Land Redistribution as Vote Buying*

Rob Davies†, Halvor Mehlum‡, Kalle Moene§and Ragnar Torvik¶

September 15, 2024

*This study is part of the Economic Development and Institutions (EDI) Programme. EDI is funded by the UK's Foreign, Commonwealth & Development Office (FCDO), and is managed through a collaboration among four institutions: Oxford Policy Management, Paris School of Economics, Centre de Recherche en Économie de Développement (CRED), University of Namur and Aide á la Décision Économique (ADE).

†Non-Resident Senior Research Fellow, United Nations University World Institute for Development Economics Research (UNU-WIDER); Associated Researcher, ESOP University of Oslo; E-mail: robdavieszim@gmail.com

‡University of Oslo, Department of Economics, P.O. Box 1095 Blindern, N-0317 Oslo, Norway; E-mail: halvor.mehlum@econ.uio.no

§University of Oslo, Department of Economics, P.O. Box 1095 Blindern, N-0317 Oslo, Norway; E-mail: k.o.moene@econ.uio.no

¶Norwegian University of Science and Technology, Department of Economics, N-7491 Trondheim, Norway, CEPR and CAMP; E-mail: ragnar.torvik@ntnu.no

Abstract

What is the relationship between land reform and political support in Zimbabwe? We study this question using a unique data set in which we combine data for 19 374 farm properties and other estates, with election results from 1 960 wards in the presidential election in 2018. The farm data are collected for 2002/2003, in the midst of the land reform in Zimbabwe and make it possible to analyze how land reform goes hand in hand with the support for the long term ruling party in Zimbabwe, ZANU-PF. The results show that for every percent of a rural ward's land area that was subject to land redistribution, the support for ZANU-PF increases by a quarter of a percentage point. The results are compatible both with a mechanism of gratitude from the beneficiaries and with a precautionary strategy where beneficiaries want to block regime change and potential reversal of the redistribution.

JEL: D72

1 Introduction

The fight for independence in Zimbabwe was about democracy but also about ending the drastically unfair distribution of land. When democracy and majority rule came in 1980, however, the constitution negotiated under the Lancaster House Agreement established that the bulk of the highly productive land should remain in the hands of white farmers running large scale farms, unless transferred through the market. This arrangement was respected and accepted for two main reasons: a) The former colonial power, the UK, set protection of property of white farmers as a premise for peace. b) A productive and efficient agricultural sector was seen

as critical for food security and for export earnings.

In the years following 1980 some redistribution of land happened but the main parts of the productive land remained in the hands of some 6000 white farmers. President Mugabe and his ruling party Zanu largely met demands for redistribution of land with loose promises about redistribution in the future. The land issue lost prominence as the economy seemed to have decent growth and as modernization and industrialization was seen as the road to prosperity. This growth focus culminated with the Economic Structural Adjustment Program in 1991. In an evaluation of that program the ESAP ambition with respect to agriculture was stated as follows "The development objective for the agricultural sector under ESAP included the production of enough food for the population, increase in agricultural exports, expansion of employment and the production of raw materials for the manufacturing industry and the deregulation of the sector." (p 18 AFDB 1997). To achieve all this, the government should remove price controls and other regulations. This deregulation led to no rise in employment. The deregulation happened with no positive effects on employment. The removal of grain marketing board and price controls meant, however, higher cost of living for city dwellers.

In the second half of the 1990s, pressure started to mount on Mugabe's regime. Formal employment in non-agriculture declined as global trade and competition from a democratic South Africa outcompeted local production and new post-independence Zimbabweans, with less loyalty to the Lancaster House Agreement, grew up to unemployment.

The resentments took two forms. A movement for drastic land redistribution and a political movement for an end to Mugabe's, in effect, one party regime.

In the parliamentary election in 2000 Mugabe's party won 63 out of 120 elected seats with most of the rest going to Movement for Democratic Change, MDC. While being close in aggregate, the vote exhibited a near complete rural urban divide. The MDC won all seats from the constituencies in the nine main urban areas in the countries. Hyper inflation and hyper rates of unemployment eroded Zanu's possibility of winning back the urban areas. The only option for Mugabe to gather support had to be based on the rural areas and involved condoning and formalizing of the land grabbing that had already started. Hence, during the period 2000-2010 a large part of the large-scale commercial farming areas was confiscated and redistributed strengthening Mugabe's party in large parts of the country.

The question we address in this project is what role the land redistribution played in this strengthening of support for Zanu. We use data on some 20,000 properties as recorded in 2002/03.

Our empirical analysis is simple. We want to explain the ward by ward support for Zanu in the 2018 election using the election results in 2000 in addition to the land redistribution ward by ward as explanatory variables . The empirical results show that land redistribution indeed explains the strengthening of support for Zanu in major parts of rural Zimbabwe: Over and above what is explained by other controls, for each additional 10 percent of a ward area that is allocated to A1 farms, Zanu support increases by 2.8 percent. For each additional 10 percent of a ward that is allocated to A2 farms the support for Zanu increases by 2.1 percent. Finally, for the remaining large scale commercial farms, 10 percent more land results in 1.1 percent increase for Zanu. That the latter number is smaller is natural as some fifty percent of this land was redistributed. That support for

Zanu can be understood in two ways: Backward looking: those living on the land may feel gratitude or Forward looking: those living on the land may feel that their continued possession depends on Zanu in power. The difference in estimated effect between A2 farms and A1 farms could reflect that A1 farms are smaller and involves more people per square kilometer of resettled land.

