

Bribery and Identity: Evidence from Sudan

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ABSTRACT

Using a unique dataset we are able to examine the determinants of identities in Sudan. We find that identification in Sudan is high and that there is little evidence that such identities compete with one another. In terms of socio-economic variables, poorer people tend to have greater identification. Tribal identification declines with the level of education, as does identity with religion and the Arab world. We also find that being asked for a bribe is associated with significantly lower levels of identity, particularly those linked with the tribe, the state (i.e. a region) and the nation. The evidence suggests that this is consistent with a large literature linking bribery to reduced trust and identification in national institutions and a nascent literature linking bribery to specific personal characteristics. Finally we analyse the probability of being asked for a bribe.

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1 INTRODUCTION

Social identity is a potentially important aspect of behaviour on which there has been a considerable amount of work done, with the early work of Tajfel (1970 and 1981) being particularly influential. The paper by Akerlof and Kranton (2000) also played a major part in developing the concept particularly from an economics perspective albeit in a different context to the one analysed in this paper. Social identity is a particularly pertinent issue for Sudan given its recent history which saw the country split into two, Sudan and South Sudan. When it involves national identity, it has the potential to bind a nation together and to enhance a feeling of civic duty, which facilitates state action and also has the potential to reduce conflict, which has been well documented in the literature (Collier and Hoeffler, 2004). However there is also a view that in practice the opposite is the case, or at least identity may become problematic, particularly within a multicultural context (Kymlicka, 2003). There is also considerable evidence that social identity impacts on individual behaviour by creating norms by which group members abide (Constant and Zimmermann, 2008, Georgiadis and Manning, 2013). In this sense, if these norms coincide with those of the state, a common purpose is established and people tend to abide by the rules embodied in the legal system. Given this, Georgiadis and Manning (2013) argue that it is fairly obvious why countries should seek to establish a strong national identity which binds people together. In addition, social identity can affect behaviour to others, i.e. individuals being more pro-social to group members and less pro-social to non-group members (Hogg and Vaughan, 2005).

Spears (2011) argues that social identity theory describes processes of social categorization into groups. Individuals derive value from this to the extent that they can compare their own group positively with others, and are thus motivated to gain and maintain a sense of positive group distinctiveness from the other group(s) to which they do not belong, and against which they compare our own group (see Tajfel, 1978). Moshman (2011) defines social identity as referring to those aspects of identity that involve relations with others and can encompass identities such as with respect to nations, cultures, or religions, rather than just collections of people. Such identity provides a deepened sense of continuity, permanence, and meaning, emphasising the non-monetary gains from such identification. Social identity theory can also be used to explain interactions between groups, both when that is positive and when it breaks down into conflict.

The background to our analysis is, of course, the several conflicts which have beset the country in recent decades, indeed almost since independence from the UK in 1956. Since then military regimes have tended to favour the centre and the north of the country, and since 1984 have also been Islamic-oriented. The dominant religion in Sudan, as opposed to Sudan together with South Sudan, is Sunni Islam, with a small Christian minority. It is also a very young country in demographic terms with just

7.1% of the population 55 or older - and almost 65% under 25 years old. The CIA Factbook suggests a difficult set of circumstances. The civil war which ended in 2005 lasted half a century - with occasional respites. The conflict had its roots in the fundamental religious and ethnic differences between the Southern, non-Arab populations, and the Northern, Muslim, Arab-dominated governments (Bredlid, 2013). For example, in 1972 a ceasefire was reached and Southern Sudan was established as an autonomous region. However the ceasefire ended in 1983, with the attempt to introduce sharia law in the South. This resulted in the establishment of the Sudan People's Liberation Movement (SPLM), whose goal was to fight Islamist imposition (Johnson, 2003). Johnson further argued that apart from religious differences, further tensions were caused by a struggle over the substantial oil resources. The Comprehensive Peace Agreement of 2005 eventually led to the creation of an independent state, South Sudan in 2011, ending a civil war in which more than two million people had died since 1989 alone. But this has not ended all conflict within Sudan, and since then Sudan has been fighting rebels in the East (until 2006), as well as the Sudan People's Liberation Movement-North (SPLM-N) in Southern Kordofan and the Blue Nile states. This is in addition to a separate conflict in the western region of Darfur beginning in 2003, which has displaced nearly two million people and caused an estimated 200,000 to 400,000 deaths.

Although the concentration of power and resources around Khartoum predates British rule, A/Salam (2008) argues that the British colonial administration continued to support the concentration of most of the socio-economic activities in the central region, a trend which has been followed by subsequent postcolonial governments. The current Darfur conflict broke out when Darfuri liberation groups, the Justice and Equality Movement and the Sudan Liberation Movement, rose in revolt against discrimination and the marginalization of their region by the central government (Madibbo, 2012). They then formed armed militia to which the central government has retaliated strongly. Several researchers have alluded to the role of social identity in the escalation of the violence and Assal (2009) has argued that tribal identity is of particular importance. De Waal (2005) refers to 'a recent polarization of "Arab" and "African" identities' that also has influenced the conflict.

As Assal (2009) observes, the question of social identity is an old problem in Sudan. This is at various levels. A/Salam (2008) refers to 'the national identity crisis afflicting Sudan' and that elites' political debates have resurfaced following independence concerning, whether the Sudan is Arabic, and is by implication part of the Arab world, or whether it is African, and is therefore an ally of African countries. Madibbo (2012) argues that the Northern ruling elites are seeking to impose an Arab identity as the basis of the definition of the national identity framework. This is reflected in the use of Arabic as a medium of education and public communication, and the adoption of Islam as a state religion. For example, in the 1990s the central government introduced al-mashro al-hadari, a state policy that aimed at expanding the Arabo-Islamic agenda throughout the country. With the split

of South Sudan from the rest of the country, this may be less problematic, but there is still a Christian minority in Sudan, and Sudanese Arabs comprise about only 70% of the population¹.

Reflecting the above, most of the discussions surrounding identity in the Sudanese context have been focused at the macro level of politics (Assal, 2009), thus overlooking the important micro level of social identity. The two may differ, e.g., Madibbo (2012) argues that while the discrepancy between Arabism and Africanism at the macro level of politics instigated violence, at the micro level there is the possibility of peaceful coexistence between those who embrace these two social identities. Partly because of this there is a need for additional empirical studies to further investigate the role of social identity and ethnicity in the specific context of Sudan, but also indeed more generally. For example, Madibbo (2012) emphasises this need with specific reference to the Darfur conflict. There have also been relatively few studies which have examined issues of overlapping identities (Cooper and Knotts, 2013).

