_r-W\big)}{\Big((v_r-W)W\Big)^2} > 0,$$

where $W \equiv (1-\tau_w)w$ and $pv_r - W > 0$ for all τ_w. This result implies that $\frac{\partial\ell^*}{\partial\tau_w} < 0$.

Finally, note that the right-hand-sides of both equations $v_s \lesseqgtr (1-\tau_w)w$ and $(1-\tau_y)y \lesseqgtr \frac{(1-p)(1-\tau_w)wv_r}{pv_r-(1-\tau_w)w}$ are decreasing with τ_w, so the probability of of an interior solution, $\ell^* > 0$, is also decreasing with τ_w.

(b) The proof that $\frac{\partial\theta}{\partial\tau_y} \geq 0$ is exactly analogous to the proof that $\frac{\partial\ell}{\partial\tau_w} \leq 0$. To show that $\frac{\partial\theta}{\partial\tau_w} \geq 0$, notice that $\theta^* > 0$, is independent of τ_w. Nevertheless, higher levels of τ_w increase the probability of an interior solution since right-hand-side of the equation $v_s \lesseqgtr (1-\tau_w)w$ is decreasing with τ_w.

(c) Focusing on the two possible interior solutions: $\theta^* > 0$ or $\ell^* > 0$, we can see that

$$\theta^* = \frac{(1-p)v_sv_r-(pv_r-v_s)(1-\tau_y)y}{(v_r-v_s)v_s} < 1 \text{ iff } 0 > -\big(pv_r-v_s\big)\big(v_s+(1-\tau_yy)\big),$$

$$\ell^* = \frac{(1-p)(1-\tau_w)wv_r - \big(pv_r - (1-\tau_w)w\big)(1-\tau_y)y}{\big(v_r - (1-\tau_w)w\big)(1-\tau_w)w} < 1$$
$$\text{iff } \ 0 > -\big(pv_r - (1-\tau_w)w\big)\big((1-\tau_w)w + (1-\tau_y y)\big),$$

which both hold for any value of τ_w and τ_y, since $pv_r - v_s > 0$ and $pv_r - w > 0$. Meanwhile, the fact that the extensive margin decisions for $\ell^* \geq 0$ and $\theta^* \geq 0$ depend on τ_w and τ_y is readily apparent from equation (A.1).

$\square$

Proposition 1(a) and (b) establish that greater expropriation of *non-farm income*, τ_w, leads to an increase in total agricultural land, $(1-\ell)$, and an increased share of land devoted to the low-risk crop, θ. Intuitively, greater expropriation of non-farm income lowers the return to formal employment, causing households to devote more time to agricultural production. For large enough values of τ_w, the household will exit the non-farm sector and devote all time to agricultural production. In this case, it will increase the share of land devoted to the low-risk crop as means of self-insuring against crop failure.

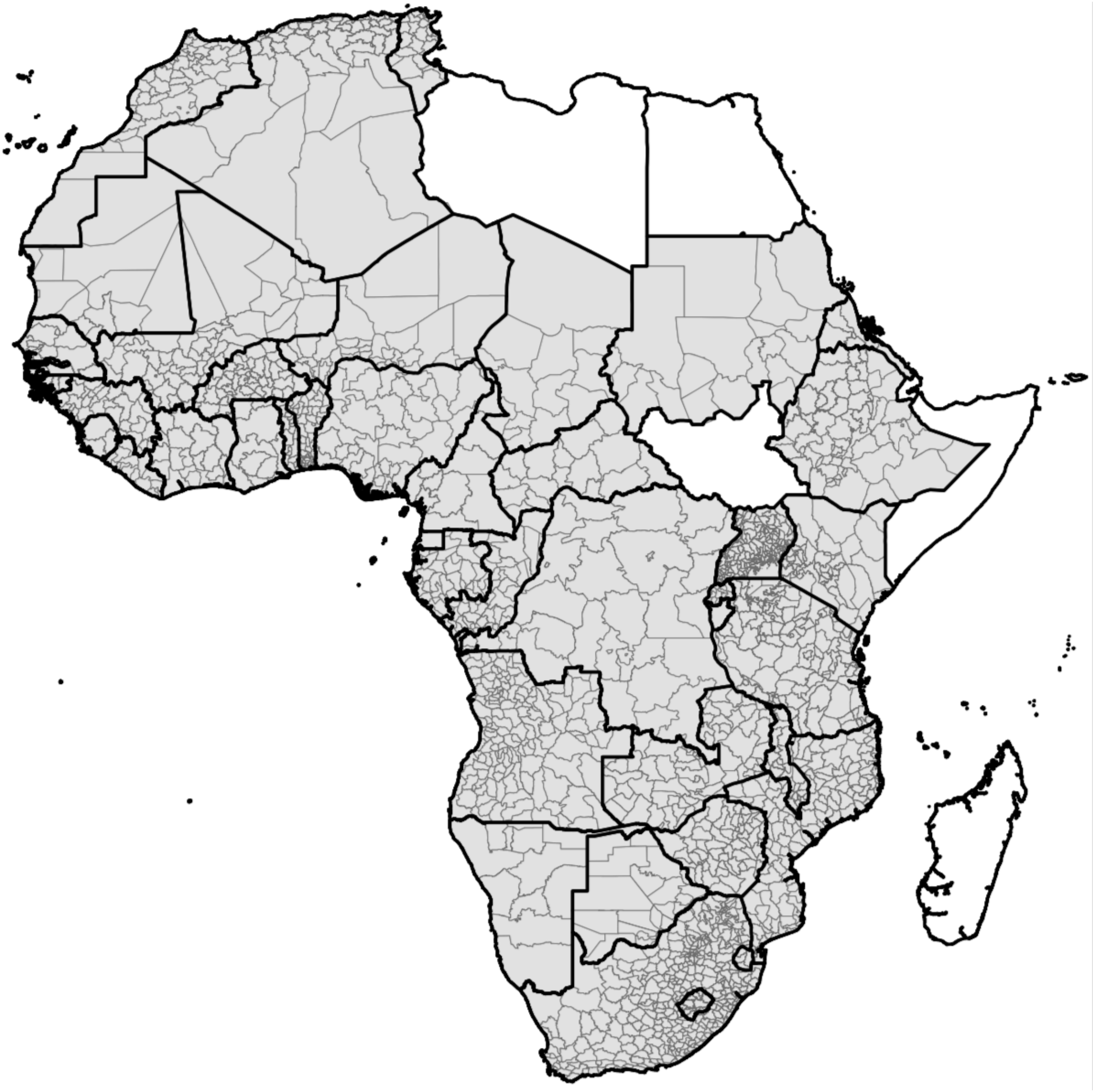
Proposition 1(a) and (b) further establish that greater expropriation of *household wealth*, τ_y, leads to a decrease in total agricultural land, $(1-\ell)$, and an increased share of land devoted to the low-risk crop, θ. Intuitively, the decline in wealth reduces the buffer against agroclimatic risk. As a result, households will reallocate time away from high-risk crop cultivation towards either low-risk agriculture or paid employment.

