



# Postliberation Politics: Evidence from Demographic Determinants of South African Voting Behavior in the 2009 National Election

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## Abstract

In this paper we examine demographic drivers of South African voting behavior in the 2009 national election. We use a novel data set, which combines census and voting data at the ward level, representing the highest level of disaggregation of South African elections to date. Unsurprisingly, blacks are more likely to vote for the ANC, whites more likely to vote for the DA, and rising incomes and greater security in the labor market predict a switch in allegiance from the ANC to the DA. Allowing for an interaction between income and race, reduces the impact of racial identity for the major parties. A striking finding is that DA voter support is disproportionately strong amongst poor black (and other race group) voters - a result that is present for every province. The result is consistent for the findings we report for the impact of income and the nature of labor force participation.

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# 1 Introduction

Explanations of South African voting patterns are overwhelmingly conventional. Voting allegiances are attributed to identity markers of race, ethnicity, income, employment and education status. In this paper we challenge this conception of voting behavior on South Africa. The cliches are not devoid of a factual basis. But the reality is importantly nuanced, making the identifiers of political behavior imperfect at best, and misleading at worst.

South Africa represents an important case study of post-liberation politics, for a number of reasons. The political transition of 1994 took place in the most advanced economy of Africa, and was led by one of the oldest African liberation movements. What is more, the transition took place by means of a peaceful transfer of power from a small elite defined principally along racial lines (white), under an economic policy framework that, while praised by many commentators for its sustainability and long-term orientation, did not engage in extreme redistributive interventions despite facing the world's highest level of income inequality. The policy framework did, however, explicitly target poverty reduction and service delivery to the historically disadvantaged (black) majority. Strikingly, the municipal elections of 2016 have given an indication that the stranglehold that the party of political liberation, the African National Congress (ANC), had on political power, is now under threat, much sooner than was the case in most of the rest of the African continent's former colonies. Remarkably, this challenge is emerging both from the "right," by a party historically associated with the rich white elite the ANC had supplanted politically, the Democratic Alliance (DA), and by a more radical populist "left" party claiming to represent the most marginalized members of South African society, the Economic Freedom Fighters (EFF).

Which raises the question of why the decline of the political fortunes of the ANC could have been so swift, and why a challenge from the left and the right could have gained such credibility?

In this paper we explore this question simply by examining the core demographic drivers of South African voting behavior in the 2009 national election, in order to explore whether potential sources of the erosion of ANC electoral support can be identified. This paper represents an important advance in the analysis of South African voting, in creating a novel data set, which combines census and voting data at the ward level for the 2009 national election. Use of the data base is a novel departure in the analysis of South African politics, in that remarkably to the best of our knowledge no previous study has undertaken an analysis of ward level voting behavior linked to census demographic data.<sup>1</sup>

We link the proportion of the vote attained by the largest eight parties in the 2009 South African national election to a range of demographic characteristics covering race, income, labor market status, education, household size and status, as well as regional characteristics. While a number of findings surrounding race and income are unsurprising, we also find associations that are surprising in that they overturn conventional wisdom. Specifically, we find that the DA loses disproportionately little support amongst poor black voters, while the ANC does disproportionately worse than expected among the same class of voters. Instead, ANC support is concentrated among labor force participants that earn relatively high incomes, and thus might be considered a labor force "elite," though not among high income voters of any race group. While in 2009 the DA was the only credible voice of opposition, the emergence and relative success of the EFF, is potentially attributable to the weakness of the ANC in representing the interests of the poorest in society.

Despite this, it needs to be remembered that electoral ANC support in 2009 was overwhelming. Under the South African proportional representation electoral system, 26 political parties were registered for the national election.<sup>2</sup> Of these, the ANC won by an almost two thirds majority (65.8%), followed by the DA (16.8%) and COPE (7%) - see Figure 1.

The paper is structured as follows. Section 2 provides the context in which the contribution of the paper is located. Section 3 details the data set employed in the study, while section 4 reports results. Section 5 provides conclusions and evaluations.

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<sup>1</sup>The sole exception is a new body of work, that does examine disaggregated data from census and survey sources, on South African voting behavior - see for instance De Kadt (2016), Sands and De Kadt (2016), De Kadt and Lieberman (2016) and De Kadt and Larreguy (2016).

<sup>2</sup>A list of these parties is given in table 8 in the Appendix.

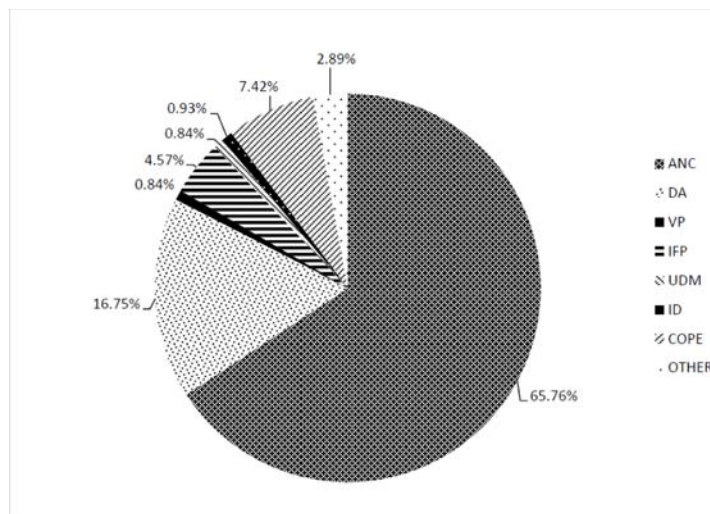


Figure 1: National Proportion of the Vote Achieved by Political Parties - South African 2009 National Election. ANC: African National Congress; DA: Democratic Alliance; VP: Freedom Front Plus; IFP: Inkatha Freedom Party; UDM: United Democratic Movement; ID: Independent Democrats; COPE: Congress of the People; Other: remainder of parties.

## 2 Literature Review

Building a workable political coalition with sufficient weight to exercise influence over policy decisions requires a solution to the underlying collective action problem (Downs, 1957; Horowitz, 1985, 1991; Ferree, 2004; Eldridge and Seekings, 1996; Schulz-Herzenberg, 2013; Norris and Mattes, 2003; Rabushka and Shepsle, 1972). Given the relative paucity of detailed quantitative analysis of South African voting behavior, we focus on the principal drivers that have been identified qualitatively in the literature: race, ethnicity, income, employment, education, age and service delivery.<sup>3</sup>

One solution to the collective action problem is the mobilization of racial identity (Lijphart, 1994; Horowitz, 1991; Sylvester, 2009; Everatt and Mbeki, 2011; Giliomee, Myburgh and Schlemmer, 2001; Johnson and Schlemmer, 1996; Habib and Naidu, 2006; Habib and Schulz-Herzenberg, 2011; Reynolds, 1994, 1999). Since colonialism has shaped South African politics along race for four centuries, especially under Apartheid, the proposition that race should influence election outcomes is immediate (Ferree, 2004; Horowitz, 1991; Seekings and Natrass, 2005), and indeed it provides perhaps the most conventional organizing principle in the analysis of South African politics. Newer analyses of South African political behavior have continued to emphasize the importance of race, though conditional on the extent to which voters are segregated - suggesting an underlying information asymmetry explanation for the salience of race (Sands and De Kadt, 2016).

Race might exercise its influence directly (Lodge, 1999) or indirectly as a signal of credibility, competency and trustworthiness, and social differences within the electorate (Mattes 1995; Seekings, 1997, Eldridge and Seekings, 1996, Ferree, 2004; Mattes, Taylor and Africa, 1999; Popkin, 1995; Habib and Naidu, 2006). Ferree (2006, 2004) places importance on the party's image and credentials being congruent with the constituency it aims to attract. The proposition that race matters electorally, does not, of course, imply homogeneity of racial group preferences (Mattes, 1995). In the presence of hysteresis, we might also anticipate the persistence of racial (and other) identity markers over time in voting behavior (De Kadt, 2016).

<sup>3</sup>A further possibility might be the development of coalitions based on the dispensation of patronage. Patronage has informed analysis of appointment to bureaucratic positions (Pollock, 1937; Reid and Kurth, 1989; Folke, Hirano and Snyder, 2011), as well as the formation of voting support at the electoral level (Weber, 1968; Levitt and Snyder, 1995, 1997; Nordhaus, 1975; Sachs and Alesina, 1988; Remmer, 1993; Block, 2000). Since we lack any relevant data we do not investigate this possibility further in the present paper.

Since according to the 2011 Census,<sup>4</sup> 79.6% of South Africans classify as black, 9% coloured (the official South African term for mixed race), 8.9% white, and 2.5% as Asian, race would offer an obvious dimension along which a ruling coalition with majority status could be structured. However, none of the racial categories in South Africa are homogenous, above all ethnically. An alternative plausible organizing principle is therefore ethnicity (Johnson and Schlemmer, 1996; Norris and Mattes, 2003; Ferree, 2004), defined as identities formed through kinship or shared family ties, tribal customs, common language, dialect, or shared local community (Horowitz, 1985, 1991; Salih and Markakis, 1998; Palmberg, 1999; Bekker, Dodds and Khosa, 2001; Daddieh and Fair, 2002). Given relevance of ethnicity, this might also open the door for a political role for traditional leaders (De Kadt and Larreguy, 2016). In South Africa, while conventionally a set of parties are identified as having an overt ethnic identity (McLaughlin, 2007; Ferree, 2004; Horowitz, 1991; Giliomee, Myburgh and Schlemmer, 2001),<sup>5</sup> equally there are parties that are explicitly non-ethnic in their policy platforms. Moreover, using linguistic ties to divide people politically can be unreliable (Piombo, 2005; Posner, 2004; Norris, 2003). Since the largest ethnolinguistic group in South Africa (Zulu speakers) comprises only 22.7% of South Africans (Stats SA, 2014), building a feasible ruling coalition of voters relying on ethnic identity alone is especially difficult.