A study of social identity has important policy implications, in addition to the issues discussed above, nation-building is often discussed as a remedy for potential problems associated with social distance in general, and with ethnically fragmented societies in particular.² Potential problems associated with high levels of ethnic diversity have often been suggested as a partial explanation for poor economic and political performance. Thus Easterly and Levine (1997) argue that ethnic diversity distorts public policies, which in turn adversely affect economic growth, and Mauro (1995) claims that diversity facilitates corruption and therefore again hurts economic growth. Others, such as Alesina et al. (1999) and La Porta et al (1999) find that ethnic diversity leads to a distorted provision of public goods. Nation-building has at least the potential to moderate these negative effects. Some have also argued that nationalism can increase government effectiveness. Although it should be noted that cross-country reviews of the determinants of corruption have shown mixed results regarding the links between corruption, ethno-linguistic fragmentation and lack of national identity (e.g. Treisman 2007). Ahlerup and Hansson (2011) find that nationalism may be a positive force at low levels of nationalism, but a negative force at high levels. The positive effects of nationalism include increasing in-group altruism, trustworthiness, and state authority. They also find that nationalism can mitigate the negative association between ethnic fractionalization and government effectiveness in former colonies. The negative effects include that nationalism can breed prejudice, out-group animosity, and scepticism of new ideas, if these are not of national origin.

In this paper we will be analysing social identity along multiple dimensions in Sudan using unique survey data from 2013. These dimensions include national identity, subnational identity with region or

¹ See the CIA's World Factbook.

² Although this may not be that easy to achieve in practice.

state³, tribe and religion and supranational identity with Arabic and African identities. Sudan is a particularly important country to study in this context, given the recent history of conflict. In particular if there is potential for social identities to conflict, then arguably this should be evident in the Sudan. However, we find little evidence that such identities are competing, but they do differ systematically according to socio-economic characteristics such as the individual's level of income, education, state (or region), location and employment status. We also find strong evidence linking being asked for a bribe to lower social identification, particularly with respect to the tribe, the state and the nation. Indeed in many respects this is the primary focus of the paper and is a conclusion with important policy implications. This is consistent with a literature which finds that corruption, of which bribery is a part, reduces the perceived legitimacy of the political system (Seligson, 2006) and reduces interpersonal trust and trust in government (Sun and Wang, 2012). Finally we analyse the determinants of being asked for a bribe. The study focuses solely on Sudan and not South Sudan, and proceeds as follows. In the next section we review the literature on social identification and also more briefly bribery. We then present a model of social identification followed by the data. Apart from the emphasis on the impact of bribery on identification, we are also concentrating on the impact of socio-economic and demographic variables on both. In the penultimate section we present the regression results before concluding the paper.

2 LITERATURE

2.1 Social Identification

For ethnic identities, the literature often assumes that the required attributes are descent-based and relatively visible, therefore hard to change in the short run (Chandra 2006). Nonetheless, even in the short run, the salience of these attributes can change (see Horowitz, 1985). However, categorization need not imply social identification: an individual may possess attributes that place them in several social groups, but in a given context, they may identify with only a subset of those groups. Indeed the current consensus sees social identification as a matter of choice, rather than something which is inherited⁴ (Laitin, 1998), although that may not be too relevant for at least some parts of Sudan, for some identities. In this approach the material benefits of social identity matter and it becomes

³ There were 16 states in what is now Sudan in 2008 (at the time of the last census). Since then the number has increased to 18, but the original 16 are used below to develop post-stratification and design weights for the survey analysis. These states are: Al Gazlera, Al Khartoum, Al Qadarif, Al Sheemalyah, Albahr-Alahmur, Blue Nile, Kassala, Naarh Al Neel, North Darfur, North Kurdofan, Sinnar, South Darfur, South Kurdofan, West Darfur, and White Nile.

⁴ Although of course this need not apply always and everywhere to the same extent.

meaningful to analyse the impact of variables such as education and income on social identification. From a theoretical perspective, Shayo (2009) and Sambanis and Shayo (2013) define social identification in terms of preferences. According to this, an individual *identifies* with group J if they care about (a) the status of group J (and in particular the payoffs of in-group members relative to the payoffs of out-group members); and (b) they are similar to other members of that group. Individuals do not identify to the same extent with each group they belong to. Rather, they tend to identify more with a group, the more similar they think they are to other members of that group and the higher the status of that group.

In Sambanis and Shayo's analysis two ethnic groups contest resources. However, while individuals belong to ethnic groups, they also belong to the "nation". Since identifying with a group means caring about the status of that group (and not only about one's own material payoffs), ethnic identification tends to increase fighting, while national identification tends to reduce it. But at the same time, the intensity of the conflict obviously affects the individuals' social environment. In particular, ethnic conflict tends to make ethnic differences more prominent, thereby reducing perceived similarity to the nation as a whole. Further, fighting can affect the relative status of the ethnic groups and since it destroys national resources it depresses national status. Bornman (2010) also argues that heterogeneous states face the possibility of multiple conflicts between social identities of subnational groups and the larger political community represented by the nation-state. However, it has also been argued that social identification does not necessarily lead to conflict and Brewer (2007) has argued that this will only happen if people feel threatened with regard to valued identities. In Shayo's (2009) approach each agent is characterized by a vector of attributes. The perceived distance from a given group is then simply a weighted Euclidean distance between the agent and the prototype of that group, with the weights reflecting the relative importance of the various dimensions. Duriez et al (2013) argue that national identification depends to some extent on people's pre-existing ideas about how society should be organized and about the membership conditions members need to fulfil.

The nature of the payoffs has been linked by social psychologists, Brewer (2007) in particular, to social factors which promote or inhibit social identification. Spears (2011) argues that group identity is of value in itself in telling us who we are. However, there are also potential material benefits. Indeed in Brewer's paper mention is made of in-group bias which gives rewards to group members. Frequently, as in Tajfel (1970), these explicitly relate to material benefits. Economists tend to focus more on material rewards, although not to the exclusion of other factors. In our analysis we will focus on the underlying socio-economic and demographic factors which influence identification and the results are consistent with both approaches.