Proposition 1(c) establishes that the households will always cultivate the high-risk crop, regardless of the levels expropriation. Provided that the high-risk crop offers a greater expected return than either safe asset, it will always be profitable to devote some land to high-risk crop cultivation. This result contrasts with the effects of τ_w and τ_y on whether the households devote time to either low-risk crop cultivation or non-farm employment. Indeed, equation (A.1.) shows that for low enough values of τ_w and τ_y, the household may fully specialize in high-risk agriculture, $\ell^* = 0$ and $\theta^* = 0$. Taken together, these results establish that the effects of expropriation should be concentrated on extensive margin decisions for low-risk agriculture and total cropland, and be unrelated to extensive margin decision of whether to grow the high-risk crop.

B Online Appendix (Not for Publication)

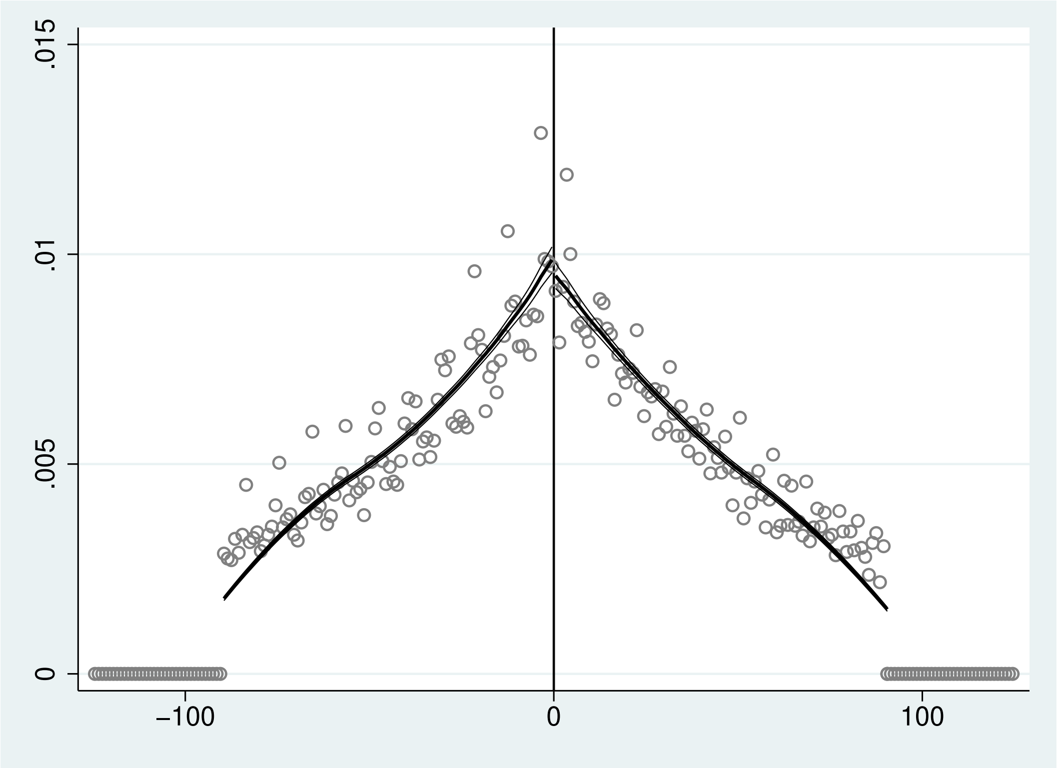
B.1 Additional Figures and Tables

Figure B.1: **District-level data on cultivated land by crop**



Notes: This figure presents a map of the districts for which agricultural data is available from Monfreda et al. (2008). The median district area is 6,950 km^2, and subnational data is available for 40 African countries. See text for discussion.