Alternative coalitions are definable along economic and social categories that stretch beyond the contingent characteristics of race or ethnicity. For instance class,<sup>6</sup> income status, employment, education and generation (age) can define the behavior and intent of voting groups (Lipset and Rokkan 1967; Norris and Mattes, 2003; Mattes, 1995; Norris, 2003; Seekings, 1997; Everatt and Mbeki, 2011).

The level of income may also plausibly come to determine voting preferences (Habib and Naidu, 2006; Norris, 2003; Seekings, 1997; Seekings and Natrass, 2005). South Africa has one of the highest income inequalities in the world, making income disparity a potentially strong factor driving voter identity (Leibbrandt et al., 2010; Seekings and Natrass, 2005). According to the 2011 Census, 95% of households earn below R12800 per month (R153600 per annum) with 45% of households earning zero annual income. Income status likely maps into the nature of the association with the formal labour market, union membership, or unemployment status, which can further define the nature of voter interests (Norris, 2003; Schulz-Herzenberg, 2006; Lipset and Rokkan 1967; Ferree, 2004; Seekings and Natrass, 2005; Giliomee, Myburgh. and Schlemmer 2001; Idasa, 1998; Seekings and Natrass, 2001; Mattes, Taylor and Africa, 1999). Again, given that according to the official definition, the South African 2011 unemployment rate was 30%, and 40% according to the expanded definition (Stats SA, 2011), that interests of voters would be materially influenced by employment conditions and status is certainly plausible.

Also correlated with income and employment status are the levels of education and literacy (Dalton, Flanagan and Beck 1984; Crewe and Denver, 1985; Norris, 2003; Everatt and Mbeki, 2011). It has been hypothesized that people with a lower level of education rely more on traditional and ethnic values and relate policies to these values (Norris and Mattes, 2003; Mattes, 1995; Popkin, 1994). Milligan, Moretti and Oreopoulos (2004), show this empirically in an American context. Since close to 65% of people older than 20 years had not completed a secondary education in our data set (Stats SA, 2012), it follows that South Africa is dichotomized by strong inequalities in its distribution of education, again making education a plausible influence on voting behavior.

Voters as well as parties and their candidates' reputation are feasibly affected by their past. Depending on whether or not a country has experienced rapid socioeconomic development or fundamental political transformations, voters belonging to different generations (different age groups) plausibly form distinct political attitudes, interests and expectations according to their experiences (Norris, 2003; Fiorina, 1978; Popkin, 1994). This is especially true in South African elections, since age divides the electorate into "not-frees" and "frees" by virtue of either having, or not having personal experience of Apartheid (Schulz-Herzenberg, 2006, 2007; Everatt and Mbeki, 2011). Since we examine the election of 2009 (15 years after the transition), the proportion of the electorate that is "free" is a negligible (effectively 0%) proportion of the total. Nonetheless, this may gain in significance in the future, and age may exercise an influence independently of the 1994 political transition (for instance due to changing socioeconomic conditions over time).

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<sup>4</sup>For ease of reference, throughout we employ the official South African designation of racial groups: Indian or Asian (we shorten to Asian); black, coloured, white.

<sup>5</sup>ID: coloured; IFP: Zulu; VP: white Afrikaner; UDM: Xhosa.

<sup>6</sup>The definition of class with respect to voting behaviour in South Africa has been vague and imprecise. Definitions have ranged from income and education, to religion, to whether voters show preference towards "left" or "right" policies (Mattes, 1995; Seekings, 1997; Norris, 2003; Everatt and Mbeki, 2011; Lipset and Rokkan, 1967).

Beyond race, ethnicity or class, South Africans are also subject to socioeconomic issues such as high crime rates (Ferree, 2004, Natrass and Seekings, 2005; Idasa 1998; Mattes, Taylor and Africa, 1999), making related policies potentially relevant (Ferree, 2004; Seekings and Natrass, 2005; Giliomee, Myburgh. and Schlemmer 2001; Idasa, 1998; Seekings and Natrass, 2001; Southall, 2013; Mattes, Taylor and Africa, 1999). In the context of high inequality, poverty, and unemployment, service delivery and welfare policies specific to the party may assume particular salience to the voter (Eldridge and Seekings, 1996; Habib and Schulz-Herzenberg, 2011; Chandra, 2004; Stevens, 1993). While the impact of service delivery on voting outcomes has not been extensively researched in South Africa (see De Kadt and Lieberman, 2016, for a first attempt), we investigate the impact of service delivery in a separate paper, while in the present analysis we explore the impact of demographic factors on voting behavior in South Africa.

Other factors that may matter are religion as well as the geographic region. Indeed, a number of South African parties explicitly claim regional identity: the IFP gains more than 90% of its votes from KwaZulu Natal, while the UDM gains more than 60% of its votes from the Eastern Cape.

The task of this paper is to investigate the relative influence of the drivers of voting behavior listed above.

### 3 Data

This study merged two distinct data sets: Census Data on the demographics of the population, and Independent Electoral Commission (IEC) data on voting behavior at ward level.<sup>7</sup>

Only the most recent (2011) South African Census was used, given the close temporal proximity to the election date. The national statistics agency of South Africa (Stats SA) and the Municipal Demarcation Board (MDB) provided the data.

Voting data from the 2009 National Election was used, obtained from the Independent Electoral Commission (IEC). Since national elections have a better turnout than municipal and local elections,<sup>8</sup> this data is better suited to merge with Census data. Moreover in national elections every ballot has the same political parties listed on it, which provides consistency across voting districts (in the municipal elections, party selection varies between regions and wards).

Given available data, non-disclosure and confidentiality policies over Census and Voting Data in South Africa, the ward level of disaggregation is the lowest level of aggregation possible without infringing on individuals' privacy.

One concern with the data is that the census data applies to 2011, the voting data to 2009. The temporal mismatch raises the possibility that dynamics in preferences, demographics and voting patterns render statistical associations subject to error. However, since the only alternative census is that of 2001, the 2011 census minimizes this type of error in the South African context. Moreover, a two year mismatch likely minimizes the importance of any dynamics to the validity of our inferences.

A perennial concern when using census data is that misrepresentation of earnings and occupations generates significant measurement error.<sup>9</sup> For this reason, we supplement the census household earnings data by additional proxies of wealth status, given by the size of the household dwelling (number of rooms). Our results are generally consistent across the alternative measures of income and wealth though our discussion does identify nuance.

On average, only 82% of the people living in a ward are registered to vote and the average voter turnout among the registered is 73%. This is higher than the international average voter turnout among the registered for presidential elections, 66.33% (IDEA, 2014). The turnout for the national elections is also greater than that for the municipal elections, which explains the use of the national elections data.

The data set provides observations of the proportion of votes received by all political parties and demographic characteristics for 4274 wards. The voting data provides the proportion of the vote attained by the officially registered political parties, and from the census data we obtain 75 demographic measures. We consider only voting proportions for the largest seven political parties - and our discussion prioritizes the largest two among them, the ANC and DA. The parties are listed in Table 1. Independent variables used include categories ( $j = 8$ ) on race, gender, age, education employment and income. A detailed explanation

<sup>7</sup>The data merge is detailed in Appendix 2.

<sup>8</sup>The turnouts for the Municipal Elections in 2006 and 2011 were 48.4% and 57.6% respectively (IEC, 2014).

<sup>9</sup>Recorded income values in the census data suggests that reported income levels do show downward bias.

Acronym	Party
ANC	African National Congress
DA	Democratic Alliance
VP	Freedom Front Plus
IFP	Inkatha Freedom Party
UDM	United Democratic Movement
ID	Independent Democrats
COPE	Congress of the People

Table 1: Seven Largest Political Parties in the 2009 National South African Elections

of these variables ( $i$ ) can be found in Table 2. Education variables relate to individuals who have completed some or all of the described level of education, except for the higher education variable which only includes individuals who have completed a tertiary education such as a degree or a diploma. Income includes all sources of income such as employment income, social grants, unemployment benefits, remittances, rentals and income from investments, sales or services.

We measure voting behavior of each ward by vote proportions (rather than absolute number of votes), to provides comparability across wards which have different sized populations.<sup>10</sup>

## 4 Results

The standard explanation of South African politics is that poor, uneducated black folk, marginalized in the labour force or in blue-collar jobs, vote for the ANC. Rich, educated, professional whites vote for the DA. All other parties are ethnic filler.

To explore this we estimate:

$$V_{p,r} = \beta_0 + \sum_{j=1}^m \sum_{i=1}^k \beta_{ij} B_{ij,r} + \varepsilon_r \quad (1)$$

where  $V_p$  represents the proportion of votes for a given party,  $p$ ;  $B$  represents the vector for each category ( $j$ ) of variables ( $i$ ) for ward  $r$ , and  $\beta_0$  and  $\varepsilon_r$  represent the constant and the error term, respectively. As proportions were used, the variable with the smallest proportion was omitted to avoid perfect multicollinearity across variable blocks.<sup>11</sup>

In what follows, we discuss estimation results by independent variable category, and report only relevant coefficients and robust standard errors.<sup>12</sup> Results for the full specifications discussed can be referenced in the Tables of Appendix 3.