There has been a considerable volume of work done on social identification, not least since 1981 when the work of Tajfel (1981) and his colleagues highlighted social identification as a process. There has however less been done making use of regression analysis with a focus on the impact of socio-

economic and demographic variables, which is one of the main focal points of this present paper. Education has been linked with social identification by Maddibo (2012) in a positive way in the Sudan, with people learning about their African heritage. Cooper and Knotts (2013) also find that education is positively correlated with Appalachian identity, speculating that this is because educated people are unlikely to have been subject to as many pejorative connotations of the word Appalachian. Others have found age is positively correlated with regional identity (Goudy, 1990) and Appalachian identity (Cooper and Knotts, 2013). It has been suggested that females identify as Southerners, in the USA, at slightly higher rates than males (Griffin and Thompson, 2003). Shulman (2003) using data from the World Values Survey and the International Social Survey Programme (ISSP), finds that within countries, poor people on average have greater national identity. In addition in a comparison of 59 countries, he finds that relatively poor countries on average have higher scores on national identity and national pride. Shayo (2009) also confirms that the level of nationalism is higher among the poor⁵. Moving away from socio-economic characteristics, Maddibo (2012) argues that in Sudan, Arabism is associated with Islam and Arabic descent and culture, and Africanism is linked to Christianity, indigenous beliefs and African culture. Bornman (2010) argues that supra-national identity can be formed from the alliances national states seek in supranational power blocks.

Many of the studies relate to social identification in melting pot cultures, such as in North America or modern Europe. Manning and Roy (2010) study the extent to which people living in Britain think of themselves as British. They find that members of non-white ethnic groups are much less likely to think of themselves as British than are whites. But 'distance' is not the only factor they find important. Immigrants from poorer and less democratic (i.e., lower status) countries assimilate faster into a British identity than do immigrants from richer countries, a conclusion which links into the findings already mentioned that national identification tends to be greater amongst poorer people.

There have also been several studies, as already indicated, which examine social identification from a specifically Sudanese perspective. Madibbo argues that identification with being Sudanese is a broad concept that extends to groups such as the Nubians, who have been in Sudan long before the expansion of Islam and Christianity in the country. Secondly, it acknowledges the input of various groups of immigrants from other countries, such as Greece and India, in forming the Sudanese identity. Third, he argues that the Sudanese identity mirrors the concept of a melting-pot, a fusion of large numbers of people into a whole with a common culture. In this way subnational and supranational identities do not necessarily conflict with the national identity. Both can coexist and even complement one another. In contrast, Bornman (2010) argues that heterogeneous states face the possibility of multiple conflicts between social identities between subnational groups and the larger

⁵ In part it was suggested that this was because, being the majority, the poor are more similar to the national prototype. In our analysis we later suggest a different explanation for many of these impacts based on their impact on the individual's choice set.

political community represented by the nation-state. In addition, the alliances national states have sought in supranational power blocks, may lead to the potential for the development of a supranational identity.

2.2 Bribery

Seligson (2002) has observed that many economists have tended to see the negative impacts of corruption in terms of increased transaction costs, reduced incentives to invest and lower economic growth. Thus with a specific focus on five North African countries, including Sudan, Drine (2012) finds a link from corruption to the technology gap and the speed of technology catch up. In contrast there is a strand in the literature, particularly common in politics, that corruption can be beneficial, particularly in non-democracies, in facilitating the ability 'to get things done'. But Seligson, and others, have begun to focus on the negative aspects of corruption, which he argues can only be properly analysed using a micro data base on individuals of the kind we use in our analysis. Using national sample survey data, from four Latin American countries, Seligson finds that independent of socioeconomic and demographic variables, exposure to corruption erodes belief in the political system. This finding is supported by other research, for example Sun and Wang (2012) find that negative actions by the government, including corruption and the abuse of privilege, significantly reduce both interpersonal trust and trust in government. Whilst in later research, Seligson (2006) found that those who experience corruption, of which being asked for a bribe is a component part, are less likely to believe in the legitimacy of their political system. Even in high income democracies, bribery and corruption have been found to be associated with large and more complex public sectors that are less susceptible to political and hence electoral oversight (Hamilton, 2013).

There is also a small literature on whom is exposed to bribery. One of the more extensive studies is by Mocan (2008). He argues that the probability of being targeted for a bribe is likely to be a function of age, marital status, labour market activity, wealth, education, gender and the location of the residence. The rationale is that, e.g. highly-educated and wealthy individuals should have higher exposure to being asked for a bribe by a government official because of their higher earning capacity. But the reverse should be true for people who are not active in the labour market, such as the very young or the very old. Males are expected to be more exposed because in most countries males are more active than females in the labour market for various reasons, and thus have more exposure to officials. Location is also important, as in larger cities there may be greater scope for increased contact with the government, and also the relationship between individuals and government officials may be less personal in larger cities in comparison to smaller ones, which may make it easier to ask for a bribe.

3 THEORY: THE DETERMINANTS OF SOCIAL IDENTITY

We take as our starting point the model by Georgiadis and Manning (2013) which in turn built upon work by Akerlof and Kranton (2000). We assume the following utility function for the individual taking action x_i , where the individual identifies with group g .

$$U_i(x_i, g) = -0.5c_i(x_i - \tilde{x}_i)^2 + B_g - 0.5b_g(x_i - x_g^*)^2 \quad (1)$$

\tilde{x}_i is the optimal value for individual i according to the conventional part of their utility function, which will be affected by their tastes which themselves might be influenced by, for example, the culture of their parents. That is, it is the action the individual would pursue if they were not to consider the group's position. If the individual complies with the group's position completely they receive benefits B_g . But if they deviate from the group's position, x_g^* then they are penalised. b_g represents the scale of punishment which Georgiadis and Manning argue can be thought of as an indication of group tolerance. Maximising this utility function with respect to x_i gives:

$$x_i = (c_i \tilde{x}_i + b_g x_g^*) / (c_i + b_g) \quad (2)$$

This is a weighted average of what the individual would wish to do based solely on their own self interest and the group's position. It would appear that this is independent of B_g the basic reward for group membership. But in reality b_g may be positively linked to B_g , as the bigger the reward, the greater the potential to penalise the individual. The value of group identity is the difference in utility from the self-interest component and with the group identity factored in:

$$I_i = B_g - 0.5(b_g c_i^2 / (c_i + b_g)^2) (\tilde{x}_i - x_g^*)^2 \quad (3)$$

This, Georgiadis and Manning interpret as a measure of the individual's strength of identification with group g .