Figure B.2: **McCrary Test**



Notes: This figure reports the results from a McCrary (2008) test that density of grid cells is continuous in the neighborhood of the national border. We removed all plots that within 10 kms of the border, which cannot properly be matched to one country (see main text). For visual clarity, we subtracted 10 kms from the distance to the border on either side of the border.

Table B.1: **An Example of a Plot with *Statewise Dominant* Failure Risk**

Year	Cassava	Rapeseed	Banana	Potato	Sorghum	Phaseolus
1989	10.547	3.384	5.421	7.606	2.485	2.694
1998	10.987	3.336	2.775	7.19	2.394	0
1994	10.823	3.169	4.429	6.845	2.247	0
1986	10.411	3.264	2.202	7.525	2.355	0
1992	10.607	3.208	2.543	7.283	2.329	0
1990	10.827	3.156	2.914	6.07	1.945	0
1997	10.485	3.181	2.38	5	0	0
1993	11.3	3.346	3.245	6.48	0	0
1996	11.12	3.306	3.645	7.329	0	0
1991	11.139	3.28	4.635	7.224	0	0
1987	11.078	3.199	3.539	7.066	0	0
1995	10.825	3.117	5.338	0	0	0
1988	10.947	3.181	3.099	0	0	0
1999	9.662	3.053	0	0	0	0
2000	8.248	0	0	0	0	0

Notes: This table presents an example of annual potential crop yields from 1986 to 2000 for the plot at latitude-longitude (-1.875, 34.958). Potential crop yields are reported for GAEZ's high input / rain fed technology. This empirical *statewise dominant* crop failure risk holds across **83 percent** of sample plots, although the specific crops and ranking differ across plots.

Table B.2: **District-level data on cultivated land by crop**

Country	# of admin. districts (1)	Ave. district size (km^2) (2)	# crops reported at subnational admin. level (3)	Country	# of admin. districts (4)	Ave. district size (km^2) (5)	# crops reported at subnational admin. level (6)
Algeria	48	49,620	9	Lesotho	10	3,036	4
Angola	163	7,648	1	Liberia	15	7,425	7
Benin	76	1,482	13	Malawi	28	4,232	5
Botswana	27	21,545	5	Mali	50	24,804	12
Burkina Faso	45	6,089	9	Mauritania	13	79,285	4
Burundi	1	27,830	0	Morocco	56	12,694	6
Cameroon	10	47,544	11	Mozambique	130	6,166	6
Central African Rep.	17	36,646	9	Namibia	13	63,494	2
Chad	29	44,276	8	Niger	36	35,194	9
Congo	48	7,125	5	Nigeria	40	23,094	18
Congo DRC	38	61,707	10	Rwanda	14	1,914	9
Cote D'Ivoire	19	16,972	4	Senegal	14	14,052	14
Equatorial Guinea	1	28,051	0	Sierra Leone	14	5,124	10
Eritrea	6	19,600	1	South Africa	355	3,440	11
Ethiopia	72	15,338	4	Swaziland	4	4,341	6
Gabon	37	7,234	0	Tanzania	136	6,950	5
Gambia	6	1,730	1	Togo	21	2,704	13
Ghana	10	23,853	10	Tunisia	24	6,817	5
Guinea	34	7,231	9	Uganda	162	1,457	7
Guinea-Bissau	9	4,014	7	Zambia	72	10,453	10
Kenya	48	12,091	1	Zimbabwe	60	6,513	4
				Continent Average	48	11,827	7
				Continent Median	29	6,950	7

Notes: The district-level data were compiled from Monfreda et al. (2008). See text for discussion. Continent average and median values for district size and number of reported crops are weighted by the number of national administrative districts.