The estimated coefficients reported above reflects the difference in support between wards with little vs much land redistribution. Hence, if land redistribution lead to less support in communal lands or in the areas redistributed during the 1980s and 1990s. With this caveat in mind, our estimates indicate that for the 1455 rural wards we consider the land redistribution lead to a 3 percentage point increase in support for Zanu ranging from 22 percent in wards with full redistribution to zero in regions with no redistribution. Taken together, the results demonstrate a clear pattern of vote buying by land redistribution.

2 The data

The Presidential election data from 2018 are from 10 986 polling stations. These polling station data are then aggregated to gross numbers for 1 960 wards. The main variable in our analysis is the vote share of Mugabe's party ZANU-PF. In 2018 the presidential candidate for ZANU-PF was Emmerson Mnangagwa, who won the election and who is the current president. It is the support for ZANU-PF that we want to explain and we use a number of co-variates.

All of our data are connected to geographical units. These units typically have different sizes for different data series. We have used GIS software to match them to the geographical pattern of the wards division in 2018. The key ingredient in the

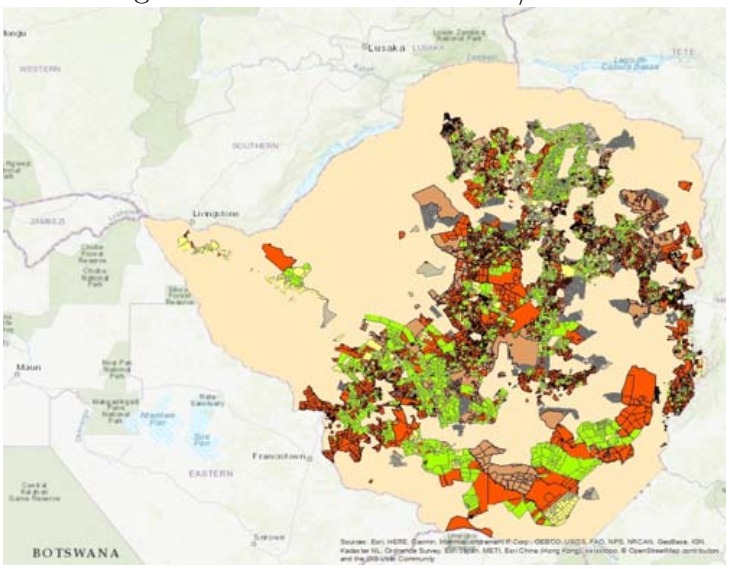
analysis is the shape files for polygons for the wards, together with polygons for the districts and for the provinces. All of these were taken from United Nations Office for the Coordination of Humanitarian Affairs, OCHA (2021). The co-variates and explanatory variables that we use are the following:

The parliamentary election data from 2000 are from Psephos election archive (Psephos 2021). This archive is maintained by the Australian political scientist Adam Carr. It contains contains gross numbers of votes for all the 120 constituencies in Zimbabwe's 2000 legislative election. The location of 2018-wards contained in these 2000-constituencies was identified visually from printed maps from various sources. These constituency data were then mapped on to the corresponding wards of the 2018 election. Hence, the year 2000 data are less disaggregated than the 2018 data, and on average 16 of today's wards cover one of the 2000 constituencies. Also for the 2000 election the variable we use is the vote share of Mugabe's party ZANU-PF. The party was running with local candidates in every constituency. The opposition was largely one MDC candidate. So in most cases there were, as in the presidential election, one ZANU-PF candidate versus one MDC candidate. There are a few exception to this rule so the variable used is the vote share of the main ZANU-PF candidate.[1]

The Poverty data are from Zimbabwe's Poverty Atlas (UNICEF 2015). The poverty atlas is based on the Poverty, Income, Consumption and Expenditure Survey (PICES) that was conducted by Zimbabwe's statistical office from June 2011 to May 2012 and on the National Population Census conducted in August 2012. Based on these prime sources Zimstat and UNICEF calculated poverty

[1]The opposition was largely, but not exclusively, represented by one MDC candidate. In rare cases splinter factions of ZANU-PF also had a candidate.

Figure 1: Land Status in 2002/2003.



measures for every ward. A handful of data are missing in the publication, but the coverage is basically complete for all the wards. The measure we use is the poverty prevalence, namely the fraction of households with a total consumption of less than the *total consumption poverty line*, calculated as the cost of 2 100 kcal plus other essential (Fews-net 2020).