(3) would appear to be the sum of B_g and $-0.5b_g(x_i - x_g^*)^2$, substituting x_i from (2) and calculating the resulting expression. However if this is to reflect the gains from being a member of the group, then it ignores $-0.5c_i(x_i - \tilde{x}_i)^2$ which is the first term in (1). Recalculating the value of the group to the individual as the full difference between utility as a member of the group or outside the group, including the first term, gives a slightly more complex, although symmetric, expression:

$$I_i = B_g - 0.5((b_g^2 c_i + b_g c_i^2) / (c_i + b_g)^2) (\tilde{x}_i - x_g^*)^2 \quad (4)$$

The level of identification will be lower the larger the gap between the individual's optimal position based on pure self-interest and that of the group's. It also declines with the strength the individual places on their own self-interest c_i . However, as would be expected, the larger the group potential benefits, B_g , the stronger is the identification to the group. An increase in b_g will tend to reduce identification as it forces the individual away from a previously optimal position with no compensation from an increase in B_g .

This suggests that the gains that people get from group membership may be linked to their socio-economic characteristics. Relatively speaking, poor people have fewer resources at their disposal than rich ones and hence a smaller choice set, thus the gains from group membership will be relatively more important. This suggests, as indicated in the literature, that income should be included as an explanatory factor in group identification with an expected negative impact. Age may also be included. There are several possibilities. Firstly as individuals age they learn more of their own personality, which potentially moves them further away from the impacts of their early socialisation. In this case we would expect $|\tilde{x}_i - x_g^*|$ to increase with age. However, if the group norms are effectively set by older people, as is the case with many groups in many societies, then we would expect that $|\tilde{x}_i - x_g^*|$ tends to decline with age. Education expands the individual's knowledge set (Ω). In some circumstances Ω is dominated by the group. This may often be the case in peripheral areas which are dominated by the tribe and religious institutions. Education provides additional knowledge, and in doing so may result in a change in values leading to $|\tilde{x}_i - x_g^*|$ increasing, and lower identification. The same may also be the case with respect to age. However, where Ω with respect to a group is limited or biased, as for example with some supranational identities which the nation does not wish to encourage, education may result in a decline in $|\tilde{x}_i - x_g^*|$, thus increasing group identification. This latter possibility is consistent with some of the findings in the literature.

Men and women may also have different choice sets, particularly in less developed countries, and they may also have different expectations of behaviour laid down by the group norms. There may also be further differences for both men and women depending upon their marital status. The benefits group membership may offer vary from promises of life after death, to more mundane ones such as protection from others, both group insiders and outsiders. For many people the key time for such benefits relates to transfers of assets after death or divorce and hence divorced or widowed people may have different levels of social identification to others.

Bribery can impact on (4) in two ways. Firstly, if the bribe is linked to group membership, it is a negative element of B_g . That is it reduces the benefits of group membership. Secondly, it can increase $|\tilde{x}_i - x_g^*|$ if the individual perceives bribery as being one of the norms of the group and the individual does not subscribe to that view. Even if the bribe does not stem from the group per se, it may still

suffer by association. For example, if the bribery stems from national officials and the nation identifies itself in part with supranational identities, those may be perceived as linked to bribery. Thus all the regressions will include these variables, and also include state fixed effects to capture differences between states in addition to the socio-economic characteristic of their inhabitants. The dependent variables are discrete and ordered, albeit over a rather large range of 1 to 10. Hence we will estimate the regressions using ordered probit.

We are also concerned with whether groups reinforce each other or compete. With just one group the difference between the individual's actions and the group's norm is⁶:

$$(x_i - x_g^*)^2 = \{c_i(\tilde{x}_i - x_g^*)/(c_i + b_g)\}^2 \quad (5)$$

With two groups it is⁷:

$$(x_i - x_g^*)^2 = \{[(c_i(\tilde{x}_i - x_g^*) + b_k(x_k^* - x_g^*))]/(c_i + b_g + b_k)\}^2 \quad (6)$$

These could also be seen as an alternative measure of identification, based on how closely the individual's actions are to the group norms. Focusing initially on a single group, comparing (5) to (4) the main difference is the absence of B_g . However it is plausible, as already discussed, to assume that b_g is an increasing function of B_g , that is the greater the potential reward of group membership the greater is the potential punishment for deviating from the group norm. In addition the impact of an increase in b_g is to reduce $(x_i - x_g^*)^2$ in (5), thus strengthening identity⁸, whereas in (4) it tends to reduce utility and hence reduce social identity. This is a crucial difference, but from our perspective these tolerance parameters are fixed and we are focusing more on the impact of socio-economic characteristics which impact on social identification and that is largely the same.

Whether the individual in their actions becomes closer to group g given a second group depends, as can be seen from equation (6), upon how close x_k^* is to x_g^* . A small difference provides added reasons for an individual to subdue their natural instincts as reflected by \tilde{x}_i . In this case the groups are mutually reinforcing, as to break with the norms of one tends to reflect a break with the other and the sanctions are twofold. However if there is a large divergence between the two group norms, then the individual is being pulled in three directions reflecting their natural instincts and the two group norms.

⁶ This is found by subtracting x_g^* from the expression on the right hand side of equation 2.

⁷ This is derived in a similar way to (5) but based on equation A1 in the appendix.

⁸ This is consistent with Roccas et al. (2010) who find that the more pressure Israeli immigrants felt to assimilate, the more positive they tended to identify with Israel.

In this case it is possible that if the gap between the two group norms is sufficiently large the two groups can be thought of as competing with identification with one pulling the individual away from the other. From a national perspective this raises the interesting question as to whether it is better to align the national identity with, e.g. that of some sub-national identity. On the one hand, if the vast majority of the country also identify with this identity, this can strengthen the national identity. But if this is not the case, then as with Sudan before the break up, it can lead to conflict.

4 METHODOLOGY

Table 1: Data definitions

Identification	Identification with Sudan/state/religion/tribe/Arabs/Africa, coded 1 to 10, i.e. from ‘not at all’ to ‘completely’.
Bribe	Whether have been asked for a bribe, responses coded 1 to 4, i.e. from in the last month, six months, year and 4 never.
Age	Age in years
Education	Coded from 1 (illiterate) to 9 (PhD) as an increasing measure of education. The highly educated variable equalled one when the individual had one of the top two levels of education.
Income	Coded 1 (100-500 STG), 2 (500-1000 STG), 3 (more than 1000 STG), monthly income
Marital variables	Binary variables taking a value of one if the person was single/married/divorced or widowed.
Male	Coded 1 if the individual was a male
Urban	Coded 1 if lives in an urban area.
Work	Coded 1 if in employment.
Work government	Coded 1 if works for the government
Work Pt Co.	Coded 1 if works for a private company.
Income support	Coded one if the household income is supplemented by a family member living abroad.