### 4.1 Race

Results confirm the obvious: race matters in South Africa.

For all political parties the race variables are at least in part statistically significant, as shown in Table 3. For the ANC, the voting proportions increase as, relative to the proportion of Asians, the proportion of black and coloured voters increase, and decrease as the proportion of white people living in a ward increases, with a 1% increase in each group translating to a 0.647% increase, 0.105% increase and 0.116% decrease

<sup>10</sup>Since we employ a linear specification linking the vote proportion to demographics, there is a potential violation of the upper (100%) and lower (0%) bound values feasible for the vote proportion. However, given our interpretation of the impact of independent variables in small intervals surrounding observed vote proportions (which are distributed away from the upper and lower bounds), this is not a critical consideration in our application. An alternative would be to employ a logistic transform of the dependent variable.

<sup>11</sup>The constant will therefore identify the mean impact of excluded categories: Asian households; females; senior adults; no education; low income; small households; with large houses.

<sup>12</sup>We also considered at length the impact of possible outliers on final estimation results. Out of a total of 4275 wards, outliers were found in only 38 wards. 9 of these wards contained outliers across several demographic variables and several parties. This could be due to the enumerators' capturing techniques in these wards. As a proportion of the total number of wards, these outliers proved to be immaterial, and did not influence the results when controlled for.

<b>Category Name (<i>j</i>)</b>	<b>Variable (<i>i</i>)</b>
Race (Proportion)	Black Coloured Indian or Asian White
Gender (Proportion)	Male Female
Age (Proportion)	Youth (aged 0 - 19 years) Young adults (aged 20 - 34 years) Middle-aged adults (aged 35 - 49 years) Senior adults (aged 50 - 64 years) Retired adults (aged 65 years and older)
Education (prop. of individuals with specified education level relative to people aged 20 years or older)	No education Primary education Secondary education Higher education
Employment (prop. of working age population)	Employed Unemployed Discouraged workers Not economically active workers (NEA)
People per household (prop. households with specified membership number in ward)	Singular household (1 person) Small household (2 - 3 people) Medium household (4 - 5 people) Large household (6 or more people)
Rooms per household (prop. households with specified room number in ward)	Small house (1 - 4 rooms) Medium house (5 - 8 rooms) Large house (9 or more rooms)
Annual income	Poorest (R 0) Very poor (R 1 - R 9,600) Poor (R 9,601 - R 38,400) Low income (R 38,401 - R 76,800) Middle income (R 76,801 - R 153,600) Rich (R 153,601 - R 307,200) Richest (R 307,200 or more)

Table 2: Independent Variables Employed in Study



	ANC	DA	VP	IFP	UDM	ID	COPE
Black	0.647*** (0.026)	-0.456*** (0.021)	-0.005* (0.003)	-0.197*** (0.017)	0.011*** (0.003)	-0.008* (0.004)	0.113*** (0.011)
Coloured	0.105*** (0.027)	-0.129*** (0.024)	-0.010*** (0.002)	-0.181*** (0.017)	0.001 (0.003)	0.112*** (0.007)	0.202*** (0.011)
White	-0.116*** (0.033)	0.373*** (0.028)	0.125*** (0.007)	-0.139*** (0.021)	-0.006 (0.005)	-0.003 (0.007)	-0.054*** (0.014)
Reference Category: Indian or Asian							
$N$	4269	4274	4274	4274	4274	4274	4274
$adj - R^2$	0.771	0.899	0.657	0.509	0.132	0.517	0.407

Figures in round parentheses denote standard errors.

Note:  $adj-R^2$  statistics are for the full specification, not just the variable block.

\*\*\*, \*\*, \* denote significance at the 1%, 5% and 10% levels

Additional Regressors: Gender, Education, Income, Employment Status, Age, Household Rooms and People

Table 3: Baseline Impact of Race

in the share of the vote received by the ANC. The DA shows the anticipated mirror image, with a 1% increase in the proportion of black, coloured and white population proportion, relative to the proportion of Asians, generating a 0.456% decrease, 0.129% decrease and a 0.373% increase in the DA voting proportion, respectively.

The result is entirely unsurprising, and conforms to the standard perception of voting splitting along racial lines for the ANC and the DA. This is further corroborated by the finding that the share of the VP increases in the proportion of the electorate that is white, the ID from the proportion of the electorate that is coloured, the UDM from the proportion of voters that are black, and COPE gains support from both black and coloured electorate proportions.

So what more remains to be said about race?

The first indication that the impact of race is not fully captured by the baseline specification, is given by the finding for the IFP, where an increasing proportion of the electorate being black relative to Asians, translates into a lower proportion of the vote for the IFP. Indeed, since the IFP voting proportion falls in black, white and coloured population proportions, the inference is that the voter base of the IFP lies with Asians. Since the IFP traditionally identifies as an ethnic Zulu party, this finding is implausible.

But there are further anomalies. Figure 2 illustrates the relationship between the proportion of votes received by the ANC and natural log of the richest white people (proportion of the population in each ward that is white and earning an annual income of more than R307,200) and the poorest black people (proportion of black people without an annual income in each ward), respectively. Figure 3 considers the relationship between the proportion of DA votes and the natural log of the richest white population. From the illustration it is clear that as the proportion of rich whites in the ward population increases, or the proportion of poor blacks decreases, for the preponderance of wards the share of the vote for the ANC declines. By contrast, a rising proportion of rich whites rises in the population, again for a preponderance of wards the share of the vote the DA gains increases.

But there are also significant numbers of wards that do not conform to this pattern.

The wards corresponding to area D1 in Figure 2, a total of 550 wards, indicate the possibility of a low proportion of the vote for the ANC, despite the fact that the proportion rich whites in the population in the ward is low - and recall that the full range of variables across race, gender, education, income, employment status, age and household size have been controlled for in estimating the coefficients of Table 3. In the wards identified by area D2a in Figure 2 (171 wards), despite a low proportion of poor blacks in the ward population, the ANC nevertheless achieves a high proportion of the total vote, while in wards identified by area D2b (142 wards) the ANC realizes a low proportion of the vote despite the ward recording a high proportion of the population as poor and black.

For the DA there are also anomalies. Wards corresponding to area D3 of Figure 3 (129 wards), the DA obtains a high proportion of the vote, despite the fact that the proportion of the ward population that is rich and white is moderate in size at best.

Wards that fall in the anomalous areas are all further differentiated from sample averages. Area D1

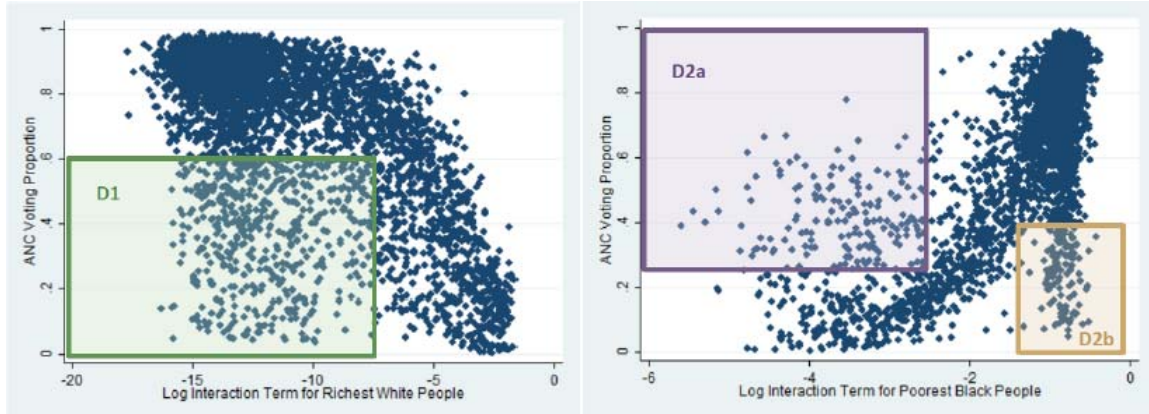


Figure 2: Anomalies in ANC Voting Patterns.

wards have relatively larger proportions of coloureds, relatively lower proportions of blacks, and a higher proportion of households with more than 6 members, and that are not economically active. Moreover 73% of these wards are located in either KwaZulu-Natal or in the Western Cape. The wards thus appear correlated with coloured non-working populations.

Area D2a wards have a higher proportion of coloureds, those who are formally employed, and earning between R9,600 and R38,400 annually, and a lower proportion of blacks and those who are not economically active. Geography again matters, with 86% of the wards located in either the Northern Cape or the Western Cape. The wards thus appear correlated with coloured working class populations.

Area D2b wards report higher proportions of blacks, individuals younger than 20, individuals without education, large households of more than 6 members, earn between R0 and R9,600 per annum, are not economically active, and are discouraged from the labor force. Of area D2b wards, 84% of are in KwaZulu-Natal. The wards thus appear correlated with populations of large black families, with several dependants and breadwinners with low incomes.

Finally, area D3 wards have lower proportions of blacks, single person households, incomes between R0 and R9600 per year, and larger proportions of coloureds, of formally employed, and household sizes of 4-5 persons. Regionally, 65% of the wards are located in the Western Cape. The wards thus appear correlated with poor coloured working class populations.