The main data-work and the main value added of the exercise is related to the land categories. The starting point is a database of 19 374 land properties, each represented by a polygon. In addition to the geographical location, these land properties are tagged with ownership status and acreage. The information in this data set was supplemented with information from the maps contained in the food security publication (ZIMVAC 2003). The scope of the geographical information is illustrated in Figure 1 , where each color illustrates an ownership category. The cream color is mainly communal lands, but also covers safari areas

Table 1: National land distribution pattern

Land category	1980 Area (m.ha)	1980 % of area	2000 Area (m.ha)	2000 % of total	2010 Area (m.ha)	2010 % of total
Communal areas	16.4	42%	16.4	42%	16.4	42%
Old resettlement:	0.0	0%	3.5	9%	3.5	9%
New resettlement: A1	0.0	0%	0.0	0%	5.8	15%
New resettlement: A2	0.0	0%	0.0	0%	3.5	9%
Small-scale commercial farms	1.4	4%	1.4	4%	1.4	4%
Large-scale commercial farms	15.5	40%	11.7	30%	1.7	4%
State farms	0.5	1%	0.7	2%	0.7	2%
Urban land	0.2	1%	0.3	1%	0.3	1%
National parks and forest land	5.1	13%	5.1	13%	5.1	13%
Unallocated land	0.0	0%	0.0	0%	0.7	2%
Total	39.1	100%	39.1	100%	39.1	100%

Source: Scoones et al. (2009) (years 1980 and 2000) and Moyo (2011) (year 2010)

and national parks. The details of this land is given in Figure 3.[2] In Figure 1 the green are A1 farms, the yellow are A2, while red are Large Scale Commercial Farms. The distribution of land in the map represents information comparable to the aggregate numbers in Table 1. The table shows that between 1980 and 2000, 3.5 mill. hectares of land were allocated to resettlement (i.e "old resettlement"). Between 2000 and 2010, 5.8 mill. hectares of land were allocated to A1 resettlement while 3.5 mill. hectares were allocated to A2 resettlement. During the period 2000 through 2010, Large Scale Commercial Farms went from covering 30 percent of the land to 4 percent of the land.[3] The main takeaway is that from 2000 to 2010, LSCF went from covering 30 percent of the land to covering 4 percent of the land. Hence, 85 percent was redistributed and of this land 3/5 went to A1 farms while 2/5 went to A2 farms. In the map Figure 1 about 50 percent of the LSCF are

[2]We return to a more thorough discussion of those non-farming areas below.

[3]These numbers come with a number of caveats. The 2010 numbers in particular are not definitive as the process was still ongoing and many cases were challenged.

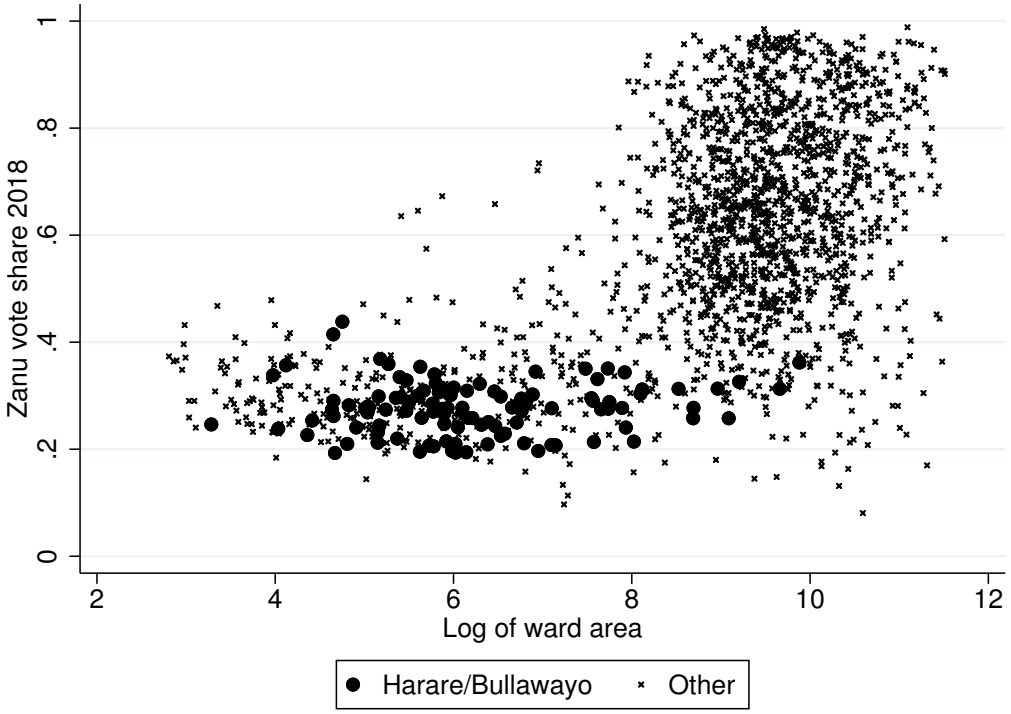
already redistributed, hence the snapshot shows the situation a little more than half way into the process. In the years following the snapshot about 70 percent of LSCF would eventually be reallocated, while 30 percent would remain large scale (at least by 2010). Thus the scope of the land redistribution in Zimbabwe presents a rather unique opportunity to investigate the effects of land reforms that has been at the core of the political process and that fundamentally changes land ownership throughout a whole country.