The dataset was collected by Sudan Polling and Statistics Center (SPSC) in collaboration with the UK’s Department for International Development on 11-21 July 2013. All states that previously constituted Sudan were included in the survey in more than 100 localities in 238 different sites – both rural and urban. Specifically, the sampling process entailed three stages, namely: (i) one cluster was randomly selected from each of the localities in every state (the probability that any given locality was selected was proportional to size); (ii) households in the locality were randomly selected with a replacement sampling strategy; (iii) an individual, of 18 years or older, was selected from within each household, using the Kish Table method for selection, to respond to the survey. Field interviewers were allocated to their own hometown or countryside which facilitated a greater capacity to understand cultural, social and political conditions. Obviously the survey is done in less than ideal conditions. For example, security conditions in South and North Kordofan hindered the work in these states, but it did not stop it and these problems add to the value of the survey data collected.

The dependent variables relating to identity take a value of 1 to 10, i.e. from ‘not at all’ to ‘completely’. These were the response to a series of questions, the first of which asked “In general to

what extent do you identify yourself as Sudanese?” Further questions followed where ‘Sudanese’ was substituted with (i) ‘state’ [i.e. the appropriate state was named], (ii) Arab, (iii) African, (iv) tribe and (v) religious affiliation. The questions are therefore similar to those analysed by Cooper and Knotts (2013) in analysing identities in the American South. Their data was coded 1 (no identity at all) to 7 (strongly identify). This therefore slightly differs from our data which is on a ten point scale. The data on bribery which we use relate to the statement “I personally have been asked for a bribe from an official in the past xxxx” where xxxx 1 (one month), 2 (six months), 3 (one year) and 4 (never). All variables are defined in Table 1.

Table 2 presents summary data on social identification. Column 1 shows the mean or average response. For identification with Sudan, this is very high at a value of 9.08 indicating that most people identify totally with being Sudanese. The next highest proportion relates to identification with religion and then ‘their state’ and tribe. There is a sharp decline for supranational identification, both African and Arabic. The second column shows the standard deviations and illustrates that people are more divided on these supranational identities than the other forms. The third column shows the proportion with zero identification. When this relates to being Sudanese or even the state, such people are of particular concern. They have no identification with being Sudanese and just possibly it is from this group that potential rebellion against the state can gain ground. Developing this measure still further, the final column shows those with minimal identification, which we classify as having a response between 1 and 3. Less than 1 in 20 fall in this category, although as indicated they could pose problems out of proportion with their numbers. There are much larger proportions with minimal identification with their religion and tribe and over a third have minimal identification with being Arabic. This too can cause tensions within society if, as is the case, substantial numbers also strongly identify with being Arabic, or indeed African. Finally, 332, or 15.1% of, respondents indicated that they fully identified with all identities.

Table 2: Summary Data on Identification in 2013

<i>Identification with:</i>	Mean	Standard deviation	Zero Identification	Minimal Identification
Sudan	9.08	2.17	3.57%	5.26%
State	8.13	2.73	6.51%	8.96%
Religion	8.67	2.71	7.10%	9.41%
Tribe	7.95	3.06	9.61%	13.60%
Arab	5.62	3.53	25.60%	33.50%
African	6.24	3.44	18.60%	25.10%

Notes: The mean (standard deviation) is the average value (standard deviation) of the identification variable, The zero identification column represents the proportion with a zero level of identification and the minimal identification column reflects those with a level of identification less than 4.

The summary data on the remaining variables used in the regressions are shown in Table 3. The first column relates to the full sample. The first five rows relate to the mean value, e.g. the mean level of education for the full sample is 4.82 on an increasing scale of 1 to 9, whilst for women alone it is 2.33. The remaining rows relate to proportions. For example 38.06% of the full sample were single

and 11.14 % came from Al Khartoum. The second column is based not on the full sample, but just on those who have been asked for a bribe. Such people tend to receive a slightly higher income than the average and be better educated, although if a woman, worse educated. However men are more likely to be asked for a bribe than women, as are those in work and in receipt of income from outside the country. In terms of where they live, those in Al Khartoum, Al Qadarif and the Blue Nile are particularly likely to have been asked for a bribe. These conclusions are based on comparing the summary statistic in the second column with the first. For example, we can see that people from the White Nile formed 6.39% of our full sample, but of those who have been asked for a bribe only 4.68% came from the White Nile.

Table 3: Summary Data on Independent variables in 2013

	<i>Full sample</i>	<i>Those asked for a bribe</i>		<i>Full sample</i>	<i>Those asked for a bribe</i>
<i>Mean Values</i>				<i>Percentages</i>	
Age	34.4	35.01	Al Gaziera	7.48	8.83
Education	4.82	5.28	Al Khartoum	11.14	16.88
Income	1.77	1.84	Al Qadarif	6.13	10.13
Women's education	2.33	1.77	Al Sheemalyfah	6.48	4.94
Bribe	3.67		Albahr Alahmur	6.48	0.78
<i>Percentages</i>			Blue Nile	6.48	10.91
Married	53.98	54.03	Kassala	6.09	4.16
Single	38.06	37.4	Nahr Al Neel	6.52	3.38
Male	50.28	63.12	North Darfur	4.05	5.19
Urban	35.8	37.14	North Kurdofan	6.26	5.45
Work	49.65	62.6	Sinnar	6.39	5.19
Work government	16.79	16.88	South Darfur	8.57	5.97
work pt Co.	10.66	17.92	South Kurdofan	5.09	7.01
Income support	30.22	39.09	West Darfur	6.44	6.49
Divorced widow women	5.83	5.71	White Nile	6.39	4.68

Notes: Column one relates to the full sample. The mean is the average value of the variable. The percentages relate to the proportion, e.g. 53.98% of the full sample are married. Column two relates to the same summary statistics as the first, but for those who have been asked for a bribe at some time in the previous year. For example, 54.03% of married people have been asked for a bribe.

In Table 4 we show the correlation matrix between the different identities. All are positively significant at the 1% level of significance, apart from that between religious identity and African identity. This does not necessarily imply that the identities are reinforcing. It is possible that there are basic factors driving social identity on all dimensions, but once these are included in the analysis, there may be no reinforcement and even competition. It is to the determinants of these basic factors which drive identity that we now turn.