Table B.3: **Country values on the 'Rule of Law' index**

Country	**Rule of Law**	**Country**	**Rule of Law**
Algeria	-1.22	Mali	-0.30
Angola	-1.63	Mauritania	-0.50
Benin	0.05	Morocco	0.22
Botswana	0.58	Mozambique	-0.81
Burkina Faso	-0.93	Namibia	0.25
Burundi	-1.41	Niger	-0.66
Cameroon	-1.44	Nigeria	-1.29
Chad	-1.26	RCA	-1.15
Congo	-1.04	RDC	-1.88
Cote d'Ivoire	-0.79	Rwanda	-1.50
Equatorial Guinea	-1.28	Senegal	-0.18
Eritrea	-0.66	Sierra Leone	-1.38
Ethiopia	-0.97	South Africa	0.09
Gabon	-0.65	Sudan	-1.71
Gambia	0.02	Swaziland	-0.47
Ghana	-0.23	Tanzania	-0.19
Guinea	-1.45	Togo	-0.73
Guinea Bissau	-1.67	Tunisia	-0.30
Kenya	-1.02	Uganda	-0.58
Lesotho	0.10	Zambia	-0.53
Liberia	-1.93	Zimbabwe	-0.81
Malawi	-0.38		

Notes: This table displays country values for the 1996 'Rule of Law' from the World Bank's Governance Matters Database (Kauffman, Kraay, and Matruzzi, 2008). Country values range from -2.5 to 2.5, with more negative values indicating lower institutional quality.

Table B.4: **Potential yield at the border**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.008	-0.055	-0.040	-0.031	-0.157	-0.062	-0.312	-0.061	0.058	-0.187
	(0.373)	(0.050)	(0.042)	(0.064)	(0.173)	(0.088)	(0.450)	(0.055)	(0.090)	(0.149)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	No	No	No	No	No	No	No	No	No	No
R2	0.809	0.887	0.710	0.647	0.686	0.695	0.706	0.663	0.737	0.706
# Observations	30530	30530	30530	30530	30530	30530	30530	30530	30530	30530
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.34	0.77	1.33	1.86	5.19	2.00	13.7	1.60	1.45	3.99

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.5: **Potential yield at the border, including linear polynomial controls**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.399	-0.034	-0.019	-0.067	-0.065	-0.018	-0.443	-0.023	-0.050	-0.083
	(0.342)	(0.036)	(0.039)	(0.063)	(0.153)	(0.070)	(0.443)	(0.055)	(0.063)	(0.116)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.809	0.887	0.710	0.647	0.686	0.695	0.706	0.664	0.737	0.707
# Observations	30530	30530	30530	30530	30530	30530	30530	30530	30530	30530
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.34	0.77	1.33	1.86	5.19	2.00	13.7	1.60	1.45	3.99

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.6: **Probability of crop failure at the border**

	Dependent Variable: Probablity of crop failure									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	0.002	-0.010	0.004	0.003	0.009	0.014	0.011	0.010	-0.001	0.012
	(0.010)	(0.010)	(0.013)	(0.013)	(0.014)	(0.015)	(0.013)	(0.013)	(0.010)	(0.014)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	No	No	No	No	No	No	No	No	No	No
R2	0.867	0.887	0.706	0.672	0.691	0.620	0.693	0.613	0.926	0.686
# Observations	30530	30530	30530	30530	30530	30530	30530	30530	30530	30530
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	0.29	0.71	0.14	0.13	0.11	0.11	0.13	0.10	0.39	0.10

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is the probability of crop failure. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.7: **Probability of crop failure at the border, including linear polynomial controls**

	Dependent Variable: Probablity of crop failure									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	0.005	0.003	-0.001	0.002	-0.000	0.008	0.005	0.002	0.006	0.006
	(0.010)	(0.007)	(0.010)	(0.011)	(0.008)	(0.010)	(0.011)	(0.008)	(0.009)	(0.009)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.868	0.887	0.706	0.672	0.691	0.620	0.693	0.613	0.926	0.686
# Observations	30530	30530	30530	30530	30530	30530	30530	30530	30530	30530
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	0.29	0.71	0.14	0.13	0.11	0.11	0.13	0.10	0.39	0.10

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is the probability of crop failure. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.8: **Potential yield at the border, 25 km bandwidth**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.636*	-0.053	-0.036	-0.091	-0.040	-0.033	-0.641	-0.029	-0.120	-0.063
	(0.361)	(0.032)	(0.041)	(0.059)	(0.173)	(0.079)	(0.426)	(0.056)	(0.088)	(0.131)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.818	0.899	0.731	0.664	0.696	0.721	0.719	0.662	0.749	0.720
# Observations	13655	13655	13655	13655	13655	13655	13655	13655	13655	13655
# Country pairs										
Max distance to border (km)	25	25	25	25	25	25	25	25	25	25
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.13	0.76	1.33	1.84	5.17	2.00	13.6	1.58	1.42	3.98

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 25 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.9: **Potential yield at the border, 100 km bandwidth**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.284	-0.014	-0.041	-0.055	-0.181	-0.059	-0.374	-0.053	0.022	-0.165
	(0.379)	(0.044)	(0.043)	(0.070)	(0.170)	(0.081)	(0.483)	(0.060)	(0.072)	(0.141)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.808	0.878	0.693	0.635	0.680	0.678	0.702	0.669	0.731	0.697
# Observations	51280	51280	51280	51280	51280	51280	51280	51280	51280	51280
# Country pairs										
Max distance to border (km)	100	100	100	100	100	100	100	100	100	100
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.43	0.77	1.33	1.87	5.17	2.03	13.8	1.60	1.44	3.98