The land information about the 19 000+ plots is, by the use of the GIS software, superimposed on on the 1 960 ward polygons. The information from the exercise is then condensed into summary measures that are the share of each ward area covered by each land category. In addition to the ones mention above the categories contain small scale commercial, Old Resettlement, state land and various natural protection categories.

3 Analysis

The goal of the analysis is to quantify the electoral consequences of the land redistribution in the 2000's. The basic question we ask is how the vote share for ZANU-PF in the 2018 presidential election in the 1960 wards can be explained by the change in ownership structure of land in the same wards. The voting pattern is of course also determined by other factors, among which the urban/rural divide is clearly a salient one. This is illustrated in Figure 2 where we have the natural log of ward area on the horizontal axes and the vote share of ZANU-PF on the vertical axes. As the ward structure in Zimbabwe aims at having wards of comparable size with respect to population, urban areas, typically have smaller wards in terms of

Figure 2: Zanu support in densely vs sparsely populated areas



area. To emphasize the urban dimension as a determinant of ward size, in the figure we have also highlighted wards in Bulawayo and Harare city.[4] These two main cities confirm the pattern of small area wards being urban wards. [5] The plot shows the striking pattern of urban wards being strongly and consistently in favor of MDC, while rural wards are on average supporting ZANU-PF. Eyeballing tells us that urban wards on average give 1/3 of their votes to ZANU-PF, while in rural wards the strength is flipped as in rural wards about 2/3 of the votes go to ZANU-PF. Another salient feature is that the support shows more variation in these rural wards.

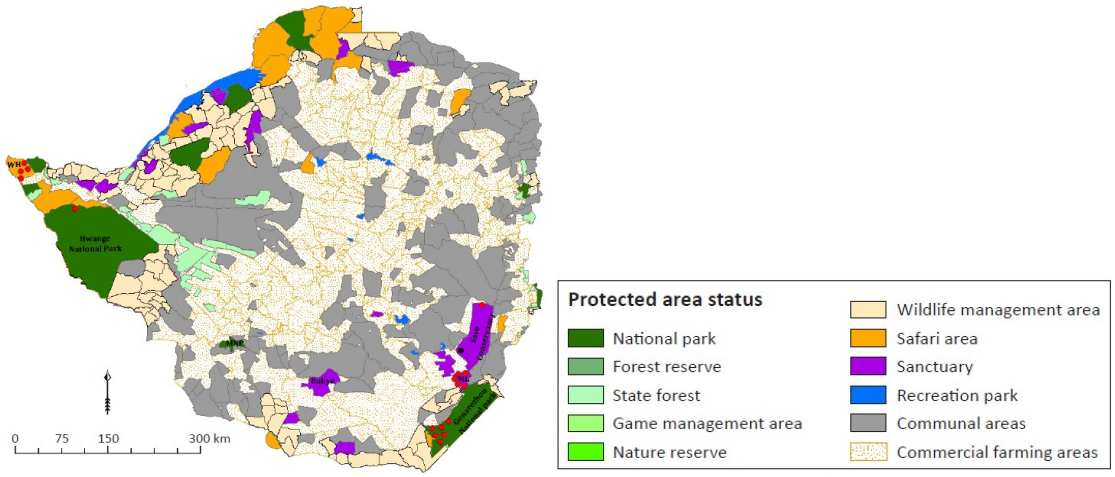
In a regression model one option for tackling this urban - rural divide would be to include a dummy for urban wards as a control. That would, however, not yield much information over and above what the figure already reveals, and, after all, our main question is related to how land distribution and *re*distribution in rural areas affect support for ZANU-PF. Ownership of arable land does not play the same role in urban areas. Expropriation of farms for city expansion is of course an issue, but that is a completely different matter than expropriation of farms for redistribution. So, we exclude the urban wards from the main analysis rather than including urban-rural dimension as a control. In precise terms, we select the right side of Figure 2 as our sample and choose, somewhat arbitrarily, a ward area of 2980 ha [6] as the cut-off. This cut-off leaves us with a sample with generous variation and with a large number of observations. As an additional restriction, we also exclude the few wards with an area of more than 100 000 ha, as they typically

[4]Harare also includes Chitungwiza.

[5]The other small size wards are wards in Mutare, Gweru, Kadoma, Kariba, Victoria Falls and the other numerous towns.

[6]With natural log exactly equal to 8

Figure 3: Farming vs non farming areas



Source: Motsi et al. (2013)

cover vast areas with minimal population. They include natural parks, safari areas and wild life sanctuaries located in north-west and south-east as shown in Figure 3. After these truncations based on ward area we are left with a sample of 1 508 wards for analysis.