While for some of the anomalous associations the proportion of the wards may seem relatively small, across the four exceptional associations a total of 992 wards are identified - 23% of the sample. To account for the impact of these wards, we reestimate the baseline specification of (1), including interaction terms between each race variable and the two extreme income brackets: the poorest households which earn no income; and the richest households with an annual income of more than R307,200. We also control for provincial dummies.

Results from estimation for the race block of variables are reported in Table 4 - again full results are reported in Appendix 3. Note that goodness-of-fit improves dramatically for the ANC (0.77→0.90) and IFP (0.51→0.67), though the increase is less marked for the remainder of the parties.

The impact of controlling for the interaction terms and geographical dummies is to reduce the impact of racial identity for the major parties, particularly the ANC. While the ANC's proportion of the vote increases with the proportion of blacks in a ward, the proportion of the population that is coloured is rendered insignificant. For the DA, voting proportions still decreases in the proportion of the population that is coloured and black, but does not respond statistically significantly to changes in the proportion of whites. At the very least, the common view that the ANC is a "black" party, and that it is actively shunned by whites, while the DA relies predominantly a "white" party actively avoided by blacks is thus brought into question.

The implication that racial identity is the principal driver of voting, is also brought into question by the results obtained for the remainder of the parties: the VP, IFP, UDM and COPE gain voting strength across

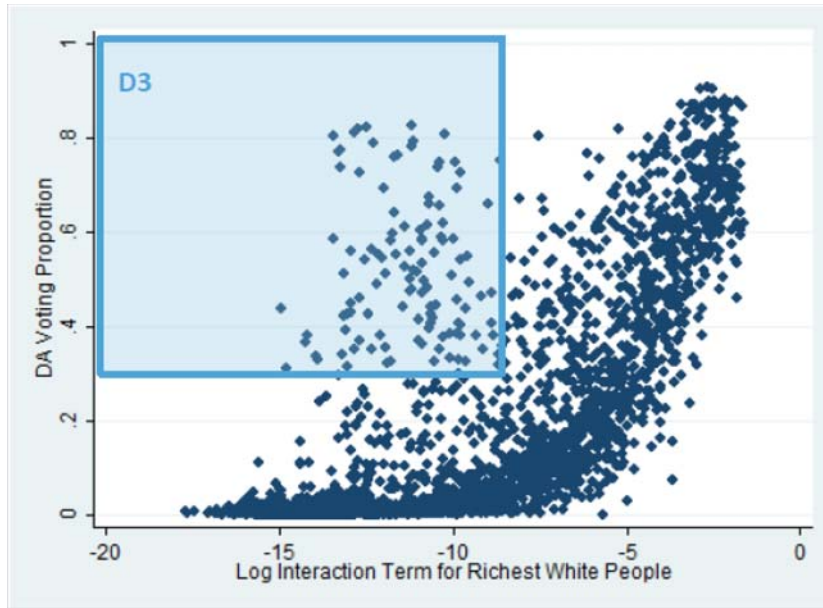


Figure 3: Anomalies in DA Voting Patterns.

	ANC	DA	VP	IFP	UDM	ID	COPE
Black	0.315*** (0.029)	-1.014*** (0.205)	0.104*** (0.038)	1.799*** (0.306)	0.058* (0.031)	0.005 (0.041)	0.663*** (0.142)
Coloured	0.068 (0.061)	-1.247*** (0.213)	0.086** (0.038)	1.750*** (0.308)	0.065** (0.029)	0.232*** (0.055)	0.831*** (0.147)
White	-0.134* (0.072)	-0.332 (0.212)	0.292*** (0.048)	1.528*** (0.316)	0.054** (0.026)	-0.013 (0.044)	0.388*** (0.146)
Reference Category: Indian or Asian							
$N$	4100	4100	4274	4274	4274	4274	4274
$adj - R^2$	0.903	0.941	0.673	0.668	0.222	0.535	0.424

Figures in round parentheses denote standard errors.

Note:  $adj-R^2$  statistics are for the full specification, not just the variable block.

\*\*\*, \*\*, \* denote significance at the 1%, 5% and 10% levels

Additional Regressors: Gender, Education, Income, Employment Status, Age, Household Rooms and People  
Race×Income Interactions and Geographical Dummies

Table 4: Impact of Race controlling for Dummies and Interaction Terms

all racial categories, instead of any particular race. Only the ID conforms to stereotype, in a rising vote proportion with increased coloured population proportion.

## 4.2 The Interaction Between Race and Income

The finding to emerge from Table 4 that racial identity is less significant than conventional wisdom suggests for South Africa, and that some of the principal party identities as "black" or "white" parties are not as robust as simple correlations (and our baseline regression in Table 3) suggest, is striking.

What accounts for this finding?

The answer lies in the impact of the interaction terms introduced into the specification that underlies the results of Table 4. The full set of interaction term results can be found in Appendix 3. Here we summarize the implications for the ANC and DA. For each we control for interactions between the two extreme income categories (R0 and above R307,200) and each of the population racial proportion categories.

In all figures that follow, the vertical axis represents the change in the proportion of votes received by the party; Race represents the proportion of people in a ward belonging to the specified race; and Income represents the proportion of people in a ward earning the specified income category. The two income categories we consider are given by a zero income per annum, which we term Poorest, and income above R307,200 per annum, which we term Richest.

For the ANC we find statistical significance for the interaction terms for blacks, whites and coloureds.

Figure 4 Panel A reports how the proportion of ANC votes changes with the proportion of coloureds that are either Poorest, or Richest. Note that the decline in the ANC vote proportion is moderate as the proportion of the ward population that is poor increases, but falls off dramatically with a rising population proportion that is rich.

Interaction terms for whites and blacks also introduce important nuance. As illustrated in Figure 4 Panel B, a rising proportion of both poor whites and rich blacks in the population of a ward, reduces the proportion of the vote that the ANC realizes, though the association is significant only for the white interaction term, and is stronger in substantive terms for whites than for blacks. A rising proportion of the population that is rich and white also lowers the share of the vote attained by the ANC, with a 1% increase (not a 1 percentage point increase) in the rich white population (off any arbitrary base) share generating a 0.2 percentage point decline in the proportion of votes realized by the party.<sup>13</sup>

The inference is therefore that the ANC, while in general gathering support from black voters (recall that the variable for the proportion of the ward population that is black remains positive), loses support amongst the richest black voters, and poor and rich coloureds and whites, though more dramatically amongst coloureds than whites. By contrast, middle income whites and coloureds matter less for the ANC voting share.

For the DA we find significance of the interaction terms for blacks, whites and coloureds.

Figure 5 Panel A illustrates the interaction terms for the proportion of blacks that are either Poorest or Richest. As the proportion of both poor blacks, or rich blacks increases, the proportion of votes received by the DA rises, even more surprisingly more strongly for the poorest than for the richest blacks.

Interaction terms for coloureds provide symmetrical results. Figure 5 Panel B reports the interaction terms for the proportion of poorest and richest coloureds. Again, for both the poorest and richest coloureds the proportion of votes for the DA increases, now more strongly for the richest than the poorest, and more strongly than for blacks.

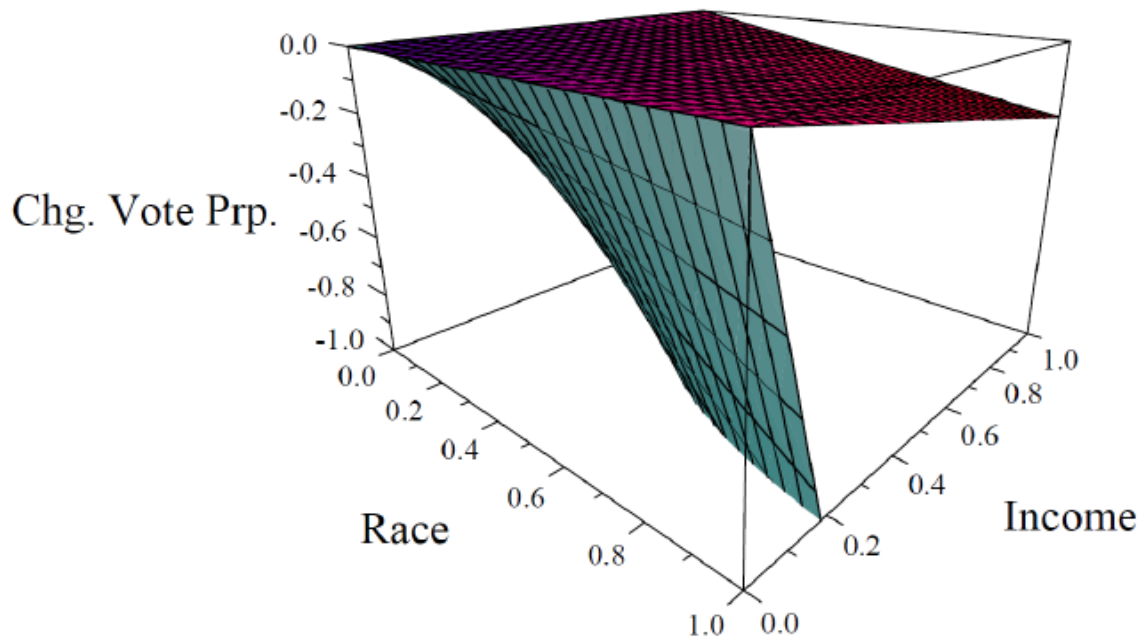
For whites, interaction term results for the poorest whites are reported in Figure 5 Panel C. Again the implication is that a rising proportion of poor whites raises the proportion of votes the DA obtains, and the size of the impact while slightly higher than that for poor blacks, is of a similar order of magnitude. For the richest whites, the result is a mirror image of that obtained for the ANC, with a 1% increase (not a 1 percentage point increase) in the rich white population (off any arbitrary base) share generating a 0.3 percentage point increase in the proportion of votes realized by the DA.