Table 4: Correlation Matrix between the different identities

	Nation	State	Religion	Tribe	Arab
State	0.383*				
Religion	0.254*	0.430*			
Tribe	0.245*	0.480*	0.514*		
Arab	0.106*	0.254*	0.099*	0.169*	
Africa	0.164*	0.119*	0.031	0.134*	0.422*

Notes: * correlation significant at the 1% level.

5 REGRESSION RESULTS

Table 5 presents the main results for identification. Only significant variables are shown. At the foot of the table we report the proportion of correct predictions, as with ordered probit the conventional R^2 is somewhat problematical. Given there are ten options, these proportions are reasonably high. Column 1 relates to identification with the Sudan. This significantly declines with income. But still more significant is bribery. Having been asked for a bribe, significantly reduces identification with the Sudan at the 1% level of significance⁹. The state variables are all in relation to those living in the White Nile. These regional variables will be picking up systematic differences between regions, possibly linked to institutional, cultural or geographic factors. For example, a relatively remote region may have a slowly changing cultural environment which impacts on identification. Other things being equal, identification is less, and often significantly so, in other states apart from North Kurdofan, where it is significantly greater at the 5% level of significance, and Sinnar, Kassala, Al Sheemalyah and Naarh Al Neel where there are no significant differences with those from the White Nile. It tends to be lowest in North Ardfur, Blue Nile and Al Qadarif. The results for identification with the state, shown in the second column, are similar. This similarity also extends to the significance of the state variables. Identification with religion is however somewhat different. Religious identification is less for those in work, apart from those working for the government, where it is greater. Income is not significant, but there are significant locational differences with it tending to be lowest for those in Al Sheemalyah, West Darfur, North Ardfur and Blue Nile. Tribal identification declines with age, the level of education and income, and tends to be lowest in West Darfur and Al Khartoum. Finally being asked for a bribe has a particularly strong adverse impact upon tribal identification. The penultimate two columns relate to supranational identity, firstly with the Arab world and secondly Africa. The former declines with the level of education and the latter with age. Both tend to be lower in urban

⁹ The definition of the bribe variable is as in Table 1 and hence reflects both the frequency of having been asked for a bribe as well as whether the individual has been asked for a bribe at all (coded 4). Hence higher values are inversely related to the extent to which the individual has been asked for a bribe.

areas, significantly higher for those who work for the government and, for the African identity, lower for those who work. Being asked for a bribe once more adversely impacts upon both forms of identity. If we repeat these regressions, excluding those who were totally identified on all dimensions there is relatively little change in the results.

The final column relates to bribery. Educated people are more likely to have been asked for a bribe as are those in receipt of income from family members abroad. This latter result could be because (i) they have the financial resources to pay the bribe, although this is not reflected in income per se, (ii) other people know of this income and want a share or (iii) it could be linked to the process by which money is transferred to the individual¹⁰. However the combined significance of the education and gender variables is that the impact of education is largely only for men and in addition, the most highly educated people are less likely to be asked for a bribe than those who are slightly less well educated. This may be because they are in positions of influence. Women as a whole are less likely to be asked for a bribe. We should also note that the regional differences are much smaller than with respect to social identification.

Table 5: Regression Results Identification and Bribery

	Identity:						Bribery:
	Sudan	State	Religion	Tribe	Arab world	Africa	Asked for bribe
Married	0.3814** (2.03)	0.0732 (0.38)	0.3565** (2.01)	0.4664** (2.36)	-0.1322 (0.67)	0.1049 (0.48)	0.101 (1.35)
Single	0.2807 (1.40)	0.0767 (0.38)	0.3521* (1.88)	0.3993** (2.00)	-0.1759 (0.87)	0.1053 (0.47)	
Age	0.0024 (0.74)	-0.0027 (0.98)	-0.00067 (0.20)	-0.0054* (1.91)	2.20E-04 (0.09)	0.0057** (2.10)	-0.004 (1.30)
Gender	0.1809 (0.96)	-0.0725 (0.44)	0.3375* (1.86)	0.1847 (1.14)	0.2311 (1.40)	0.212 (1.29)	0.429** (2.06)
Highly educated	0.0572 (0.33)	0.2334 (1.63)	0.2951* (1.70)	0.123 (0.84)	0.0298 (0.22)	-0.0942 (0.68)	0.3329** (2.20)
Education	-0.0072 (0.26)	-0.0012 (0.05)	-0.0726*** (2.65)	-0.0933*** (3.78)	-0.0521** (2.17)	0.0152 (0.65)	-0.1486*** (4.98)
Income	-0.1105** (2.21)	-0.1135** (2.56)	0.0527 (1.06)	-0.091** (2.01)	0.0415 (1.02)	0.0059 (0.15)	
Urban	-0.1071 (1.48)	-0.0399 (0.62)	-0.0047 (0.06)	-0.00079 (0.01)	-0.2085*** (3.41)	-0.1405** (2.34)	
In work	0.066 (0.69)	0.1033 (1.25)	-0.201** (2.13)	-0.0463 (0.56)	-0.0671 (0.86)	-0.2854*** (3.66)	-0.3039*** (3.08)
Work for government	0.1094 (0.99)	0.0345 (0.36)	0.2782** (2.44)	0.0837 (0.87)	0.1964** (2.23)	0.2471*** (2.77)	0.2696** (2.39)
Work for private firm	-0.0405 (0.33)	-0.1054 (0.96)	0.0833 (0.68)	-0.0791 (0.72)	0.0234 (0.24)	0.1367 (1.37)	-0.221* (1.90)
Receives income for abroad	-0.1029 (1.47)	-0.0881 (1.44)	0.0268 (0.36)	0.0907 (1.44)	0.0133 (0.22)	-0.0793 (1.36)	-0.331*** (4.37)
Women's education	0.047	-0.0022	0.0468	0.0436	0.026	-0.006	0.1243***

¹⁰ Given the pre-dominance of black market transactions in Sudan this is quite a plausible explanation.