3.1 The regression results

The first set of regression results are shown in Table 2. The first column shows the basic equation, with controls for the eight provinces. At face value, the results show that a 10 percentage point increase in acreage occupied by A1 farms gives a 2.1 percentage point increase in support for ZANU-PF. A similar increase in the coverage of A2 farms gives an increase of 1.3 percent support for ZANU-PF. Lastly, the acreage of Large Scale Commercial Farms has largely no effect. These results exhibit a substantial correlation between support for ZANU-PF and the allocation of redistributed farms. The R^2 is 27.5 percent in a regression with provincial dummies only. Thus the three land categories are able to explain an

Table 2: Zanu vote share 2018

	(1)	(2)	(3)	(4)
Acreage-share of A1	0.216***	0.247***	0.253***	0.271***
	(0.0204)	(0.0190)	(0.0183)	(0.0174)
Acreage-share of A2	0.136**	0.192***	0.165***	0.204***
	(0.0434)	(0.0402)	(0.0387)	(0.0368)
Acreage-share of large scale commercial	-0.00386	0.0741***	0.0591***	0.109***
	(0.0158)	(0.0154)	(0.0144)	(0.0142)
Poverty prevalence		0.642***		0.492***
		(0.0403)		(0.0379)
Zanu vote share 2000			0.535***	0.457***
			(0.0267)	(0.0260)
Observations	1508	1506	1497	1495
R^2	0.340	0.436	0.466	0.520
Province controls	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

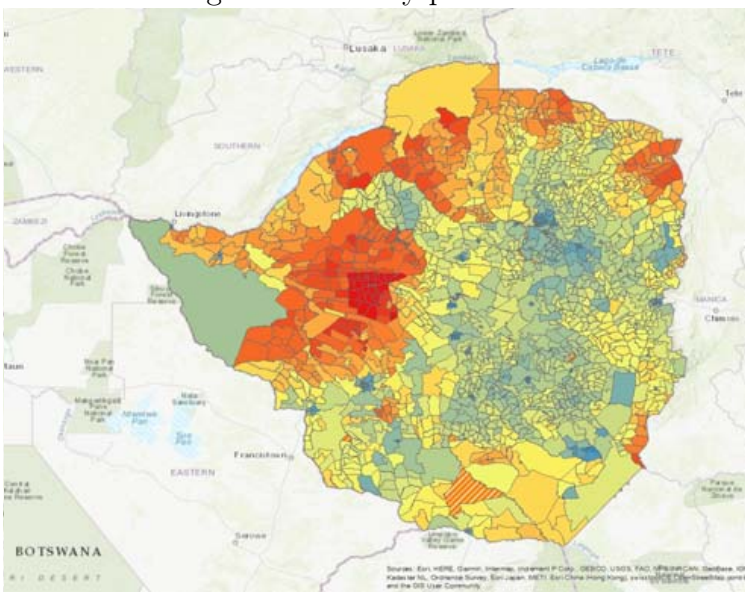
additional 7 percent of the variation.

An obvious question, however, is what explains this correlation. It could be a) Wards with a lot of LSCF redistribution to A1 and A2 supports ZANU-PF as a consequence. b) Wards that traditionally have supported ZANU-PF received redistribution as reward. c) There could be other factors that are correlated both with land distribution and with ZANU-PF support.

To go some way in addressing the latter, in addition to Province dummies, we have included poverty prevalence as a control. This measure is a headcount of the number of households below the poverty line as shown in Figure 4 There are several reasons why it may be relevant for voting patterns, but the main logic when including it is that the rural poor has traditionally been seen as supporters of ZANU-PF.

Including poverty prevalence increases the explanatory power by 10 percent.

Figure 4: Poverty prevalence



Source: UNICEF 2015, red is severe.

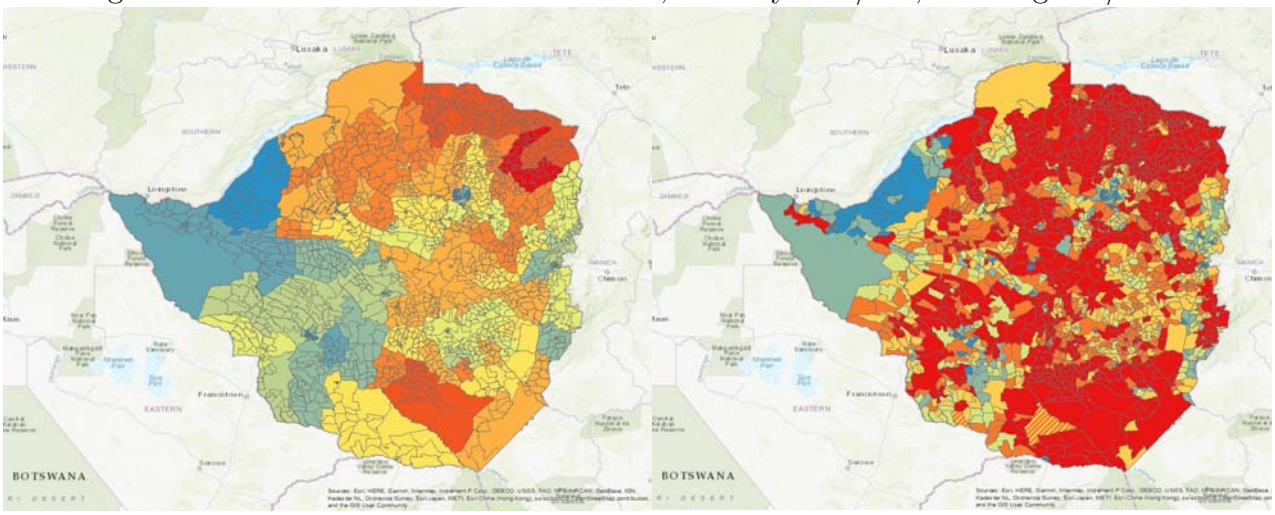
The importance of A1 and A2 acreage is strengthened, while the Large Scale Commercial Farms now get a non-negligible coefficient.[7] Hence the results are affected, and the explanatory power is strengthened, by including one obvious control. There could be other controls however, like ethnic composition, also contributing explanatory power.[8] We do not have data on the ethnic composition. The provincial dummies, however, will typically take care of most of this ethnicity dimension, and thus we do not view it as a main concern.