The inference is therefore that the DA, consistently gathers support from the highest income bracket across all races (black, white, coloured), though most dramatically amongst coloureds. Surprisingly, DA voter support also appears to increase with a rising proportion of the ward population that is in the poorest income bracket (zero income), irrespective of race.

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<sup>13</sup>Note that this implies a non-linear elasticity conditional on the level of the voting share.

## Panel A



## Panel B

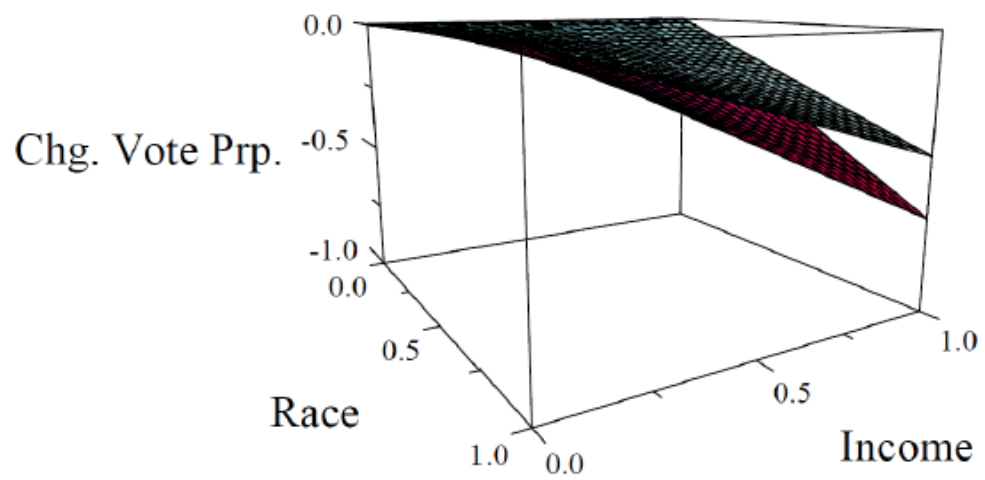
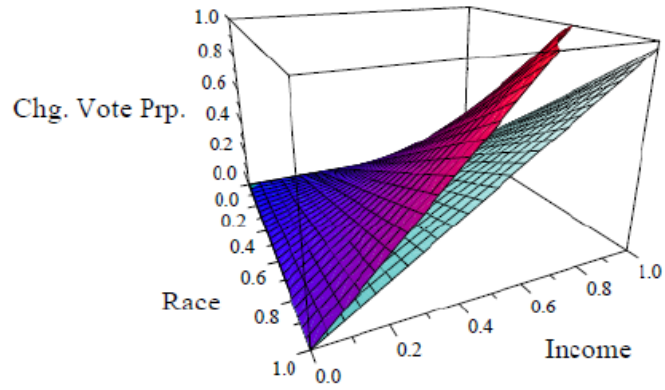
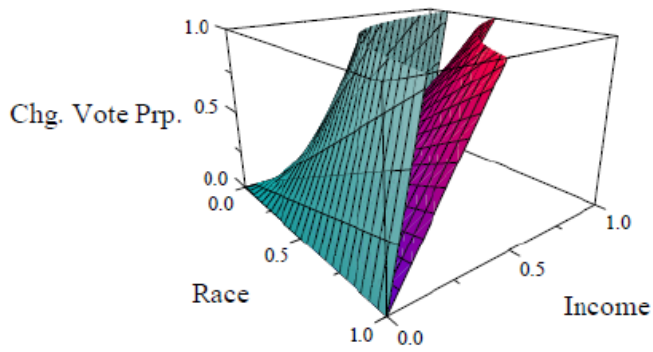


Figure 4: Panel A: Coloured ANC: Poorest (Red-Blue), Richest (Blue-Gray). Panel B: White and Black ANC: Poorest White (Red-Blue), Richest Black (Blue-Gray).

Panel A



Panel B



Panel C

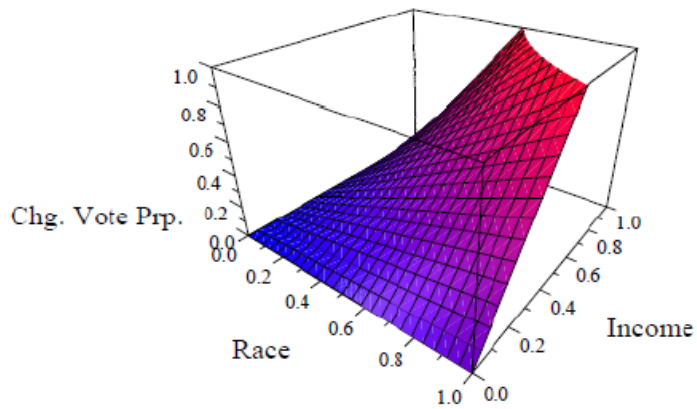


Figure 5: Panel A: Black DA: Poorest (Red-Blue) Richest (Blue-Gray). Panel B: Coloured DA: Poorest (Red-Blue), Richest Blue-Gray). Panel C: Whites DA: Poorest (Blue-Red).

	ANC	DA	VP	IFP	UDM	ID	COPE
R0	-0.173* (0.0.098)	-1.744*** (0.457)	0.267*** (0.079)	2.644*** (0.629)	0.037 (0.060)	0.012 (0.095)	1.317*** (0.299)
R1 - R9,600	-0.233** (0.092)	-0.227* (0.131)	0.030 (0.020)	-0.368*** (0.094)	-0.097*** (0.028)	-0.010 (0.037)	0.210*** (0.072)
R9,601 - R38,400	-0.329*** (0.085)	-0.261* (0.134)	0.051** (0.020)	-0.291*** (0.084)	-0.076*** (0.024)	-0.036 (0.037)	0.272*** (0.073)
Reference Category: R38,401 - R76,800							
R76,801 - R153,600	-1.005*** (0.209)	-0.426 (0.348)	0.042 (0.069)	-0.247 (0.224)	-0.013 (0.052)	-0.015 (0.113)	0.544*** (0.177)
R153,601 - R307,200	0.316 (0.198)	-0.340** (0.170)	-0.129*** (0.049)	-0.039 (0.152)	-0.034 (0.043)	-0.041 (0.064)	0.467*** (0.112)
R307,200 or more		-0.737*** (0.239)	-0.140 (0.202)	1.944** (0.866)	0.216*** (0.083)	0.136 (0.142)	1.545*** (0.430)
R307,200 or more†	-0.009*** (0.003)						
$N$	4100	4100	4274	4274	4274	4274	4274
$adj - R^2$	0.903	0.941	0.673	0.688	0.222	0.535	0.424

Figures in round parentheses denote standard errors.  
 \*\*\*, \*\*, \* denote significance at the 1%, 5% and 10% levels  
 †The natural log was used for this variable in order to tighten the scale  
 Additional Regressors: Race, Gender, Education, Employment Status, Age, Household Rooms and People  
 Race×Income Interactions and Geographical Dummies

Table 5: Impact of Income Categories controlling for Dummies and Interaction Terms

While the poor black population proportion impact on the DA voting proportion is not large in substantive terms, it is nevertheless a startling finding, and runs counter to the conventional wisdom which views the support base of the DA as strongly biased away from poor, black constituencies. Note that this result is not driven by ward outliers. What is more, the result is *not* a regional effect since the positive impact of the proportion of poor blacks on the DA vote proportion is present for every province.

While our data do not allow for a definitive explanation, one interpretation is that the ANC has not actively represented the interests of the poorest in South African society, and while at face value it is surprising that the political support would have emerged for the DA, in 2009 it also represented the largest, most organized, and most vocal opposition to the ANC. It also points to the credibility of a populist party platform identifying the interests of the most disadvantaged black voters in South Africa - essentially to the "left" of the ANC.

In the specifications controlling for income and race interaction terms, we also controlled for provincial dummies, as identified by the anomalous wards under Figures 2 and 3. As a result we controlled for the Western Cape, the Northern Cape, and KwaZulu-Natal in the interaction term regressions. Results confirm a positive, statistically significant positive coefficient on the Western Cape for the DA, while the Western Cape and KwaZulu-Natal are negative and statistically significant for the ANC, and the Northern Cape positive.

### 4.3 Income and Employment

Under the specification of (1), controlling for the interaction terms between income and race, results in the associations between income and party vote proportions of votes are reported in Table 5.

The ANC experiences statistically significant decreasing vote proportions both at incomes above and below the R38,401 - R76,800 reference income category. Over the entire R0-R38,400 income range, ANC support declines relative to the R38,401-R76,800 reference category range. It also declines above the reference category range, up to R153,600 income per annum. For the DA, we find statistically significant declining support at the lowest income levels (R0 - R38,400), and the highest income categories (above R153,600). However, while the DA appears to lose votes among the rich, this is offset by the significant gains among rich black, coloured and white voters observed from the interaction terms discussed in the preceding subsection of the paper.