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 100 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.10: **Probability of crop failure at the border, 25 km bandwidth**

	Dependent Variable: Probablity of crop failure									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.000	0.010	0.002	0.005	0.002	-0.004	0.002	-0.003	0.003	0.006
	(0.013)	(0.008)	(0.013)	(0.013)	(0.011)	(0.009)	(0.011)	(0.012)	(0.012)	(0.011)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.877	0.911	0.717	0.676	0.700	0.624	0.708	0.618	0.928	0.687
# Observations	13655	13655	13655	13655	13655	13655	13655	13655	13655	13655
# Country pairs										
Max distance to border (km)	25	25	25	25	25	25	25	25	25	25
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	0.30	0.71	0.13	0.13	0.10	0.10	0.13	0.10	0.39	0.09

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is the probability of crop failure. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 25 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.11: **Probability of crop failure at the border, 100 km bandwidth**

	Dependent Variable: Probablity of crop failure									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.006	-0.016*	-0.012	-0.013	-0.004	-0.005	-0.008	-0.001	-0.000	-0.000
	(0.011)	(0.009)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.013)	(0.011)	(0.012)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.855	0.865	0.694	0.658	0.701	0.623	0.681	0.626	0.926	0.711
# Observations	51280	51280	51280	51280	51280	51280	51280	51280	51280	51280
# Country pairs										
Max distance to border (km)	100	100	100	100	100	100	100	100	100	100
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	0.30	0.71	0.14	0.14	0.12	0.11	0.13	0.11	0.40	0.10

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is the probability of crop failure. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 100 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.12: **Potential yield at the border, with border fixed effects**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.107	-0.059	-0.030	-0.040	-0.184	-0.040	-0.420	-0.068	0.079	-0.182
	(0.396)	(0.069)	(0.047)	(0.071)	(0.210)	(0.092)	(0.498)	(0.063)	(0.110)	(0.170)
Border FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	No	No	No	No	No	No	No	No	No	No
R2	0.712	0.772	0.595	0.520	0.541	0.580	0.586	0.532	0.569	0.575
# Observations	30530	30530	30530	30530	30530	30530	30530	30530	30530	30530
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.34	0.77	1.33	1.86	5.19	2.00	13.7	1.60	1.45	3.99

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for border-country pair fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.13: **Potential yield at the border, with border fixed effects & linear polynomial controls**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	-0.507 (0.381)	-0.033 (0.048)	-0.019 (0.041)	-0.080 (0.066)	-0.068 (0.158)	-0.019 (0.072)	-0.520 (0.476)	-0.030 (0.055)	-0.057 (0.087)	-0.100 (0.121)
Border FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.712	0.772	0.595	0.520	0.541	0.580	0.587	0.533	0.569	0.575
# Observations	30530	30530	30530	30530	30530	30530	30530	30530	30530	30530
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.34	0.77	1.33	1.86	5.19	2.00	13.7	1.60	1.45	3.99

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. All regression models are unweighted. Each cell corresponds to a different crop. All models include controls for border-country pair fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.14: **Crop choice**

	Dependent Variable: Crop is grown						
	(1) Cassava	(2) Sorghum	(3) Groundnut	(4) Millet	(5) Pulses	(6) Potato	(7) Maize
Rule of Law	-0.089*	-0.079	-0.097**	-0.076**	-0.128**	-0.179***	-0.078
	(0.053)	(0.058)	(0.048)	(0.034)	(0.053)	(0.060)	(0.059)
Mean Dep. Var.	0.54	0.44	0.48	0.39	0.64	0.56	0.52
	(8) Rice	(9) Wheat	(10) Other cereal	(11) Banana & coconut	(12) Cocoa, coffee & tea	(13) Sugarcane	(14) Oilpalm & other
Rule of Law	-0.045	-0.012	-0.046	0.033	-0.014	0.021	-0.010
	(0.038)	(0.012)	(0.053)	(0.023)	(0.031)	(0.033)	(0.014)
Mean Dep. Var.	0.27	0.05	0.24	0.18	0.21	0.15	0.08

NOTES. This table reports the effects of *Rule of Law* on the probability of crop cultivation from equation (1). The dependent variable is an indicator variable equal to 1 if the crop is grown. All regression models are unweighted. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.15: **Plot cultivation, crop choice, and diversification, 100 km bandwidth**

	Plot cultivated		*Lowest risk crop grown*		*Highest risk crop grown*		*Log # crops by 1000 hectares of cultivated land*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of Law	-0.126**	-0.090*	-0.129**	-0.090*	-0.063	-0.034	-0.325**	-0.348*
	(0.057)	(0.050)	(0.056)	(0.050)	(0.051)	(0.048)	(0.150)	(0.209)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear	No	Linear	No	Linear
R2	0.431	0.431	0.423	0.424	0.361	0.361	0.612	0.612
# Observations	51280	51280	51280	51280	51280	51280	34994	34994
# Country pairs	76	76	76	76	76	76	75	75
Weights	No	No	No	No	No	No	Yes	Yes
Max distance to border (km)	100	100	100	100	100	100	100	100
Mean Dep. Var.	0.68	0.68	0.67	0.67	0.46	0.46	3.31	3.31