Provincial dummies will typically not solve all problems of omitted variables. In order to mend potential biases caused by omitted confounding variables, and also address issue b) above of ZANU-PF strongholds receiving land distribution, we include as a control variable the election results in the parliamentary election

[7]The underlying relationship explaining why Poverty prevalence and large scale farming both enter positively is that large scale commercial and poverty prevalence are negatively correlated with a coefficient of -0.3.

[8]ZANU-PF is traditionally a party that sprung out of the dominant Shona people.

Figure 5: Election Zimbabwe 2000 vs 2018, Zanu=yellow/red, MDC=green/blue



in 2000. In Figure 5 the results from the two elections in 2000 and 2018 are juxtaposed. As above, green to blue indicates MDC support while yellow to red indicates ZANU-PF support. The maps show the drastic polarization in the 2018 election as compared to the election in 2000, with the colors being sharp blue or sharp red. The main remaining MDC strongholds are populous urban centers and Matableland North and Nyanga. There is, however, a clear correlation in the voting patterns across these 18 years. Urban areas supported MDC also in 2000 and Mashonaland was also in 2000 a stronghold for ZANU-PF.

The third and fourth column of the table shows the results after including the ZANU-PF support in 2000 as a control. Column 4 shows that election results in 2000 and 2018 are indeed strongly correlated in the rural wards as included in the analysis. The coefficient on all three land categories is higher than in column 2. These results indicate that mechanism b is the driver of our results. It may be that ZANU-PF regions were experiencing more redistribution but ZANU-PF support increased following the reform and brought the ZANU-PF numbers to new highs.

Hence, land redistribution seems to strengthen the ZANU-PF support. ZANU-PF had found a policy instrument which increased their popularity (despite many factors working in the opposite direction). The numerical estimates shows that the coefficient on A2 is twice and A1 thrice that of LSCF.[9] That A1 land generates more support than A2 land is only natural as the acreage of an average A1 farm is about 1/4 of that of an A2 farm. Hence, for a given amount of redistributed land, A1 farms accommodates 4 times the number of farmer households than A2 farms.

The relative size of the coefficient on LSCF being positive but smaller squares well with the fact that 70 percent of this land was subsequently redistributed. Based on the estimated A2 and A1 coefficients and based on the relative importance of A1 vs A2, the corresponding coefficient on the prevailing LSCF would be -0.21[10]

At face value this derived coefficient can be interpreted as follows: Relative to other types of land, mainly communal land, the land redistribution coefficients are 0.27 resp 0.21. If we rather compare redistributed A1 and A2 land to *non*-redistributed LSCF, the coefficient differences are 0.48 resp 0.42. This implies that redistributing 10 percent of a ward from large scale to A1 leads to the difference in ZANU-PF vote share increase by 5 %.

In summary, the analysis shows that the ZANU-PF support is substantially higher in rural wards with more rather than less A1/A2 farms. In addition there are indications that the difference is particularly high when calculating the difference, taking into consideration that growth in A1/A2 has to come at the expense of

[9]The test of the coefficient being equal yields F(1,1482) = 2.35 with $p = 0.125$, hence it cannot be rejected that they are equal.

[10]The calculation is based on A1 land occupying 61.6 % and A2 land occupying 38.3 % of redistributed land and the assumption that these relative fractions also holds for the remaining land redistributions. The confidence interval of this estimate is [-0.333,-0.083].

Large Scale Commercial Farms. At that margin, one percentage point increase in land covered by A1/A2 goes hand in hand with half a percentage point higher support for ZANU-PF. The precision of the results are a bit uncertain and the exact causal interpretation is still a bit oblivious, other than what we can see in the timing. In the following we will go further in depth by addressing some obvious robustness concerns.

3.2 All separate land types included.

The analysis above was executed by done focusing on A1 farms, A2 farms and LSCF relative to all other land categories. The main category among those land types lumped together in the "control group" is Communal Lands. Communal Lands on average cover 63.6% of the wards included in the sample.[11] There are however also other categories, like "old resettlement", "state land" and "forest land". All in all 17 different land categories are represented in the sample. Most of them cover less than 0.1 percent of a given ward, and they will thus not matter significantly neither for the precision of the estimates nor for the interpretation of the coefficients. But there are, nevertheless, a few non-negligible land types that are worthy of attention. In Table 3 we have included all types of land in the regression. We have also reported all the coefficients for all land types with, on average, more than 0.5 % coverage. We have also included the average values for each of the included variables. The results show that the estimates for A1, A2 and LSCF increase modestly when the control category is Communal Lands proper and

[11]This is different from the numbers in Table 1 for three reasons. First, the included wards leave out large wards with national parks and vast forest. Second, it leaves out urban areas. Third, the averages are over the respective shares in the respective wards and not the overall share.