	ANC	DA	VP	IFP	UDM	ID	COPE
Employed	0.708*** (0.062)	-0.234*** (0.044)	0.004 (0.008)	-0.204*** (0.034)	0.018* (0.010)	0.005 (0.009)	-0.156*** (0.021)
Employed†	-0.465*** (0.063)	0.295*** (0.046)					
Unemployed	0.202*** (0.041)	-0.084*** (0.032)	-0.001 (0.007)	-0.120*** (0.040)	0.008 (0.013)	-0.005 (0.013)	0.055** (0.026)
Discouraged	0.104** (0.048)	-0.061* (0.032)	0 (0.007)	0.232*** (0.059)	-0.034** (0.016)	-0.005 (0.014)	-0.107*** (0.027)
NEA	0.156*** (0.035)	-0.083*** (0.029)	0.001 (0.007)	-0.115*** (0.034)	0.037*** (0.011)	0.004 (0.009)	0.004 (0.020)
<i>N</i>	4100	4100	4274	4274	4274	4274	4274
<i>adj - R</i> <sup>2</sup>	0.903	0.941	0.673	0.668	0.222	0.535	0.424

Figures in round parentheses denote standard errors.

\*\*\*, \*\*, \* denote significance at the 1%, 5% and 10% levels

†A quadratic specification was used for the proportion of employed people in each ward

Additional Regressors: Race, Gender, Income, Education, Age, Household Rooms and People

Race×Income Interactions and Geographical Dummies

Table 6: Impact of Employment Status controlling for Dummies and Interaction Terms

The implication is thus that both the ANC and DA support peaks for relatively privileged working class voters (incomes of R38,401 - R76,800), and falls off both below and above this income bracket. This is consistent with our finding from the interaction term analysis that the ANC incompletely represents the interests of the very poor, creating an opening for the emergence of a populist "left" party.

The VP gains support among voters below the reference category (R38,401 - R76,800) and loses support for incomes above the reference category. IFP support increases among the poorest and most affluent relative to the reference category, and declines in low income working class income categories (R1-R38,400). The UDM loses support below the reference category, gains it amongst high income voters, while COPE gains at all income levels relative to the reference category. The ID voting support is invariant in income.

Associated with income status, we also control for the impact of labor market outcomes. The associations between employment and the proportion of votes received by each of the parties, controlling for race and income interaction terms, are reported in Table 6.

For the ANC, voting support increases in more marginal labor force participation, increasing as the proportion of voters that are unemployed, discouraged or not economically active (predominantly populations that are in school or pensioned) rises. The proportion of the population employed is nonlinearly, concavely associated with the ANC voting proportion, implying a maximum ANC support level where 76% of the population is employed. Figure 6 illustrates the plausibility of the nonlinearity. Note that the low ANC vote proportion at low employment level wards (the left downward spike), are characterized by disproportionate numbers of young people, females, poor (R0-R9,600 income), low education, large households, small houses, not economically active and discouraged from the labor force, located in KwaZulu-Natal.

We note that the declining ANC support at low employment levels, is again consistent with the finding of declining ANC support among the most marginalized black population, as reported under the interaction term findings, and the income findings of Table 5.

The DA effectively returns a mirror image of the ANC results, with falling support as the proportion of the population that is marginalized in the labor force (unemployed, discouraged, not active) rises, and with a convex nonlinear association with respect to employment. The implied minimum level of support occurs where 0.4 of the population is employed. We note, however, that while the nonlinearity finds support for the DA, the positive association between employment and voting support for the DA dominates the negative linear component.

For the remainder of the parties, formal labor market participation, either in the form of employment or unemployment, or being not economically active (in schooling, pensioned), lower IFP support, while discouraged status in the labor force raises IFP support. COPE support responds positively to unemployment, but declines in employment and being discouraged from the labor force. UDM support declines in discouraged labor force status, and rises in employed status and not economically active status. Neither the ID nor the



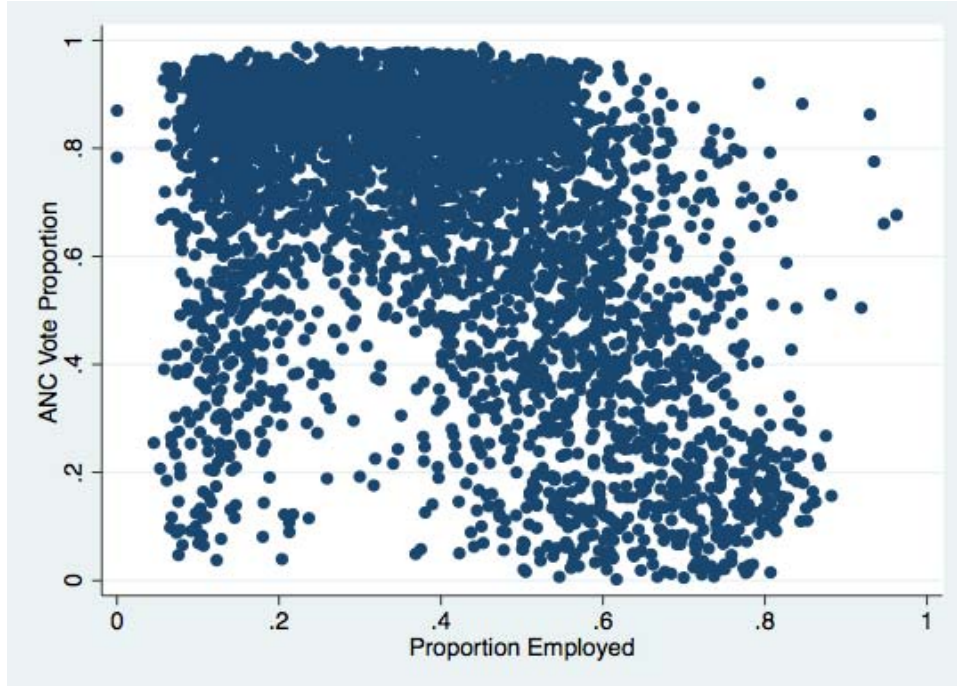


Figure 6: Association between ANC Vote Proportion of Ward Population Employed.

VP is statistically conditional on the employment status of voters.

#### 4.4 Education

Associations to emerge for the education variables and the proportion of votes received by each of the parties, under specifications that include interaction terms, are reported in Table 7.

The ANC loses support as the proportion of the voting population becomes more educated, and gains support as the proportion of the population has zero education increases. By contrast, DA voting support rises statistically significantly in the prevalence of secondary education, but not otherwise.

For the remainder of the parties, the IFP loses voter support with rising primary and secondary levels of schooling, COPE gains support as all forms of education increase, the ID only in secondary education. While UDM support does not appear to respond to education at all, the VP has falling support in secondary, but rising support in higher education.

Results thus suggest that ANC support lies with uneducated voters, while education appears to play only a moderate role in the support for most other parties, with the exception of COPE whose support rises strongly in education.

#### 4.5 Other Factors

The remainder of our control in estimation are of less importance, and we comment only briefly. We find that in terms of gender, ANC support is positively lined to male population proportions, the DA to female population proportions. In terms of age, ANC support is biased toward younger voters, and pensioners. ANC support is concentrated in mid-sized households (4-5 members), and declines amongst the largest household (>6 members), while the DA support is concentrated in nuclear family structures (2-3 members) and those living in medium-sized houses.

REG 5	ANC	DA	VP	IFP	UDM	ID	COPE
Primary Education	-0.062* (0.034)	0.018 (0.016)	-0.002 (0.003)	-0.466*** (0.042)	-0.007 (0.012)	0.013 (0.009)	0.111*** (0.018)
Secondary Education	-0.151*** (0.026)	0.028** (0.012)	-0.011*** (0.003)	-0.076** (0.033)	0.002 (0.013)	0.018*** (0.006)	0.066*** (0.014)
Higher Education	-0.401*** (0.049)	0.028 (0.038)	0.033*** (0.011)	-0.076 (0.046)	0.019 (0.014)	0.006 (0.010)	0.363*** (0.029)
Reference Category: No education							
$N$	4100	4100	4274	4274	4274	4274	4274
$adj - R^2$	0.903	0.941	0.673	0.668	0.222	0.535	0.424

Figures in round parentheses denote standard errors.  
 \*\*\*, \*\*, \* denote significance at the 1%, 5% and 10% levels  
 Additional Regressors: Race, Gender, Income, Employment Status, Age, Household Rooms and People  
 Race×Income Interactions and Geographical Dummies

Table 7: Impact of Education controlling for Dummies and Interaction Terms

## 5 Conclusions and Evaluation

Conventional wisdom surrounding South African voting behavior is not without basis in fact. Race matters, with blacks more likely to vote for the ANC, whites more likely to vote for the DA. Rising incomes and greater security in the labor market predict a switch in allegiance from the ANC to the DA.

But there is important nuance hidden in these broad patterns.

Allowing for an interaction between income and race, reduces the impact of racial identity for the major parties. This is particularly so for the ANC, for which voting proportions no longer responds statistically significantly to white and coloured population proportions. It also eliminates the statistical significance of the white population proportion for the DA. This calls into question the common view that the ANC is a "black" party actively shunned by whites, while the DA is predominantly a "white" party actively avoided by blacks.

Amongst the interaction terms, the striking finding is that while the DA consistently gathers support from the highest income bracket across all races (black, white, coloured), though most dramatically amongst coloureds, DA voter support is disproportionately strong amongst poor black (and other race group) voters. While the poor black population proportion impact on the DA voting proportion is not large in substantive terms, it nevertheless runs counter to the conventional wisdom which views the support base of the DA as strongly biased away from poor, black constituencies. The result is neither driven by ward outliers, nor is it a regional effect since the positive impact of the proportion of poor blacks on the DA vote proportion is present for every province.