NOTES. This table reports the effects of *Rule of Law* on the main dependent variables of the paper, with the sample of plots located within 100 kms of a border (instead of 50 or 25 kms). In Columns 1-2, the dependent variable is the probability of plot cultivation. In Columns 3-4 (resp. 5-6), the dependent variable is the probability of cultivating lowest (resp. highest) risk crops. In Columns 7-8, the dependent variable is the log of the number of crops per 1000 hectares of cultivated land. The specifications and weights used in Columns 1-2, Columns 3-4, Columns 5-6 and Columns 7-8 are the same as Columns 1-2 in Table 1, Columns 1-2 in Table 2, Columns 5-6 in Table 2, and Columns 1-2 in Table 3, respectively. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.16: **Plot cultivation, crop choice, and diversification, with cubic polynomial controls**

	Plot cultivated		*Lowest risk crop grown*		*Highest risk crop grown*		*Log # crops by 1000 hectares of cultivated land*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of Law	-0.183**	-0.140**	-0.170**	-0.144**	-0.066	-0.054	-0.119	-0.439*
	(0.079)	(0.063)	(0.084)	(0.064)	(0.086)	(0.063)	(0.333)	(0.221)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	Cubic	Cubic	Cubic	Cubic	Cubic	Cubic	Cubic	Cubic
R2	0.428	0.431	0.419	0.424	0.366	0.362	0.624	0.612
# Observations	30530	51280	30530	51280	30530	51280	21089	34994
# Country pairs	76	76	76	76	76	76	75	75
Weights	No	No	No	No	No	No	Yes	Yes
Max distance to border (km)	50	100	50	100	50	100	50	100
Mean Dep. Var.	0.69	0.68	0.68	0.67	0.47	0.46	3.24	3.31

NOTES. This table reports the effects of *Rule of Law* on the main dependent variables of the paper, using cubic RDD polynomials (instead or none or linear), with the sample of plots located within 50 or 100 kms of a border. In Columns 1-2, the dependent variable is the probability of plot cultivation. In Columns 3-4 (resp. 5-6), the dependent variable is the probability of cultivating lowest (resp. highest) risk crops. In Columns 7-8, the dependent variable is the log of the number of crops per 1000 hectares of cultivated land. Except for the polynomials covariates, the specifications and weights used in Columns 1-2, Columns 3-4, Columns 5-6 and Columns 7-8 are the same as Columns 1-2 in Table 1, Columns 1-2 in Table 2, Columns 5-6 in Table 2, and Columns 1-2 in Table 3, respectively. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.17: **Land use**

	Dep. Var.: Plot is cultivated			
	(1)	(2)	(3)	(4)
Rule of Law	-0.102*	-0.106**	-0.105**	-0.136***
	(0.052)	(0.051)	(0.052)	(0.051)
Border FE	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear
R2	0.427	0.427	0.428	0.428
# Observations	30530	30530	13655	13655
# Country pairs	76	76	76	76
Max distance to border (km)	50	50	25	25
Mean Dep. Var.	0.69	0.69	0.68	0.68

NOTES. This table reports the effects of *Rule of Law* on the probability of plot cultivation from equation (1). The dependent variable is an indicator for whether the plot is cultivated. Its mean is reported at the bottom of the table. All regression models are unweighted. All models include interactions of border-country pair fixed effects. The sample comprises plots located between 10 and *Max. distance to the border (km)*. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.18: **Probability of growing low and high risk crops, with border fixed effects**

	Dep. Var: Lowest risk crop is grown				*Dep. Var: Highest risk crop is grown*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of Law	-0.122**	-0.122**	-0.126**	-0.126**	-0.048	-0.048	-0.043	-0.043
	(0.051)	(0.051)	(0.050)	(0.050)	(0.046)	(0.046)	(0.047)	(0.047)
Border FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear	No	Linear	No	Linear
R2	0.284	0.284	0.277	0.277	0.278	0.278	0.260	0.260
# Observations	30530	30530	13655	13655	30530	30530	13655	13655
# Country pairs	76	76	76	76	76	76	76	76
Max distance to border (km)	50	50	25	25	50	50	25	25
Mean Dep. Var.	0.68	0.68	0.67	0.67	0.44	0.44	0.43	0.43

NOTES. This table reports the effects of *Rule of Law* on the probability of cultivating lowest and highest risk crops from equation (1). The dependent variable is an indicator variable equal to 1 if a crop with the lowest (resp. highest) probability of crop failure is cultivated on the plot, within the subset of crops cultivated on at least one plot in the border area, and zero otherwise (see text for details). All regression models are unweighted. All models include interactions of border-country pair fixed effects. The sample comprises plots located between 10 and *Max. distance to the border (km)*. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.19: **Plot cultivation, crop choice, and diversification, with log population density controls**