Table 3: All land types

	(1)	(2)	average value
Acreage-share of A1	0.271***	0.275***	7.6 %
	(0.0174)	(0.0171)	
Acreage-share of A2	0.204***	0.245***	2.7 %
	(0.0368)	(0.0376)	
Acreage-share of large scale commercial	0.109***	0.124***	11.7%
	(0.0142)	(0.0141)	
Zanu vote share 2000	0.457***	0.443***	56.3%
	(0.0260)	(0.0256)	
Poverty prevalence	0.492***	0.556***	76.2%
	(0.0379)	(0.0404)	
Acreage-share of old settlements		0.144***	3.9%
		(0.0192)	
Acreage-share of small scale commercial		0.0396*	4.1%
		(0.0186)	
Acreage-share of state land		0.0580	1.2%
		(0.0390)	
Observations	1495	1495	
R^2	0.520	0.549	
Province controls	Yes	Yes	
All land types controls	No	Yes	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

not the lumped together category. It is also seen that the Old Resettlements are driving these adjustments. By not averaging over these land types in the control, the Communal Land's dwellers lower enthusiasm for ZANU-PF are accentuated and the difference with respect to e.g. A1 is clearer. These Old Resettlements happened in the period before 1999 and was done on a willing buyer willing seller basis. The fact that these wards support ZANU-PF more than Communal Lands dwellers, also when controlling for 2000 results, could be explained in several ways. One potential explanation is that the proprietors on this land in 2018 had an even stronger urge to express gratitude to ZANU-PF and to the Mugabe legacy. Another explanation could simply be that they perceived that their own land was at risk of being confiscated if a new regime was to reverse what had happened in the past. In particular, this could be so if the beneficiaries of the old resettlement were associated with the elites in ZANU-PF. Whatever the reason for the Old Resettlement coefficient, the main results with respect to recent redistribution remain also when including a more fine-grained land variable.

3.3 Extensive margin vs intensive margin

In the main regressions we have compared all 1 495 rural wards. As the map in Figure 1 shows, the A1, A2 and LCSF are concentrated in some parts of the country, while Communal Lands are predominantly concentrated in other parts.[12] It is therefore not a priori clear what the estimates show. Do they reflect the difference between purely communal areas and purely A1, A2 and LSCF areas respectively or do they reflect the difference between wards where all land categories are present in various fractions? This is a question of the parameters reflecting the extensive

[12]This reflects the colonial reservation of good farming land for white farmers.

or intensive margin. Is it the difference when switching land category entirely (the extensive margin) or when increasing the already existing land category marginally (the intensive margin). In Table 4 we have investigated the extensive vs intensive

Table 4: Zanu vote share 2018 extensive vs intensive margins

	(1)	(2)	(3)
	All	Intensive margin	Extensive margin
Acreage-share of A1	0.271***	0.318***	0.199***
	(0.0174)	(0.0535)	(0.0301)
Acreage-share of A2	0.204***	0.157*	0.227*
	(0.0368)	(0.0643)	(0.100)
Acreage-share of large scale commercial	0.109***	0.0205	0.0699***
	(0.0142)	(0.0469)	(0.0195)
Zanu vote share 2000	0.457***	0.159*	0.536***
	(0.0260)	(0.0711)	(0.0296)
Poverty prevalence	0.492***	0.650***	0.453***
	(0.0379)	(0.0997)	(0.0446)
Observations	1495	217	1092
R^2	0.520	0.472	0.549
Province controls	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

margin. In column 2 (the intensive margin) we have limited the sample to wards where Large Scale Commercial Land is more than 5 % *and* A1/A2 make up more than 5% of the land. Hence, the land types of our main interest make up more than 10 % and A1/A2 and LSCF are both present. In column 3 we have limited the sample to wards that are predominantly homogeneous with respect to land type. In this sample, the wards are 97.5 % homogeneous, meaning that they are either (for all practical purposes) exclusively A1/A2, or exclusively LSCF or exclusively "other" (i.e. communal). The first thing to note that there is no overlap between the samples. Moreover, the two samples cover 90% of the overall sample.

When comparing columns 2 and 3 with column 1, it is seen that the two main estimates with respect to A1 and A2 farms have comparable magnitudes in all three samples. This speaks to the robustness of those results. The LSCF coefficient, however, seems mostly to be driven by observations on the extensive margin. This could simply be driven by the fact that the LSCF farms observations, as shown in Figure 1, are concentrated. And, in fact the standard deviations are so large in column (2) that it cannot be rejected that the coefficients on LSCF are equal across all specifications.