The result is also consistent for the findings we report for the impact of income and the nature of labor force participation. Here we find that ANC support peaks for relatively privileged working class voters (incomes of R38,401 - R76,800), and falls off both below and above this income bracket. We also find that the proportion of the population employed is nonlinearly, concavely associated with the ANC voting proportion, implying a maximum ANC support level where 0.76 of the population is employed. Declining ANC support at low employment levels, is again consistent with the finding of declining ANC support among the most marginalized black population.

One interpretation of these findings is that the ANC has not actively represented the interests of the poorest in South African society, and while at face value it is surprising that the political support would have emerged for the DA, in 2009 it also represented the largest, most organized, and most vocal opposition to the ANC. It also points to the credibility of a populist party platform identifying the interests of the most disadvantaged black voters in South Africa - essentially to the "left" of the ANC. The voting outcome of the 2016 municipal elections in South Africa, dramatically lowering the vote proportion gained by the ANC, is thus not entirely surprising.

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## 6 Appendix 1

	Abbreviation	Party Name
1	AP	A Party
2	ACDP	African Christian Democratic Party
3	ANC	African National Congress
4	APC	African People's Convention
5	AJ	Al Jama-Ah
6	AFD	Alliance Of Free Democrats
7	APO	Azanian People's Organisation
8	CDA	Christian Democratic Alliance
9	COPE	Congress Of The People
10	DA	Democratic Alliance/Demokratiese Alliansie
11	GKSA	Great Kongress Of South Africa
12	ID	Independent Democrats
13	IFP	Inkatha Freedom Party
14	KISS	Keep It Straight And Simple
15	MF	Minority Front
16	MDP	Movement Democratic Party
17	NDC	National Democratic Convention
18	NVP	New Vision Party
19	PACA	Pan Africanist Congress Of Azania
20	PAM	Pan Africanist Movement
21	SADC	South African Democratic Congress
22	UCDP	United Christian Democratic Party
23	UDM	United Democratic Movement
24	UIF	United Independent Front
25	VP	Vryheidsfront Plus
26	WF	Women Forward

Table 8: Political Parties in the 2009 South African Election

## 7 Appendix 2

Merging the two data sets required several processes. The Census data obtained from Stats SA was aggregated up to ward level, while the voting data obtained from the IEC was aggregated up to voting district level. Voting districts are smaller than wards, and the boundaries of voting districts and wards do not always coincide, which means that a voting district can be shared between two wards as illustrated in Figure 7.

The reason for this lies in the determination process of the boundaries for the voting districts and the wards. This is laid out in various South African statutes.

As Apartheid drew to an end in 1994, the laws of the time were repealed and a restructuring of the laws took place. Parliament drafted a new Constitution, the Constitution of the Republic of South Africa, 1996, which laid the foundation of new laws which were to govern the Republic of South Africa. This constitution formalized new provincial borders (s.103) changing the number of provinces from four to nine and most importantly, changed the National and Provincial election process from Constituency-based elections to Proportional Representation Elections.

The former involved subdividing the complete territory of each province into municipalities, which are the local sphere of government (s.151) and the latter meant that each registered voter could cast a vote for the political party of his/her choice, while each political party would choose its own Members of Parliament. Once the votes are tallied nationally, each party obtains the number of seats in Government that is proportional to the number of votes it won – each percent of the national vote obtains 4 members of parliament.

### 7.1 Determination of Voting Districts

In 1996, the Electoral Commission Act (51 of 1996) established an independent electoral commission, which is responsible for managing and promoting free, fair and orderly elections (ss.3-5). There was, however, no statute in place regarding the formation of voting districts. The first Act that addressed this issue was the Electoral Act of 1998. According to ss.60-61 and 66, the Commission and electoral officer must establish voting districts for the whole territory of the country, taking into consideration the number and distribution of voters; the availability of voting stations; telecommunications facilities; geographical features and municipal and provincial boundaries.

### 7.2 Determination of Wards

The boundaries of municipalities are determined and implemented by the Municipal Demarcation Board subject to ss. 21, 24-25 in the Municipal Demarcation Act 27 of 1998 and the boundaries of the wards are determined according to s.22 and ss. 2 – 4 in Schedule 1 of the Municipal Structure Act 117 of 1998. The number of wards depends on the number of ward councillors in a municipality (indirectly determined using a formula) as well as the number of registered voters in the area. The Municipal Demarcation Board consults with the Electoral Commission and ensures that each ward has the same number of registered voters with 15% leeway either way, and that communities are not fragmented.

### 7.3 Merging the Data sets

Each voting district was given a unique identifier and then allocated to the ward in which it lies. Where a voting district was shared across two wards, it was allocated to both wards. In order to determine how the population in the voting district was distributed and in which ward the people resided, GIS technology at the MDB was utilized. Dots representing the population within a voting district were placed on the map of voting districts. Using these dots, a weighting measurement was created for each voting district, such that the percentage of votes within a voting district that lay within the ward would correspond to the percentage of the population residing in both voting district and ward. This is illustrated in Figure 8 below. In Figure 8, 75% of the residents living in the voting district labelled VDC and 100% of the residents living in the voting districts labelled ADA, VDB, VDD and VDE live in the ward labelled WA. This means that 75% of the votes for each political party in the voting district, VDC would be allocated to ward WA, and the remaining 25% allocated to ward WB. Voting districts VDA, VDB, VDD and VDE do not need to be split and hence 100% of the votes for each political party in those voting districts would be allocated to the ward WA.





Using this technique and summing the amount obtained from the proportions of votes per party in each voting district, the number of votes per party could be aggregated to ward level. This process was applied to all the variables in the voting data set.

# 8 Appendix 3

Table 9: Baseline Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANC	DA	VP	IFP	UDM	ID	COPE
Black	0.647*** (0.026)	-0.456*** (0.021)	-0.005* (0.003)	-0.197*** (0.017)	0.011*** (0.003)	-0.008* (0.004)	0.113*** (0.011)
Coloured	0.105*** (0.027)	-0.129*** (0.024)	-0.010*** (0.002)	-0.181*** (0.017)	0.001 (0.003)	0.112*** (0.007)	0.202*** (0.011)
White	-0.116*** (0.033)	0.373*** (0.028)	0.125*** (0.007)	-0.139*** (0.021)	-0.006 (0.005)	-0.003 (0.007)	-0.054*** (0.014)
Male	0.348** (0.143)	-0.162** (0.074)	0.092*** (0.017)	-0.427*** (0.131)	0.103*** (0.026)	-0.007 (0.021)	0.043 (0.054)
Youth	0.726*** (0.135)	0.090 (0.085)	0.027 (0.023)	-0.448*** (0.112)	-0.025 (0.026)	0.047* (0.024)	-0.420*** (0.058)
Young_ad	1.106*** (0.135)	0.167** (0.083)	-0.001 (0.020)	-0.804*** (0.113)	-0.075*** (0.023)	0.041 (0.027)	-0.456*** (0.058)
Middle_aged_ad	0.636*** (0.204)	-0.054 (0.132)	-0.032 (0.026)	-0.318* (0.174)	-0.099*** (0.035)	0.092** (0.045)	-0.398*** (0.087)
Retired_ad	1.383*** (0.224)	0.584*** (0.161)	-0.074 (0.051)	-1.770*** (0.184)	-0.017 (0.033)	0.087** (0.041)	-0.454*** (0.090)
Primary_ed	0.195*** (0.055)	-0.001 (0.021)	-0.002 (0.003)	-0.459*** (0.055)	0.072*** (0.011)	0.023** (0.009)	0.120*** (0.018)
Secondary_ed	-0.299*** (0.043)	0.044*** (0.015)	-0.011*** (0.003)	0.143*** (0.042)	0.032** (0.013)	0.023*** (0.006)	0.070*** (0.014)
Higher_ed	-0.404*** (0.066)	0.076* (0.045)	0.031*** (0.012)	-0.043 (0.060)	0.086*** (0.015)	0.024** (0.011)	0.368*** (0.030)
Employed	0.874*** (0.086)	-0.164*** (0.051)	0.001 (0.007)	-0.227*** (0.046)	0.006 (0.010)	0.005 (0.009)	-0.154*** (0.021)
Employed2	-0.517*** (0.083)	0.216*** (0.054)					
Unemployed	0.365*** (0.057)	-0.156*** (0.037)	-0.005 (0.008)	-0.270*** (0.051)	0.013 (0.014)	-0.004 (0.013)	0.053** (0.026)
Discouraged	-0.127 (0.078)	-0.035 (0.038)	-0.003 (0.007)	0.420*** (0.076)	-0.038** (0.017)	-0.006 (0.014)	-0.105*** (0.027)
NEA	0.224*** (0.048)	-0.082** (0.033)	-0.002 (0.007)	-0.165*** (0.045)	0.053*** (0.013)	0.005 (0.009)	0.009 (0.020)
Singular_hh	-0.068 (0.073)	0.024 (0.049)	-0.010 (0.009)	-0.049 (0.058)	0.014 (0.010)	0.020 (0.020)	-0.079*** (0.028)
Medium_hh	0.417*** (0.117)	0.403*** (0.083)	0.017 (0.013)	-1.103*** (0.092)	0.013 (0.018)	0.023 (0.036)	0.022 (0.046)
Large_hh	-1.011*** (0.062)	0.102*** (0.039)	-0.020*** (0.006)	1.228*** (0.055)	0.024 (0.015)	0.037** (0.018)	-0.296*** (0.022)
Small_house	-0.114 (0.094)	0.237*** (0.057)	-0.047*** (0.014)	-0.364*** (0.089)	0.014 (0.018)	0.016 (0.015)	0.063* (0.036)
Medium_house	0.117 (0.104)	0.252*** (0.066)	-0.044*** (0.016)	-0.554*** (0.097)	-0.063*** (0.021)	0.014 (0.017)	0.000 (0.041)
R0	0.130 (0.112)	-0.501*** (0.120)	0.021 (0.019)	-0.385*** (0.129)	0.016 (0.032)	-0.034 (0.037)	0.233*** (0.075)
R1_R9600	-0.084 (0.115)	-0.621*** (0.122)	0.018 (0.020)	0.004 (0.126)	-0.012 (0.030)	-0.024 (0.039)	0.234*** (0.073)
R9601_R38400	-0.226** (0.098)	-0.558*** (0.120)	0.052*** (0.020)	0.116 (0.109)	-0.003 (0.027)	-0.016 (0.038)	0.307*** (0.074)
R76801_R153600	-1.108*** (0.205)	-1.022*** (0.317)	0.040 (0.068)	0.260 (0.282)	0.185*** (0.062)	-0.071 (0.122)	0.491*** (0.180)
R153601_R307200	0.462* (0.250)	-0.397* (0.203)	-0.098** (0.049)	0.460*** (0.176)	0.086* (0.047)	-0.065 (0.069)	0.517*** (0.117)
R307201_plus		-0.443** (0.212)	-0.233*** (0.047)	-0.375** (0.169)	-0.064 (0.043)	0.010 (0.061)	0.034 (0.116)
R307201_plus_ln	-0.030*** (0.004)						
Constant	-1.024*** (0.241)	0.699*** (0.173)	-0.009 (0.037)	1.799*** (0.258)	-0.081* (0.045)	-0.066 (0.060)	0.067 (0.114)
Observations	4269	4274	4274	4274	4274	4274	4274
Adjusted R <sup>2</sup>	0.771	0.899	0.657	0.509	0.132	0.517	0.407