	Plot cultivated		*Lowest risk crop grown*		*Highest risk crop grown*		*Log # crops by 1000 hectares of cultivated land*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of Law	-0.102*	-0.106**	-0.104*	-0.107**	-0.041	-0.027	-0.338*	-0.376*
	(0.053)	(0.052)	(0.052)	(0.052)	(0.048)	(0.052)	(0.170)	(0.201)
Log population density	0.005	0.005	0.004	0.004	-0.002	-0.002	-0.022	-0.021
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.014)	(0.014)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear	No	Linear	No	Linear
R2	0.427	0.428	0.419	0.419	0.365	0.365	0.624	0.624
# Observations	30517	30517	30517	30517	30517	30517	21076	21076
# Country pairs	76	76	76	76	76	76	75	75
Weights	No	No	No	No	No	No	Yes	Yes
Max distance to border (km)	50	50	50	50	50	50	50	50
Mean Dep. Var.	0.69	0.69	0.68	0.68	0.47	0.47	3.24	3.24

NOTES. This table reports the effects of *Rule of Law* on the main dependent variables of the paper, adding the log of the population density on a plot in the vector of covariates. In Columns 1-2, the dependent variable is the probability of plot cultivation. In Columns 3-4 (resp. 5-6), the dependent variable is the probability of cultivating lowest (resp. highest) risk crops. In Columns 7-8, the dependent variable is the log of the number of crops per 1000 hectares of cultivated land. Apart from including the log of the population density in the covariates, the specifications and weights used in Columns 1-2, Columns 3-4, Columns 5-6 and Columns 7-8 are the same as Columns 1-2 in Table 1, Columns 1-2 in Table 2, Columns 5-6 in Table 2, and Columns 1-2 in Table 3, respectively. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.20: **Probability of growing crops with risk of failure below or above 10%**

	Dep. Var: Crop with probability failure <10% is grown				*Dep. Var.: Crop with probability failure >10% is grown*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of Law	-0.088*	-0.102**	-0.095*	-0.136***	-0.060	-0.035	-0.056	-0.065
	(0.051)	(0.050)	(0.050)	(0.048)	(0.043)	(0.047)	(0.043)	(0.053)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear	No	Linear	No	Linear
R2	0.457	0.457	0.460	0.460	0.411	0.411	0.405	0.405
# Observations	30530	30530	13655	13655	30530	30530	13655	13655
# Country pairs	76	76	76	76	76	76	76	76
Max distance to border (km)	50	50	25	25	50	50	25	25
Mean Dep. Var.	0.65	0.65	0.64	0.64	0.47	0.47	0.47	0.47

NOTES. This table reports the effects of Rule of Law on the probability of growing at least one with a probability of failure below 10% (Column 1-4) or above 10% (Columns 5-8). All regression models are unweighted. All specifications control for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and *Max distance to border* from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.21: **Share of land cultivated with high- vs low-risk crops**

	Log area with highest risk crops / area with highest or lowest risk crops					
	(1)	(2)	(3)	(4)	(5)	(6)
Rule of Law	0.656**	0.685**	1.028***	1.023**	0.916*	1.160***
	(0.320)	(0.312)	(0.345)	(0.401)	(0.483)	(0.414)
Border FE	Yes	Yes	Yes	Yes	Yes	Yes
Crops FE	No	No	No	No	No	No
R2	0.606	0.851	0.629	0.871	0.674	0.858
# Observations	479	314	338	223	338	223
# Country pairs	55	41	44	35	44	35
Same high/low-risk crops across border	No	No	Yes	Yes	Yes	Yes
Crops with district-level data only	No	No	No	No	No	No
Weights	No	No	No	No	Yes	Yes
Mean dep. var.	-3.3	-3.4	-3.2	-3.7	-3.2	-3.7

NOTES. This table reports the effects of *Rule of Law* on the relative area devoted to high- and low-risk crops across districts in Africa, based on equation (1). All models include border pair fixed effects. The sample comprises districts within 100 km of the national border. The dependent variable is logarithm of the fraction of area devoted to the highest risk crops relative to the sum of area devoted to highest and lowest risk crops. Cols. 1-4 are unweighted, cols. 5-6 are weighted by district area. Cols. 1-2 report the results for all border districts, while cols. 3-6 report the results for the subsample of border-pair districts that have the same low- and high-risk crops. Cols. 1, 3, and 5 report results across all crops, cols. 2, 4, and 6 restrict the sample to the subset of crops for which information on area cultivated was reported at the subnational district level. Standard errors are clustered at the country-pair level. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.22: **Potential yield at the border on cultivated land**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	0.402	-0.000	-0.015	0.015	-0.181	-0.112	-0.057	-0.036	0.111*	-0.126
	(0.331)	(0.036)	(0.061)	(0.095)	(0.282)	(0.099)	(0.636)	(0.074)	(0.065)	(0.235)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	No	No	No	No	No	No	No	No	No	No
R2	0.802	0.887	0.689	0.631	0.678	0.657	0.690	0.647	0.777	0.665
# Observations	21089	21089	21089	21089	21089	21089	21089	21089	21089	21089
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Weights	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.75	0.78	1.43	1.97	5.66	2.15	14.6	1.73	1.49	4.37