4 Conclusion

We asked whether land reform in the period 2000-2010 helped explain the victory of ZANU-PF in 2018 presidential election. We found that wards subject to land reform show higher support for ZANU-PF than wards that did not experience land reform. This result is strong and significant and is of a magnitude that could flip the balance of an election. Whether the land reform gave a net gain for ZANU-PF in the aggregate is not unambiguously established. There are two caveats when interpreting the results in that direction.

First, the documented difference in support could be a result of *lower support* in the non-affected areas. One reason could be discontent in the Communal Lands areas with the violence and disruptions to political and economic stability that followed the land reform. Another reason could be that displaced land laborers who previously worked on Large Scale Commercial Farms, now have moved to Communal Lands and cast their vote of discontent there.

Second, we have focused on differences within the rural wards. As was evident

from Figure 2 the urban areas were consistently quite negative for ZANU-PF. Their negative sentiments were probably strengthened rather than softened by the land reform and economic hardship that followed. Hence, even if the land reform might have helped mobilize ZANU-PF votes in the rural areas, it probably led to loss of votes in the urban area. Hence, a robust conclusion seems to be that land reform contributed to the polarization of the electorate as evident in Figure **??** .

References

AFDB (1997) *Zimbabwe Economic Structural Adjustment Program Project Performance Evaluation Report*, Operations Evaluation Department (Opev) 9 December 1997.

Batsani-Ncube, I. (2022). "EXCELGATE: how Zimbabwe's 2018 Presidential election was stolen: by Jonathan Moyo, Harare, SAPES Books,", *Journal of Contemporary African Studies* Volume 40, 2022 - Issue 1.

Brett, Teddy & Winter, Simon (2003) "Origins of the Zimbabwe Crisis" *FOCUS, Second Quarter* https://hsf.org.za/publications/focus/issue-30-second-quarter-2003/origins-of-the-zimbabwe-crisis

Chamisa v Mnangagwa & 24 Others. 2018. ZWCC 42 CCZ 42/18 (Constitutional Court of Zimbabwe). Accessed December 20, 2021. https://zimlii.org/zw/judgment/constitutional-court-zimbabwe/2018/42.

Fews-net (2020) *Zimbabwe Food Security Alert* September 2, 2020, Harare Zimbabwe. https://reliefweb.int/report/zimbabwe/zimbabwe-food-security-alert-september-2-2020, download Dec. 20 2021.

Fielding, D. (2018). "The geography of violence during a presidential election: Evidence from Zimbabwe." *European Journal of Political Economy*, 55, 538-558.

Good, Kenneth (2002) "Dealing with Despotism: the People and the Presidents" in Henning Melber (ed) *Zimbabwe's Presidential Elections 2002: Evidence, Lessons, Implications* Discussion Paper 14 Uppsala: Nordiska Afrikainstitutet.

Kim, J., Elliott, E., & Wang, D. M. (2003). "A spatial analysis of county-level outcomes in US Presidential elections: 1988–2000." *Electoral Studies*, 22(4), 741-761.

King, G. (2013). *A solution to the ecological inference problem.* Princeton University Press.

Mas, A., & Moretti, E. (2009). "Racial bias in the 2008 presidential election." *American Economic Review,* 99(2), 323-29.

Matondi, P. B. (2012) *Zimbabwe's fast track land reform.* Zed Books Ltd.

Meredith, M. (2018). "Mugabe's Misrule: And How It Will Hold Zimbabwe Back." *Foreign Aff.*, 97, 129.

Motsi, T. R., Tichiwangana, S. C., Matope, G., & Mukarati, N. L. (2013). "A serological survey of brucellosis in wild ungulate species from five game parks in Zimbabwe: research communication." *Onderstepoort Journal of Veterinary Research,* 80(1), 1-4.

Moyo, S. (2011). "Three decades of agrarian reform in Zimbabwe". *Journal of Peasant Studies*, 38(3), 493-531.

OCHA (2021) Accessed December 20, 2021, https://data.humdata.org/dataset/zimbabwe-administrative-levels-0-3-boundaries

Palmer Robin (1977) "Land and Racial Domination in Rhodesia." *Perspectives on Southern Africa, number 24.* Berkeley and Los Angeles: University of California Press.

Psephos (2021) *Adam Carr's Election Archive, Zimbabwe*, Accessed December 20, 2021, http://psephos.adam-carr.net/countries/z/zimbabwe/zimbabwe20002.txt

Scoones, I., Marongwe, N., Mavedzenge, B., Mahenehene, J., Murimbarimba, F., & Sukume, C. (2010). *Zimbabwe's land reform: myths & realities.* Oxford: James Currey.

UNICEF (2015). *Zimbabwe Poverty Atlas: Small Area Poverty Estimation.* Statistics for Poverty Eradication. Harare: UNICEF, World Bank and Zimbabwe National Statistics Agency.

Zim-vac (2003) *Zimbabwe Emergency Food Security and Vulnerability Assessment* April 2003, Accessed December 20, 2021, http://fnc.org.zw/wp-content/uploads/2019/01/2003-April-May-2003-Zimbabwe-Emergency-Assessment-Report.pdf

Sources of supplementary maps

https://esdac.jrc.ec.europa.eu/

https://www.rhodesia.me.uk/maps/