Figures in round parentheses denote standard errors.  
 \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Table 10: Regressions with Interaction Terms

	(1) ANC	(2) DA	(3) VP	(4) IFP	(5) UDM	(6) ID	(7) COPE
Black	0.315*** (0.029)	-1.014*** (0.205)	0.104*** (0.038)	1.799*** (0.306)	0.058* (0.031)	0.005 (0.041)	0.663*** (0.142)
Coloured	0.068 (0.061)	-1.247*** (0.213)	0.086** (0.038)	1.750*** (0.308)	0.065** (0.029)	0.232*** (0.055)	0.831*** (0.147)
White	-0.134* (0.072)	-0.332 (0.212)	0.292*** (0.048)	1.528*** (0.316)	0.054** (0.026)	-0.013 (0.044)	0.388*** (0.146)
Male	0.097 (0.091)	-0.208*** (0.067)	0.093*** (0.016)	0.079 (0.109)	0.110*** (0.024)	0.009 (0.020)	0.036 (0.054)
Youth	0.574*** (0.102)	0.018 (0.075)	0.011 (0.022)	-0.245*** (0.089)	0.066*** (0.025)	0.007 (0.025)	-0.421*** (0.059)
Young_ad	0.780*** (0.100)	0.019 (0.073)	-0.012 (0.019)	-0.617*** (0.091)	0.023 (0.022)	0.005 (0.027)	-0.467*** (0.057)
Middle_aged_ad	0.522*** (0.147)	-0.087 (0.108)	-0.052** (0.025)	-0.337** (0.145)	-0.031 (0.034)	0.037 (0.043)	-0.422*** (0.086)
Retired_ad	0.743*** (0.171)	0.237* (0.141)	-0.089* (0.052)	-1.061*** (0.135)	0.031 (0.032)	0.063 (0.043)	-0.392*** (0.090)
Primary_ed	-0.062* (0.034)	0.018 (0.016)	-0.002 (0.003)	-0.466*** (0.042)	-0.007 (0.012)	0.013 (0.009)	0.111*** (0.018)
Secondary_ed	-0.151*** (0.026)	0.028** (0.012)	-0.011*** (0.003)	-0.076** (0.033)	0.002 (0.013)	0.018*** (0.006)	0.066*** (0.014)
Higher_ed	-0.401*** (0.049)	0.028 (0.038)	0.033*** (0.011)	-0.076 (0.046)	0.019 (0.014)	0.006 (0.010)	0.363*** (0.029)
Employed	0.708*** (0.062)	-0.234*** (0.044)	0.004 (0.008)	-0.204*** (0.034)	0.018* (0.010)	0.005 (0.009)	-0.156*** (0.021)
Employed2	-0.465*** (0.063)	0.295*** (0.046)					
Unemployed	0.202*** (0.041)	-0.084*** (0.032)	-0.001 (0.007)	-0.120*** (0.040)	0.008 (0.013)	-0.005 (0.013)	0.055** (0.026)
Discouraged	0.104** (0.048)	-0.061* (0.032)	-0.000 (0.007)	0.232*** (0.059)	-0.034** (0.016)	-0.005 (0.014)	-0.107*** (0.027)
NEA	0.156*** (0.035)	-0.083*** (0.029)	0.001 (0.007)	-0.115*** (0.034)	0.037*** (0.011)	0.004 (0.009)	0.004 (0.020)
Singular_hh	0.121** (0.052)	-0.093** (0.040)	-0.020** (0.009)	-0.312*** (0.050)	0.013 (0.011)	0.030 (0.018)	-0.108*** (0.027)
Medium_hh	0.296*** (0.079)	0.033 (0.067)	0.008 (0.014)	-0.772*** (0.082)	0.013 (0.018)	0.032 (0.033)	-0.014 (0.046)
Large_hh	-0.117*** (0.043)	-0.022 (0.029)	-0.027*** (0.006)	0.486*** (0.049)	0.024 (0.015)	0.034** (0.017)	-0.306*** (0.022)
Small_house	-0.110* (0.065)	0.074 (0.047)	-0.047*** (0.013)	-0.235*** (0.072)	-0.001 (0.016)	0.011 (0.015)	0.077** (0.034)
Medium_house	-0.035 (0.072)	0.100* (0.053)	-0.044*** (0.015)	-0.380*** (0.078)	-0.043** (0.019)	0.011 (0.017)	0.013 (0.038)
R0	-0.173* (0.098)	-1.744*** (0.457)	0.267*** (0.079)	2.644*** (0.629)	0.037 (0.060)	0.012 (0.095)	1.317*** (0.299)
R1_R9600	-0.233** (0.092)	-0.227* (0.131)	0.030 (0.020)	-0.368*** (0.094)	-0.097*** (0.028)	-0.010 (0.037)	0.210*** (0.072)
R9601_R38400	-0.329*** (0.085)	-0.261* (0.134)	0.051** (0.020)	-0.291*** (0.084)	-0.076*** (0.024)	-0.036 (0.037)	0.272*** (0.073)
R76801_R153600	-1.005*** (0.209)	-0.426 (0.348)	0.042 (0.069)	-0.247 (0.224)	-0.013 (0.052)	-0.015 (0.113)	0.544*** (0.177)
R153601_R307200	-0.316 (0.198)	-0.340** (0.170)	-0.129*** (0.049)	-0.039 (0.152)	-0.034 (0.043)	-0.041 (0.064)	0.467*** (0.112)
R307201_plus		-0.737*** (0.239)	-0.140 (0.202)	1.944** (0.866)	0.216*** (0.083)	0.136 (0.142)	1.545*** (0.430)
R307201_plus_ln	-0.009*** (0.003)						
Poorest_black_ln	0.014* (0.008)						
Poorest_black		1.480*** (0.442)	-0.236*** (0.078)	-3.393*** (0.627)	-0.108* (0.064)	-0.024 (0.086)	-1.119*** (0.292)
Richest_black	-0.431 (0.310)	0.880*** (0.270)	0.198 (0.230)	-2.848*** (0.943)	-0.412*** (0.106)	-0.004 (0.141)	-1.130** (0.482)
Poorest_coloured	-0.236** (0.114)	2.355*** (0.460)	-0.192** (0.078)	-3.242*** (0.629)	-0.142** (0.061)	-0.261** (0.119)	-1.251*** (0.302)
Richest_coloured	-5.410*** (0.753)	7.437*** (0.815)	-0.447* (0.231)	-1.466 (0.918)	-0.194** (0.096)	-1.631*** (0.311)	-4.049*** (0.542)
Poorest_white	-0.654*** (0.167)	1.839*** (0.466)	-0.357*** (0.098)	-2.787*** (0.648)	-0.126** (0.055)	0.003 (0.093)	-0.850*** (0.302)
Richest_white			-0.233 (0.226)	-2.298** (0.906)	-0.267*** (0.084)	-0.052 (0.141)	-1.516*** (0.445)
Richest_white_ln	-0.002** (0.001)	0.003*** (0.001)					
Constant	-0.111 (0.171)	1.418*** (0.264)	-0.112** (0.056)	-0.206 (0.353)	-0.084* (0.047)	-0.056 (0.073)	-0.436** (0.177)
Observations	4100	4100	4274	4274	4274	4274	4274
Adjusted R <sup>2</sup>	0.903	0.941	0.673	0.668	0.222	0.535	0.424

Figures in round parentheses denote standard errors.

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