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The sample is restricted to cultivated plots. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. Each observation is weighted by the size of cultivated area on the plot. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all cultivated plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.23: **Potential yield at the border on cultivated land**

	Dependent Variable: Potential yield									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rule of Law	0.100	-0.053	0.034	0.029	0.285	0.001	0.344	0.083	0.024	0.180
	(0.547)	(0.041)	(0.071)	(0.113)	(0.256)	(0.130)	(0.802)	(0.080)	(0.063)	(0.200)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
R2	0.802	0.888	0.689	0.631	0.679	0.657	0.690	0.648	0.777	0.666
# Observations	21089	21089	21089	21089	21089	21089	21089	21089	21089	21089
# Country pairs										
Max distance to border (km)	50	50	50	50	50	50	50	50	50	50
Weights	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crop	Cassava	Cocoa	Cotton	Groundnut	Maize	Millet	Sweet Potato	Phaseolus	Rice	Sorghum
Mean Dep. Var.	9.75	0.78	1.43	1.97	5.66	2.15	14.6	1.73	1.49	4.37

NOTES. This table reports the results of equation (1) for Africa, estimated separately for each crop in the set of the 10 most cultivated crops in the African sample. The sample is restricted to cultivated plots. The dependent variable is potential yield, measured in tons per hectare. The table reports the mean of each dependent variable. Each observation is weighted by the size of cultivated area on the plot. Each cell corresponds to a different crop. All models include controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all cultivated plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.24: **Plot cultivation, crop choice, and diversification, controlling for distance to closest city**

	Plot cultivated		*Lowest risk crop grown*		*Highest risk crop grown*		*Log # crops by 1000 hectares of cultivated land*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of Law	-0.099*	-0.109**	-0.100*	-0.108**	-0.028	-0.014	-0.366**	-0.408*
	(0.052)	(0.052)	(0.052)	(0.052)	(0.047)	(0.051)	(0.174)	(0.212)
Log Distance to Closest City	-0.069**	-0.069**	-0.077**	-0.077**	-0.076*	-0.076*	0.137	0.148
	(0.031)	(0.031)	(0.032)	(0.032)	(0.039)	(0.039)	(0.096)	(0.099)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RD Polynomial	No	Linear	No	Linear	No	Linear	No	Linear
R2	0.421	0.421	0.413	0.413	0.364	0.364	0.632	0.632
# Observations	29966	29966	29966	29966	29966	29966	20783	20783
# Country pairs	76	76	76	76	76	76	75	75
Weights	No	No	No	No	No	No	Yes	Yes
Max distance to border (km)	50	50	50	50	50	50	50	50
Mean Dep. Var.	0.69	0.69	0.68	0.68	0.47	0.47	3.24	3.24

NOTES. This table reports the effects of *Rule of Law* on the main dependent variables of the paper, adding the log distance to closest city with more than 100,000 residents of a plot in the vector of covariates. In Columns 1-2, the dependent variable is the probability of plot cultivation. In Columns 3-4 (resp. 5-6), the dependent variable is the probability of cultivating lowest (resp. highest) risk crops. In Columns 7-8, the dependent variable is the log of the number of crops per 1000 hectares of cultivated land. Apart from including the log distance to closest city with more than 100,000 residents in the covariates, the specifications and weights used in Columns 1-2, Columns 3-4, Columns 5-6 and Columns 7-8 are the same as Columns 1-2 in Table 1, Columns 1-2 in Table 2, Columns 5-6 in Table 2, and Columns 1-2 in Table 3, respectively. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table B.25: **Crop choice, market-oriented crops**

	Dep. Var.: Crop is grown					
	(1)	(2)	(3)	(4)	(5)	(6)
Rule of Law	-0.030	-0.123**	-0.003	-0.088	-0.150**	-0.161**
	(0.034)	(0.049)	(0.035)	(0.058)	(0.062)	(0.062)
Border x Ethnic FE	Yes	Yes	Yes	Yes	Yes	Yes
RD polynomial	No	No	No	No	No	No
R2	0.500	0.414	0.408	0.426	0.464	0.425
# Observations	51280	51280	51280	51280	51280	51280
# Country pairs						
Max distance to border (km)	50	50	50	50	50	50
Crop	Cocoa, coffee, tea	Groundnut	Banana, coconut, sugar crops	Oilpalm and other oil crops	Best crop under US prices	Best crop under French prices
Mean Dep. Var.	0.21	0.47	0.23	0.28	0.60	0.63

NOTES. This table reports the effect of *Rule of Law* on the probability of crop cultivation from equation (1). The dependent variable is an indicator variable equal to 1 if the crops at the top of the column are grown. All models are unweighted. In all columns, the specification controls for the interaction of border-country pair and ethnic homeland fixed effects. The sample comprises all plots located between 10 and 50 km from the country border. Standard errors are two-way clustered for both country and ethnic homeland, following the approach of Cameron, Gelbach, and Miller (2011). ***, **, * denote significance at the 1%, 5%, and 10% level.