	(1.40)	(0.08)	(1.45)	(1.53)	(0.91)	(0.21)	(3.47)
Divorced/widowed and a woman	0.4786**	-0.0522	0.4144*	0.416*	-0.2125	0.3161	
Asked for bribe	(2.01)	(0.23)	(1.76)	(1.83)	(0.93)	(1.30)	
	0.1187***	0.1591***	0.0727**	0.184***	0.0833***	0.1111***	
	(3.29)	(4.68)	(1.98)	(5.57)	(2.69)	(3.70)	
Al Gazlera	-0.4162**	-0.5065***	-0.1718	-0.5277***	0.1636	-0.0698	-0.4373**
	(2.27)	(3.13)	(0.80)	(3.16)	(1.16)	(0.49)	(2.49)
Al Khartoum	-0.3419**	-0.8997***	-0.8725***	-1.295***	0.0683	-0.7248***	-0.3493**
	(2.04)	(6.18)	(4.49)	(8.66)	(0.54)	(5.76)	(2.19)
Al Qadarif	-0.886***	-0.7986***	-0.8686***	-0.6179***	-0.522***	-0.7405***	-0.727***
	(5.11)	(4.86)	(4.34)	(3.80)	(3.97)	(5.59)	(4.14)
Al Sheemalyah	-0.261	-0.1613	-1.427***	-0.662**	0.176	0.2775	-0.2986
	(0.76)	(0.52)	(4.88)	(2.28)	(0.63)	(1.03)	(0.98)
Albahr-Alahmur	-0.5852***	0.1985	-0.2169	-0.2567	-0.6549***	-1.053***	0.2383
	(2.69)	(0.94)	(0.90)	(1.15)	(3.25)	(5.05)	(0.74)
Blue Nile	-0.8963***	-0.890***	-1.338***	-1.031***	-0.2818**	-0.3311**	-1.024***
	(5.25)	(5.76)	(6.84)	(6.54)	(2.12)	(2.49)	(5.41)
Kassala	-0.0129	-0.1103	0.0117	-0.3723**	-0.0185	-1.121***	-0.1777
	(0.07)	(0.66)	(0.05)	(2.18)	(0.12)	(7.48)	(0.99)
Naarh Al Neel	-0.4576	-0.1655	-0.3715	-0.4374*	0.6216***	-0.1677	0.1319
	(1.58)	(0.66)	(1.31)	(1.79)	(2.65)	(0.76)	(0.48)
North Adrfur	-0.9004***	-0.2986	-1.251***	-1.121***	-0.2151	-0.6065***	-0.4429**
	(3.85)	(1.28)	(4.94)	(4.88)	(1.03)	(2.77)	(2.06)
North Kurdofan	0.625**	0.5601**	0.5349*	0.172	-0.6608***	-1.17***	-0.3009
	(2.29)	(2.50)	(1.87)	(0.90)	(4.12)	(7.02)	(1.59)
Sinnar	0.1936	-0.1363	-0.0057	-0.1796	0.063	0.071	-0.3043
	(0.87)	(0.76)	(0.02)	(0.97)	(0.40)	(0.45)	(1.61)
South Darfur	-0.5467***	-0.2936*	-0.4489**	-0.3568**	-0.1553	-0.7996***	-0.2016
	(2.97)	(1.72)	(2.09)	(1.96)	(1.03)	(5.23)	(1.09)
South Kardofan	-0.3627*	-0.2734	-0.4316*	-0.516***	-0.0107	-0.3735**	-0.5057***
	(1.76)	(1.52)	(1.80)	(2.93)	(0.07)	(2.50)	(2.75)
West Darfur	-0.5491**	-1.172***	-1.419***	-1.420***	-0.8678***	-0.409**	-0.4881**
	(2.55)	(6.63)	(6.81)	(7.90)	(4.80)	(2.47)	(2.44)
Observations	1831	1821	1828	1814	1760	1744	1897
Log Likelihood	-1731	-2695	-1783	-2639	-3519	-3327	-1237
X ²	162.9	303.7	276.1	383.9	178.5	280.4	168.9
Correct predictions (%)	81.8%	65.2%	80.5%	67.1%	46.6%	50.4%	83.2%

Notes: All the regressions estimated by ordered probit; t statistics in italics. ***/**/* denotes significance at the 1%/5%/10% levels of significance. Standard errors have been corrected for heteroscedasticity. Variables defined in Table 1, X² represents the likelihood ratio test statistic. The regional variables are in comparison with the White Nile, which is the omitted region from the above. The % of correct predictions refers to where the predicted response, for identification on a range of 1 to 10, is the same as the actual response.

We also did a set of bivariate probit regressions where the dependent variable took a value of one if identity was either 9 or 10. In all cases the correlation term for the respective equation's error terms was positively significant. When we redid the regressions excluding those who answered total identification on all dimensions all the correlations between identification with the Sudan, state, tribe and religion remained significant, at the 1% level, as were those between the (i) state and Arabic, (ii) the tribe and African and (iii) African and Arabic identities. There were no significant negative correlations. This same pattern was reproduced when we used multivariate probit to estimate the regressions. The pattern of significance on these bivariate and multivariate regressions was similar to the single regression probit ones reported in Table 5, indeed the t statistics were in general slightly

more significant. Finally, the results did not substantially change when we restricted the analysis to those who did not express total identification on all dimensions.

These regressions assume that being asked for a bribe is exogenous. This is consistent with the literature (Seligson, 2002). In addition, in our analysis we have used a variable which reflects being asked for a bribe rather than one which relates to giving a bribe and it is the latter which is more likely to be endogenous. However, it is still possible that ‘outsider groups’ are potentially more vulnerable to having to pay bribes. Thus in addition we did further regressions where we use a predicted value for bribery obtained from the final regression in Table 5¹¹. The results are shown in Table 6. This predicted bribe variable remained significant at the 1% level in the regressions for identity apart from those relating to the supranational identities. In all of these regressions, standard errors are corrected for heteroscedasticity. Finally we again did multivariate probit regressions. Once more the predicted bribery variable impacted on identification with the tribe, at the 1% level of significance, and the state and Sudan itself, both at the 5% level of significance¹². However, the Hausman test indicated that endogeneity was only a problem with respect to the regression relating to the tribe and this suggests that we should use the identities in Table 5 for all the results apart from those relating to the tribe. It also tentatively suggests that the argument advanced above pertaining to outsiders being vulnerable to bribes is most relevant with respect to the tribe.

Table 6: Regression Results Identification using Instrumented Bribery

	Identity:					
	Sudan	State	Religion	Tribe	Arab World	Africa
Married	0.1102 (1.52)	0.0223 (0.35)	0.0597 (0.81)	0.116 1.72	0.0051 0.08	-0.0301 -0.48
Age	0.0022 (0.77)	-0.0016 (0.64)	0.0018 (0.59)	-0.0046 -1.67	0.0017 0.69	0.0052 2.04
Education	0.0311 (1.36)	0.0282 (1.46)	-0.0136 (0.64)	-0.0497 -2.48	-0.0386 -2.08	-0.0081 -0.44
Income	-0.1161 (2.45)	-0.1248 (2.98)	0.0228 (0.49)	-0.0998 -2.33	0.0341 0.88	0.0073 0.19
Urban	-0.0846 (1.21)	-0.0429 (0.69)	-0.0301 (0.42)	-0.0197 -0.32	-0.2026 -3.41	-0.1175 -2.03
In work	0.1916 (2.18)	0.1827 (2.42)	-0.1108 (1.31)	-0.048 -0.64	0.0118 0.16	-0.1536 -2.13
work for government	-0.005 (0.05)	-0.0178 (0.20)	0.2376 (2.18)	0.0952 1.03	0.1609 1.92	0.198 2.31
Divorced/widowed and a woman	0.282 (1.93)	0.0184 (0.16)	0.0926 (0.64)	0.1289 1.13	-0.1489 -1.27	0.0623 0.57
Asked for bribe	0.376 (2.79)	0.3913 (3.45)	0.1841 1.37	0.2487 2.12	0.0637 0.58	-0.1193 -1.11

¹¹ This is, in part, why the specification of the bribery equation in Table 5 included those variables with a t statistic greater than 1. These are still reasonably likely to impact upon bribery, and meant that age was included which also seems reasonable on theoretical grounds.

¹² All of these results are available from the authors upon request.

Regional dummies	included	included	included	included	included	included
Observations	1961	1950	1955	1943	1879	1868
Log Likelihood	-1878	-2933	-1974	-2888	-3754	-3568
X ²	172.6	320.5	297.3	382.3	170.3	263.7
Correct predictions (%)	80.3%	61.8%	78.6%	63.6%	43.1%	46.4%

Notes: See Table 5

6 CONCLUSIONS AND POLICY IMPLICATIONS

The analysis has provided evidence that there is a negative association between bribery and social identification at all levels, but particularly with respect to the tribe, the state and the nation. Least affected is religious identity, followed by the supranational identities. There is some evidence that tribal identification is most affected. This may reflect the identity of the person seeking the bribe. If this is so, then the focus in terms of reducing corruption should be on the tribe and the state and national officials in particular. This is particularly important in a country such as Sudan which is struggling with internal divisions, built in part on different identities. Thus our analysis has shown that there are very substantial differences between regions both in terms of the level of bribery and even more so with social identification. The bribery variable we have used relates to experience of personally being asked for a bribe. It therefore primarily relates to low level corruption (Seligson, 2006). It is possible that perceptions of high level corruption may also adversely impact on identification. The results also show that social identification differs systematically with an individual's socio-economic characteristics.

In common with other studies (e.g. Shayo, 2009) we find identification with the three key administrative levels, the nation, the state and the tribe declines with the level of income¹³. Tribal identification, but not the other two, also declines with the level of education, as does identification with the Arab world. Identification is to a large extent not impacted upon by age. Finally there was relatively little evidence that being in receipt of income from family members abroad reduced social identification¹⁴. In no case are there conflicting impacts of the socio-economic variables on the different dimensions of identification¹⁵. In this and in other ways there was also relatively little evidence of one form of identification crowding out other forms¹⁶. Indeed the reverse was the case for

¹³ If this is valid over time, as well as in a cross section analysis, then it has implications for identification as countries become richer.

¹⁴ Being as this reduces an individual's dependence upon the country, it was felt this might reduce national and sub-national identity. We found no evidence for this.

¹⁵ There is some limited evidence of conflict. With respect to national identity, a regression of this on the separate identities on the full sample, results in only state and African identities being significant at the 1% level of significance. If we repeat the regression excluding those who said they had total identity on all dimensions, then Arabic identity was *negatively significant* at the 1% level of significance. But this is not reinforced with findings elsewhere in this analysis.

¹⁶ An important qualification to this can be found in the impact of the state variables. Hence North Kurdofan, for example, has significantly stronger identification with both the state and the nation and significantly negative less identification with both supranational identities.

national identity in particular. But this does not mean it is not a problem, with members of one state or tribe potentially having negative views of other states or tribes. This is something our analysis has not picked up and going forward an interesting question might be how much individuals identify with Sudanese from other tribes or states. More background information on the individuals, e.g. a finer definition of income and how long the individual has been in their current location would also be useful in helping to understand attitudes.

Social identity is potentially important in helping bind a nation together and allowing it to benefit from a generalised feeling of civic duty. It has also been argued that nation-building aimed at building an overarching national identity needs to accommodate the interests and identity of members of various groups in the process of national integration (Dersso, 2008). From the literature it is not obvious that in Sudan the government has always followed inclusive policies. Nonetheless, despite these qualifications, our analysis has suggested that in the Sudan, following the cessation of South Sudan, social identification particularly with the state is quite high. On the other hand, there are regions such as in the Blue Nile and West Darfur where identity with both the state and religion is less than in much of the rest of the country. However, if Sudan becomes richer, better educated and more urbanised we can expect identification on most dimensions, but particular the tribal one, to weaken. Finally, in all parts of the country corruption, particularly as it impacts on individuals, can also damage this identification.

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Appendix: Analysis when there are two groups.

In the case where there are two groups, g and k, maximising the utility function with respect to x_i gives:

$$x_i = (c_i \tilde{x}_i + b_g x_g^* + b_k x_k^*) / (c_i + b_g + b_k) \tag{A1}$$

Where b_k is the k group's toleration parameter. The utility the individual receives equals

$$U_i(x_i, g, k) = -0.5c_i [((c_i \tilde{x}_i + b_g x_g^* + b_k x_k^*) / (c_i + b_g + b_k)) - \tilde{x}_i]^2 + B_g - 0.5b_g [((c_i \tilde{x}_i + b_g x_g^* + b_k x_k^*) / (c_i + b_g + b_k)) - x_g^*]^2 + B_k - 0.5b_k [((c_i \tilde{x}_i + b_g x_g^* + b_k x_k^*) / (c_i + b_g + b_k)) - x_k^*]^2 \tag{A2}$$

This will involve interactive terms between x_g^* and x_k^* , and the utility loss belonging to a group is now more difficult to calculate. However, the individual may still plausibly be assumed to base identification on (4) where they consider the impact of the group on their wellbeing in isolation from other groups. But the interactive terms in (6) highlight the possibility that the utility gain of belonging to one group depends upon membership of other groups. Thus there is the potential for positive and negative spillovers from one group to another. Hence in the text we approach this in another way by focusing on how close to a group an individual is in the actions they actually take¹⁷.

¹⁷ This view of identification is similar to that of Sambanis and Shayo (2013) who link it to how similar an individual is to others in the group.